EMS Laboratories
117 W. Bellevue Drive
Pasadena, CA 91105

NARRATIVE

July 8, 2010

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

SDG/EMS# 137822
Project: 2027.001, Tronox LLC Henderson,
560 West Lake Mead Drive, Henderson, NV
Client COC ID: 02027.01.2127

REFERENCE:	DAS Case No. 0769F	TDD No.: 07-10-0012
	Task No. 0361	P. O. No.: 0063941
	Tronox Project# 10203.01.02	NGE Tracking# 03
	AUI Task# 6	

EMS REPORT NO.: 137822

The elutriator that is used in this task was constructed at EMS Laboratories and has a nominal 4 inch diameter stainless steel tube for the body of the elutriator. The drawing of the elutriator in the document EPA/540/R97/028 assumes an inner diameter of 4 inches for the calculation of the desired flow rate in the elutriator but the EMS elutriator has in inner diameter of about one eighth inch less than that. The EMS elutriator uses a basic flow rate of 1460 ml per minute instead of the 1560 ml per minute to adjust for the difference in diameter.

Two serious interferences were observed when the Tronox soil samples were subjected to the elutriation and in the subsequent preparation of the grids used for transmission electron microscope (TEM) viewing. The first interference manifested itself as a very low rate of dust collection of material on the filter that was to be used for TEM examination. The second problem was that it was very difficult to prepare good quality grids because of breakage in the carbon film.

The top of the elutriator contains two filters that connect to the pump that pulls the air through the vertical elutriator. Both filters are nominally 25 millimeters. One takes the major flow of the air and dust through the tube and the other is used to prepare a filter for examination in the TEM. This filter that is termed the IST filter is collected from a tube that extends down from the top openings to the level where the body of the elutriator has the nominal 4 inch diameter. The purpose of this tube is to collect a sample on a 25 mm diameter filter that represents the particle size distribution at the top of the uniform column before it is disturbed by the reduction of the cross sectional area that occurs at the top of the elutriator. The other takes the majority of the flow of air and collects the dust also on a 25 millimeter filter. There is a filters of each type so that one filter of each is always in place when the filters are changed.

EMS Laboratories
117 W. Bellevue Drive
Pasadena, CA 91105

The flow velocity in the IST tube has to be at least that in body of the elutriator to carry the particles upward. A flow rate higher than the minimum will not have a significant effect since the size of the particles going up the elutriator is already determined before the airstream reaches the IST tube. However, if some force other than gravity acts on the particles than there can be a problem. It is found in the EMS elutriator that the IST filters have a significant static charge after the sample is collected. It is also found that an air flow velocity in excess of the velocity in the body of the elutriator is necessary to get a deposit on the IST filter that weighs nearly what is expected. The additional force exerted by the static electricity on particles of the same charge would prevent them from reaching the surface of the filter. They cannot just build

up in the region near the surface but instead one would expect them to form aggregates and drop back down the tube.

The weight of the deposit on each filter should divide according to the total airflow through each, i.e., if 90% of the air goes through one filter and 10% through the other then in the same time period one would expect to have nine times the weight of the other. In actuality this is generally not the case. In the original draft of the method in 2003 it is noted that a significantly higher flow velocity is required in the IST tube to get the weight predicted by the formula relating the weight to each airflow.. There appear to be several reasons for this. One that was suggested in draft of the modified elutriator method is that leaks which are small compared to 1400 or 1500 ml per minute are not small in the IST tube that carries only 5% of the total flow. Accordingly, the original draft suggested using airflow somewhat higher than the air velocity in the body. The air leaks have been minimized and do not appear to be a major cause of the fact that the airflow must be significantly higher in the IST tube in order to get satisfactory deposits on the IST filter. The factors which appear to be important with respect to getting a good filter are the soil chemistry and also the static charge that builds up on the filters.

.The particles in the air stream move upward because the airflow creates an upward force that is balanced by gravity. If there is a force other than gravity such as a repulsive static electrical force as the particle approaches the filter, then the larger particles may not reach the surface of the filter. The particles that do not reach the filter must sooner or later go back down the tube or collect on the sides. The apparent fate is that they collect other particles and the aggregates fall down the tube undergoing additional aggregation as they fall. There are numerous observations that support this hypothesis.

The problem also appears to be enhanced by soil chemistry. EMS has experienced problems in the past when elutriating alkaline materials. Alkaline materials are particularly bad when collecting the sample on polycarbonate filters. Apparently alkalinity somehow interferes with the particles sticking to the surface. MCE filters under the same conditions are less affected as far as particle sticking is concerned as evidenced by experiments where dust was collected alternately on MCE and polycarbonate filters. The EMS chemistry department was given a few randomly chosen Tronox samples for determination of pH and found alkalinity in some as high as the 10 to 11 range.

EMS Laboratories
117 W. Bellevue Drive
Pasadena, CA 91105

Alkaline dust also is a problem at the stage in the process in which samples on the polycarbonate filters were transferred to a carbon film on a grid for examination in the TEM. The grids prepared from alkaline dust samples when viewed in the TEM often show lost of particles and cracking of the film when polycarbonate filers are used.

The alkaline dust problem is not new and EMS has in its elutriator SOP a suggestion for using MCE filters for dealing with this interference. Accordingly, EMS prepared a few of the NGEM samples on MCE filters to show that it corrected the problem. The tradeoff is that the

MCE filters do not have the good humidity stability that the polycarbonate has so precautions must be taken to get the correct weight of deposit.. On June 11th EMS was informed that NGEM did not want to use MCE filters. These samples were already prepared and analyzed prior to this decision. Use of MCE filters for samples was terminated.

The only solution for the static problem that has been successful is using increased flow rates in the IST tube, up to 130 ml/min and occasionally 138 as contrasted with a theoretical flow rate in the mid-seventies. In the past EMS has found a flow rate of 90 ml/minute to be appropriate for soil samples.

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 sheets.

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

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/19/2010 09:13AM
EMS LAB No: 137822
Date Prepared: 6/9/2010 2:30PM
Analysis Date: 6/10/2010 8:30AM

Report Date: July 7, 2010

Date Sampled: 5/13/2010 10:35

NIOSH 7402/ISO

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

EMS Laboratory Number:	137822		Mass of Respirable Dust on Fiber:	169	
Customer Sample Number:	SSAR6-01-0.00BPC		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:	94	
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		Soil % Moisture	9.5	%
	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: 2.58E+06 Structure /g PM 10 Limit of Detection: 7.72E+06 Structure /g PM 10

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

Test For Uniformity (Chi-Square results)

Structure Class	Min ID Level Required	Counts Primary Str.	Counts Total Str.	Density St/mm²	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	7.72E+06
Asbestos Structures>5um, ≤10um (Chrys)	CD	0	0	0	0	0	7.72E+06
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	7.72E+06
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	7.72E+06
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	7.72E+06
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	7.72E+06
Total Protocol Asbestos Structures	ADX/CD	0	0	0	0	0	7.72E+06
Protocol Asbestos Structures (Chrys)	CD	0	0	0	0	0	7.72E+06
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	7.72E+06
Total Protocol Non Asbestos Structures	**NAM**	0	0	0	0	0	7.72E+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 :	137822			**Magnification:**	9,200x
Sample number:	SSAR6-01-0.00BPC			**Grid Opening Dimension:**	0.0094 mm^2
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,			**Grid Loading:**	Moderate to Heavy

Preparation Date: 6/9/2010 by Joel Paruli
Analysis Date: 6/10/2010 by Radha Singh **Grid Openings** 94

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 ID	Grid Opening	Structure Type	Structure Number		Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length				
1A	C23	None Detected								
1A	C26	None Detected								
1A	E23	None Detected								
1A	E26	None Detected								
1A	F23	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	H34	None Detected								
1A	F41	None Detected								
1A	F44	None Detected								
1A	G41	None Detected								
1A	E51	None Detected								
1A	E54	None Detected								
1A	F51	None Detected								
1B	C33	None Detected								
1B	C36	None Detected								
1B	E33	None Detected								
1B	E36	None Detected								
1B	F31	None Detected								
1B	F34	None Detected								
1B	G31	None Detected								
1B	G34	None Detected								
1B	H31	None Detected								
1B	F23	None Detected								
1B	F26	None Detected								
1B	C41	None Detected								
1B	C44	None Detected								
1B	E41	None Detected								
1B	E44	None Detected								
1B	F41	None Detected								
1B	G51	None Detected								
1B	G54	None Detected								
1B	H51	None Detected								
1B	H54	None Detected								
1C	C23	None Detected								
1C	C26	None Detected								
1C	E23	None Detected								
1C	E26	None Detected								
1C	F23	None Detected								
1C	F26	None Detected								

EMS Laboratories

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

Report Number:	137822
Sample number:	SSAR6-01-0.00BPC

Analyzed by:	Radha Singh
Date of Analysis:	6/10/2010

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	F31	None Detected								
1C	F34	None Detected								
1C	G31	None Detected								
1C	G34	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								
1C	G46	None Detected								
1C	H31	None Detected								
1C	H34	None Detected								
1D	C31	None Detected								
1D	C34	None Detected								
1D	E31	None Detected								
1D	E34	None Detected								
1D	F31	None Detected								
1D	F34	None Detected								
1D	C41	None Detected								
1D	C44	None Detected								
1D	E41	None Detected								
1D	E44	None Detected								
1D	F41	None Detected								
1D	F44	None Detected								
1D	G41	None Detected								
1D	H43	None Detected								
1D	F51	None Detected								
1D	F54	None Detected								
1D	G51	None Detected								
1D	G54	None Detected								
1D	H51	None Detected								
1E	C33	None Detected								
1E	C36	None Detected								
1E	E33	None Detected								
1E	E36	None Detected								
1E	F33	None Detected								
1E	C26	None Detected								
1E	E23	None Detected								
1E	E26	None Detected								
1E	F23	None Detected								
1E	F26	None Detected								
1E	G23	None Detected								
1E	G26	None Detected								
1E	G51	None Detected								
1E	G54	None Detected								
1E	H51	None Detected								
1E	H54	None Detected								

Copy

85

Count (Page of) NIOSH 7402/ISO

Report number : 137822
Sample number: SSAPC-01-0.00BPC
File name: Northgate
Sample Description: 169 mg

Filter Type: MCE 385 mm2
Date Sample was Run: 6/9/10

Magnification: 9,200 X

start prep: 1200 PM
Stop prep: 230 PM

Preparation date: 6/9/10 By JAP
Analysis date: 6/10/10 By RS
(A): ADX, ADQ

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

Analysis - 6.30 a - 8.30 a

Grid loading moderate to heavy Condition of Grid dust

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
1A	C2-3							
	C2-6							
	E2 3							
	E2-6							
	E2 3							
	E3-1							
	E3-4							
	E3-1							
	E3-4							
	G3-1							
	G3-4							
	1B3-1							
	1B3-4							
	E4-1							
	E4-4							
	G4-1							
	E5-1							
	E5-4							
	E5-1							
1B	C3-3							
	C3-6							
	E3-3							
	E3-6							
	E3-1							
	E3-4							
	G3-1							
	G3-4							
	1B3-1							
	E2 3							
	E2 6							

TEM-10A (2002)

TEM Asbestos Structure Count (Page of)

Report number: 137822 SAMPLE NO: SSAR6-01-0.00BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
1B	CU-1							
	CU-4							
	EU-1							
	EU4							
	FU-1							
	LU7							
	LU-4							
	HS-1							
	HS4							
1C	C2-3							
	C26							
	E23							
	M26							
	F23							
	1C2-6							
	L23							
	F3-1							
	F3-4							
	L3-1							
	L3-4							
	CU-4							
	EU-1							
	EU4							
	C-4-1							
	E-U-4							
	LU-3							
	LU6							
	HS1							
	HS-4							
1D	C3-1							
	C34							
	E3-1							
	E3-4							
	C3-1							

TEM Asbestos Structure Count (Page of)

Report number: 137822 SAMPLE NO: SSAR6-01-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
LD	E3-4							
	C4-1							
	C4-4							
	E4-1							
	E4-4							
	E4-1							
	E4-4							
	H4-1							
	H4-3							
	F5-1							
	F5-4							
	G5-1							
	G5-6							
—	H5-1							
E	C3-3							
	C3-6							
	E3-3							
	E3-6							
	F3-3							
	C2-6							
	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	G5-1							
	G5-4							
	H5-1							
	H5-4							

Elutriator Data

Date: 6-9-10 Client: Northgate

Lab #: 137822

Sample ID: SSARG-01-0.00BPC Sample weight (g): 78.3

Time air flow started: 600 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	800	137	0.03430	0.02453	9.77	30	326	
2	830		0.03157	0.02450	7.07	15	471	
3	845		0.03192	0.02448	7.44	20	371	
4	905		0.03122	0.02477	6.45	20	323	
5	925		0.03083	0.02490	5.93	20	297	
6	945		0.02848	0.02500	3.48	20	174	
7	1005		0.03304	0.02490	8.14	30	271	
8	1035							
Time							Dep. Rate ug/min	Estiimate
MCE-1 857	901		24.492	24.444	0.048	4	12	
-2 913	919 1/2		24.273	24.104	0.169	6 1/2	26	26
-3 933	939 1/2		24.327	24.216	0.111	6 1/2	17	25
PC-4 953	1001		4.517	4.469	0.048	8	6	
MCE-5 1014	1026		24.434	24.280	0.154	12	13	23

prep: 6/9/10

138029

Moisture content

6-8-10

#SA111-1.00 BPC Rush

dish wt. 19.23 g

samp. wt 119.81 - 19.23 = 100.58 g (initial wt.)

6:15-7:15 112.32 - 19.23 = 93.09 g

8:05-9:05 112.29 - 19.23 = 93.06 g (Final wt.)

$$\% \text{ moist.} \rightarrow 100 \times \frac{100.58 - 93.06}{93.06} = 8.08\ \%$$

#138822 - #SA05-0.33 BPC Rush

dish wt. 31.48 g

samp. wt. 131.30 - 31.48 = 99.82 (initial wt.)

6:15-7:15 123.48 - 31.48 = 92.00

8:05-9:05 123.44 - 31.48 = 91.96 (Final wt.)

$$\% \text{ moist.} \rightarrow 100 \times \frac{99.82 - 91.96}{91.96} = 8.55\ \%$$

#138822 - #SSA R6-01-00 BPC Rush

dish wt. 31.45 g

samp. wt. 131.28 - 31.45 = 99.83 g (initial wt.)

6:15-7:15 122.65 - 31.45 = 91.20 g

8:05-9:05 122.61 - 31.45 = 91.16 g (Final wt.)

$$\% \text{ moist.} \rightarrow 100 \times \frac{99.83 - 91.16}{91.16} = 9.51\ \%$$

BP

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

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/19/2010 10:05AM
EMS LAB No: 137822
Date Prepared: 6/8/2010 11:07AM
Analysis Date: 6/9/2010 10AM

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

Report Date: July 7, 2010

Date Sampled: 5/13/2010 10:20

NIOSH 7402/ISO

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

EMS Laboratory Number:	137822		Mass of Respirable Dust on Fiber:	142	
Customer Sample Number:	SA05-0.33BPC		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:	104	
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		Soil % Moisture	8.6	%
	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: 2.77E+06 Structure /g PM 10 Limit of Detection: 8.31E+06 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/mm²	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	8.31E+06
Asbestos Structures>5um, ≤10um (Chrys)	CD	0	0	0	0	0	8.31E+06
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	8.31E+06
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	8.31E+06
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	8.31E+06
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	8.31E+06
Total Protocol Asbestos Structures	ADX/CD	0	0	0	0	0	8.31E+06
Protocol Asbestos Structures (Chrys)	CD	0	0	0	0	0	8.31E+06
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	8.31E+06
Total Protocol Non Asbestos Structures	NAM	1	1	1	2.80E+06	0.07E+06	15.4E+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 :	137822	**Magnification:**	9200
Sample number:	SA05-0.33BPC	**Grid Opening Dimension:**	0.0094 mm^2
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,	**Grid Loading:**	Moderate to Heavy

Preparation Date: 6/8/2010 by Joel Paruli
Analysis Date: 6/9/2010 by Radha Singh **Grid Openings** 104

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 ID	Grid Opening	Structure Type	Structure Number		Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length				
1A	E23	F			1.09	7.61				Non Asbestos
1A	E26	None Detected								
1A	F23	None Detected								
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	E41	None Detected								
1A	E44	None Detected								
1A	F41	None Detected								
1A	F44	None Detected								
1A	C51	None Detected								
1A	C54	None Detected								
1A	E51	None Detected								
1A	E54	None Detected								
1A	G51	None Detected								
1A	G56	None Detected								
1A	H53	None Detected								
1B	C33	None Detected								
1B	C36	None Detected								
1B	E33	None Detected								
1B	E36	None Detected								
1B	C41	None Detected								
1B	C44	None Detected								
1B	E41	None Detected								
1B	F43	None Detected								
1B	F46	None Detected								
1B	G43	None Detected								
1B	G46	None Detected								
1B	F51	None Detected								
1B	F54	None Detected								
1B	G51	F			0.11	8.91				Non Asbestos
1B	G56	None Detected								
1B	E53	None Detected								
1B	E56	None Detected								
1B	F53	None Detected								
1B	F56	None Detected								
1B	F61	None Detected								
1B	F64	None Detected								

EMS Laboratories

NIOSH 7402/ISO

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

Report Number:	137822
Sample number:	SA05-0.33BPC

Analyzed by:	Radha Singh
Date of Analysis:	6/9/2010

Grid ID	Grid Opening	Structure Type	Structure Number		Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length				
1C	E26	None Detected								
1C	F23	None Detected								
1C	F26	None Detected								
1C	G23	None Detected								
1C	G26	None Detected								
1C	H23	None Detected								
1C	C34	None Detected								
1C	E31	None Detected								
1C	E34	None Detected								
1C	F31	None Detected								
1C	G33	None Detected								
1C	G36	None Detected								
1C	C41	None Detected								
1C	C44	None Detected								
1C	E41	None Detected								
1C	C51	None Detected								
1C	C54	None Detected								
1C	E51	None Detected								
1C	E54	None Detected								
1C	F51	None Detected								
1C	F54	None Detected								
1D	C26	None Detected								
1D	E23	None Detected								
1D	E26	None Detected								
1D	F23	None Detected								
1D	F26	None Detected								
1D	G23	None Detected								
1D	G26	None Detected								
1D	F31	None Detected								
1D	F34	None Detected								
1D	G31	None Detected								
1D	G34	None Detected								
1D	E33	None Detected								
1D	E36	None Detected								
1D	F33	None Detected								
1D	F36	None Detected								
1D	G41	None Detected								
1D	G44	None Detected								
1D	H41	None Detected								
1D	H44	None Detected								
1D	G51	None Detected								
1E	E23	None Detected								
1E	E26	None Detected								
1E	F23	None Detected								
1E	F26	None Detected								
1E	G23	None Detected								
1E	E31	None Detected								
1E	E34	None Detected								
1E	F31	None Detected								
1E	F34	None Detected								
1E	C41	None Detected								

EMS Laboratories

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

Report Number:	137822
Sample number:	SA05-0.33BPC

Analyzed by:	Radha Singh
Date of Analysis:	6/9/2010

Grid ID	Grid Opening	Structure Type	Structure Number		Dimensions (μm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length				
1E	C44	None Detected								
1E	E41	None Detected								
1E	E44	None Detected								
1E	C54	None Detected								
1E	E51	None Detected								
1E	E54	None Detected								
1E	F51	None Detected								
1E	F54	None Detected								
1E	G53	None Detected								
1E	G56	None Detected								

Copy

104 G.0

Count (Page of) NIOSH 7402/ISO

Report number : 137822
Sample number: SA05 - 0,33 BPC
File name: Northgate
Sample Description: 142 mg

Filter Type: MCE 385 mm2
Date Sample was Run: 6-8-10

Magnification: 9,200 X

Preparation date: 6/8/10 By JAP
Analysis date: 6/9/10 By RS 10AM
(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
1A	B2-3				F	10	70	Non asb.
	E2-6							
	F2-3							
	F2-6							
	F3-1							
	E3-4							
	F3-1							
	F3-4					S		
	G3-1							
	G3-4							
	H3-1							
	E4-1							
	E4-4							
	F4-1							
	F4-4							
	C5-1							
	C5-4							
	E5-1							
	E5-4							
	H5-3							
	H5-6							
2	H3-3							
1B	C3-3							
	C3-6							
	E3-3							
	E3-6							
	A4-1							
	A4-4							
	E4-1							
	F4-3							

TEM Asbestos Structure Count (Page of)

Report number: 137822 SAMPLE NO: SA05-0.33 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
1B	F4-6							
	4W3							
	4W6							
	F5-1							
	F5-4							
	4F5-1				F	1.	82	Nonasb
	C1-6							
	E1-3							
	E1-6							
	1E5-3							
	1E5-6							
	F6-1							
2A	FG4							
1C	F2-3							
	E2-3							
	E2-6							
	4W2-3							
	4W2-6							
	1W2-3							
	C3-4							
	E3-1							
	E3-4							
	1E3-1							
	4W3-3							
	4W3-6							
	C4-1							
	C4-4							
	E4-1							
	C5-1							
	C5-4							
	E5-1							
	F5-1							
	E5-1							
2A	F5-4							
1D	C2-6							
	E2-3							

TEM Asbestos Structure Count (Page of)

Report number: 137822 SAMPLE NO: SA05-0.33 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
1D	E2-6							
	E2-3							
	F2-6							
	G2-3							
	G2-6							
	F3-1							
	F3-4							
	G3-1							
	G3-4							
	E3-3							
	E3-6							
	F3-3							
	F3-6							
	G4-1							
	G4-4							
	H4-1							
	H4-4							
2D	G5-1							
1E	F2-3							
	E2-6							
	F2-1							
	G2-6							
	G2-3							
	E3-1							
	F3-4							
	F3-1							
	F3-4							
	G4-1							
	G4-4							
	E4-1							
	F4-4							
	G4-4							
	E5-1							
	E5-4							
	F5-1							
	F5-4							
2D	G5-3							
	G5-6							

Elutriator Data

Date: 6-8-10 Client: Northgate

Lab #: 137822

Sample ID: SA05 -0.33 BPC

Sample weight (g): 68.

Time air flow started: 730

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	930	140	0.04699	0.02424	22.75	30		
2	1000		0.04151	0.02418	17.33	20	867	
3	1020		0.04323	0.02451	18.72	20	936	
4	1040		0.04188	0.02443	17.45	20	872	
5	1100		0.04224	0.02449	17.75	30	592	
6	1130							
7								
8								
Polycarbonate Tic								
Time							Dep. Rate ug/min	Estiimate
1	1027	1031	24.890	24.520	370	4	93	
2	1049	1052	24.660	24.434	226	3	75	72
MCE 3	1107	1109.15	24.515	24.373	142	2.15	65	6-8-10
4	1120	1122.30	24.568	24.390	178	2.30	71	72
5	1138	1140.25	24.540	24.370	170	2.25	70	
6								
7								
8								

* SHUT DOWN @ 1144

138029

Moisture content

6-8-10

#SA111-1.00 BPC Rush

dish wt. 19.23 g

Samp. wt 119.81 - 19.23 = 100.58 g (initial wt.)

6:15-7:15 112.32 - 19.23 = 93.09 g

8:05-9:05 112.29 - 19.23 = 93.06 g (Final wt.)

% moist. → $100 \times \frac{100.58 - 93.06}{93.06} = 8.08\ \%$

#13?822 - #SA05-0.33 BPC Rush

dish wt. 31.48 g

Samp. wt. 131.30 - 31.48 = 99.82 (initial wt.)

6:15-7:15 123.48 - 31.48 = 92.00

8:05-9:05 123.44 - 31.48 = 91.96 (Final wt.)

% moist. → $100 \times \frac{99.82 - 91.96}{91.96} = 8.55\ \%$

#13?822 - #SSARG-01-00 BPC Rush

dish wt. 31.45 g

Samp. wt. 131.28 - 31.45 = 99.83 g (initial wt.)

6:15-7:15 122.65 - 31.45 = 91.20 g

8:05-9:05 122.61 - 31.45 = 91.16 g (Final wt.)

% moist. → $100 \times \frac{99.83 - 91.16}{91.16} = 9.51\ \%$

BP

Spot Size Measurements

Scope: H-60B

Date: May 2010

Name: RS

Conditions of Measurements

High Voltage: 100 K

Beam Current: 10 μA

Magnification: 19,200

Condenser Aperture Size: #2

Measurements from a photo 8.5

Shortest diameter: 8.1 mm

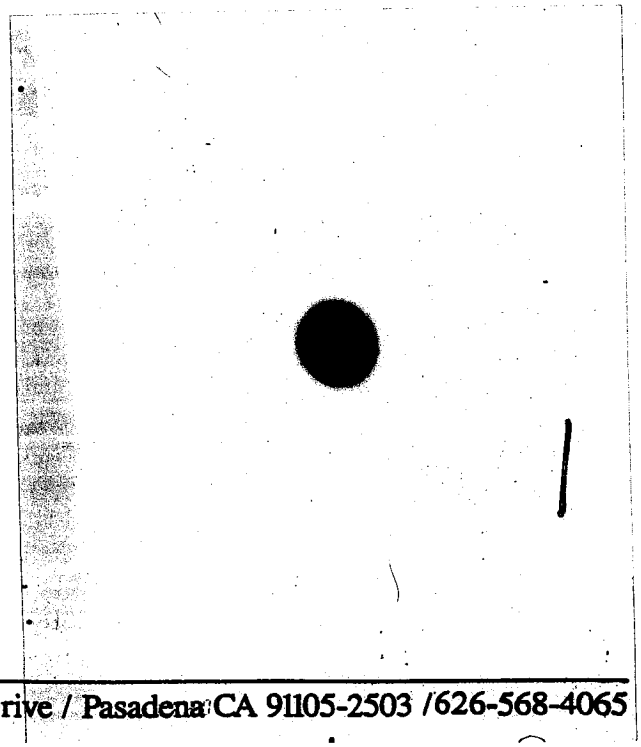
Longest diameter: 9 mm

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 H6wB

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

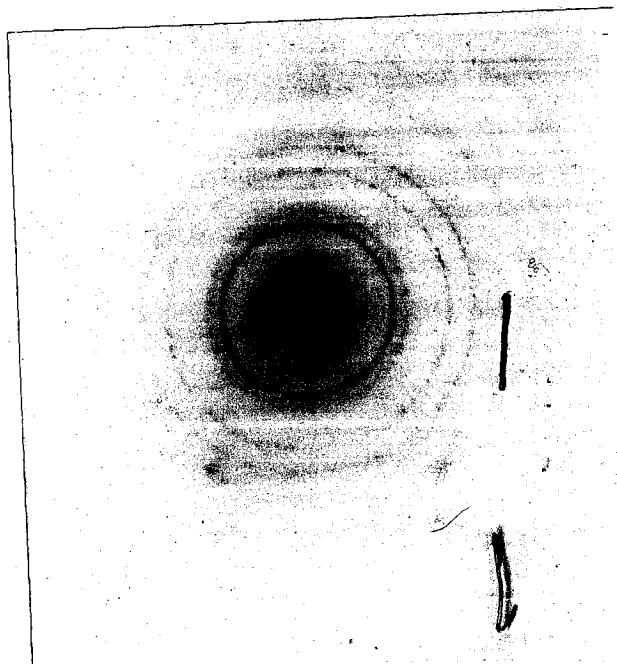
Average Camera Constant = 28.3

* 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 3m

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 1/6 = 19,260	51/12 =	9180
2	53.5/6 = 19,260	51.5/12 =	9,270
3	53 1/6 = 19,080	51.5/12 =	9,270
4	53 1/6 = 19,080	51/12 =	9,180
5	53.5/6 = 19,260	51/12 =	9,180
6		51/12 =	9,180
7	ave 19,200		
8		ave	9,200
9			
10			
	AVERAGE:		

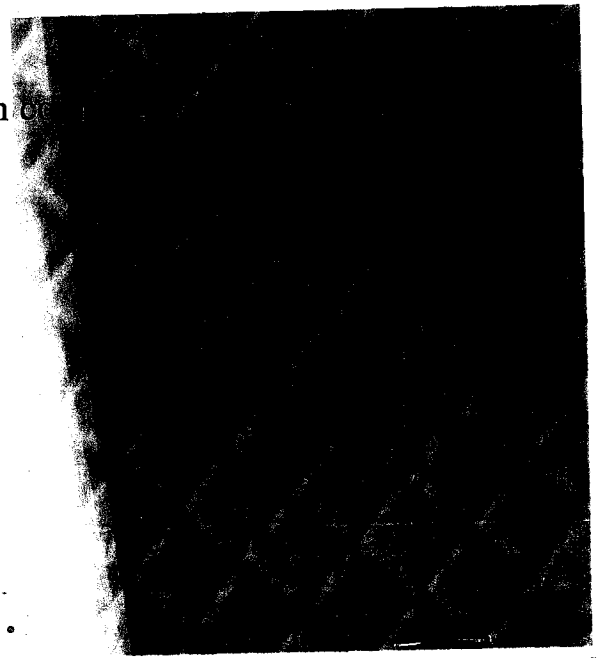
OPERATING VOLTAGE 100 KV

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

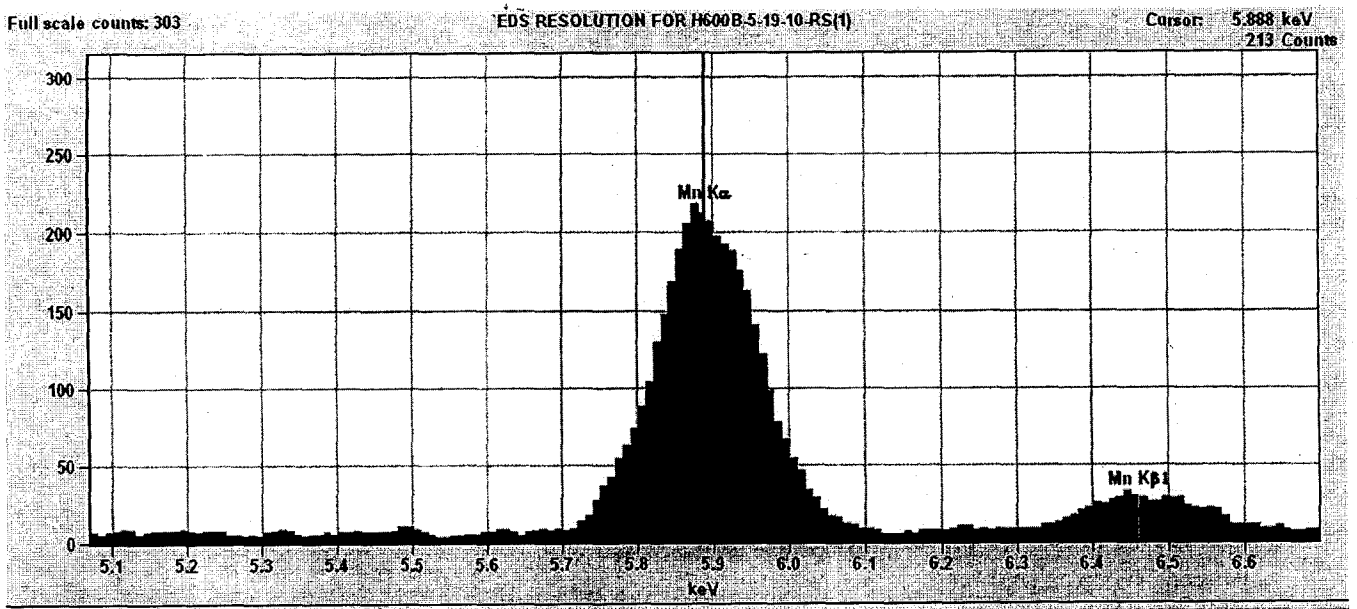
K(Mg)/K(Fe) < 1.5

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



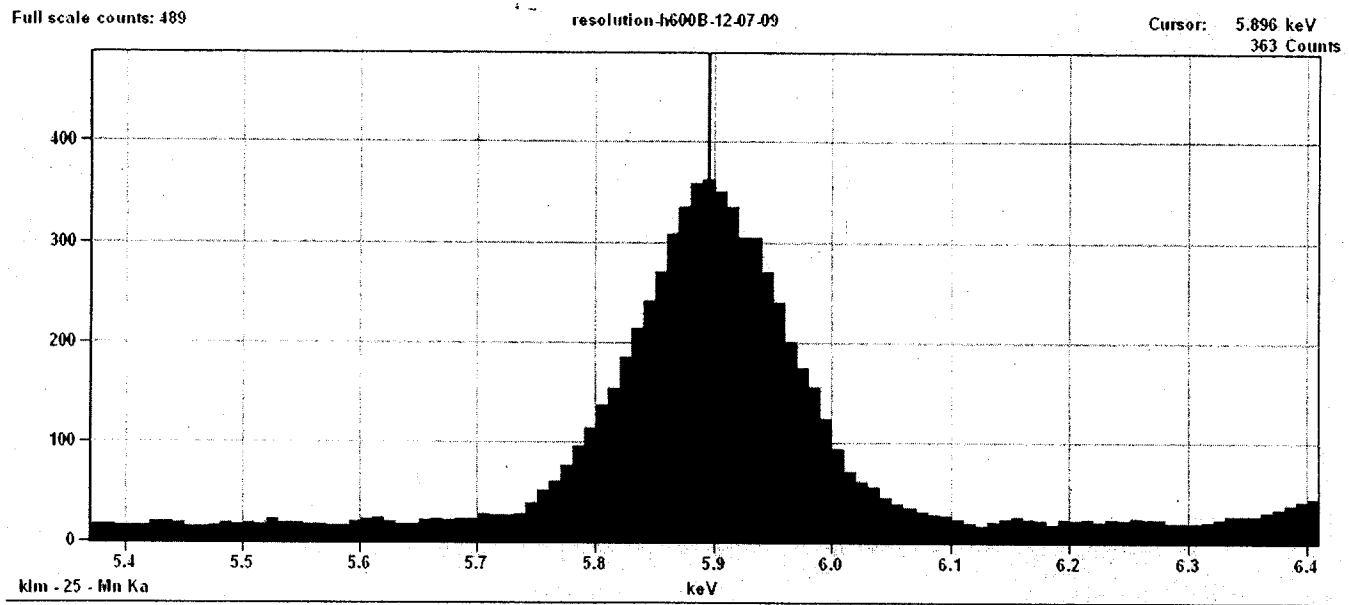
Auto | Manual | FWHM | Fe55 Bench Test

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%	

137822

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# 02027.01.2127
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:	9 (Bea)	Sampler's Name:	
Date & Time of Sample Collection:	5-13-10	Holding Times:	Signature:

Type: ☐ Water ☐ Waste Water ☐ Soil ☐ Filter ☐ Impinger ☐ Sorbent Tube ☐ Other

EMS Only	Client Sample No.:	Description/Location:	Analysis:	Volume/Weight
1	SSAL5-02.0.00BPC		Elutriator	
2	SSAL5-02.0.33BPC			
3	SA19-0.33BPC			
4	SA19-0.33BPC_FD			
5	SSAL5-01-0.00BPC			
6	SSAL5-01.033BPC			
7	SSAR6-01-0.00BPC	**SEE ATTACHMENT**		
8	SSAR6-01-0.33BPC			
9	SA05-0.33BPC			
10				
11	EDD: email: Frank.Hagar@ngem.com			
12				
13				
14				
15				
16				
17				

137822

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:	9	Chain of Custody Signature:	
Disposition of Samples:	EMS LABS	Misc. Info:	SF 7/06

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.

137822

Page: 1 of 1
Cooler # of

COC # 02027.01.2127
Total # of Samples: 9 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	

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	SSAL5-02-0.00BPC	SSAL5-02	SO	C	N	05/13/2010	12:30	3			X		
2	SSAL5-02-0.33BPC	SSAL5-02	SO	C	N	05/13/2010	12:30	3			X		
3	SA19-0.33BPC	SA19	SO	C	N	05/13/2010	11:55	3			X		
4	SA19-0.33BPC_FD	SA19	SO	C	FD	05/13/2010	11:55	3			X		
5	SSAL5-01-0.00BPC	SSAL5-01	SO	C	N	05/13/2010	11:30	3			X		
6	SSAL5-01-0.33BPC	SSAL5-01	SO	C	N	05/13/2010	11:30	3			X		
7	SSAR6-01-0.00BPC	SSAR6-01	SO	C	N	05/13/2010	10:35	3			X		
8	SSAR6-01-0.33BPC	SSAR6-01	SO	C	N	05/13/2010	10:35	3			X		
9	SA05-0.33BPC	SA05	SO	C	N	05/13/2010	10:20	3			X		

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Francisco Barron SW	05/13/10	13:35	SW	5/13/10	1335
SW	5/13	13:35		5/13/10	1335

Sample Receipt Conditions

Temp in 0C	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 #:

PRINT Name of SAMPLER: Francisco Barron

SIGNATURE of SAMPLER: Francisco Barron

DATE Signed: 05/13/10

Time: 13:35

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.

COPY

Page: 1 of 1
Cooler # of

COC # 02027.01.2127

Total # of Samples: 9 Event Complete?

Required Ship to Lab:		Required Project Information:		Required Invoice Information:	
Lab Name:	EMS Laboratories, Inc.	Site ID #:	TRONOX LLC. HENDERSON	Send Invoice to:	
Address:	117 W Bellvue Dr	Project #	2027.01	Address:	PO Box 55
	Pasadena, CA 91105	Site Address	560 W Lake Mead Drive	City/State.	Henderson, NV 89009 Phone #: (949) 260-9293
Lab PM:	Tony Kolk	City	Henderson State, Zip NV, 89015	PO #	
Phone/Fax:	626-568-4065	Site PM Name	Derrick Willis	Send EDD to	Frank.Hagar@ngem.com
Lab PM email	akolk@emslabs.com	Phone/Fax:	(949)375-7004	CC Hardcopy report to	PDF Electronic Version Only – FTP Upload
Applicable Lab Quote #:		Site PM Email:	derrick.willis@ngem.com	CC Hardcopy report to	

										Analysis: Filtered	Preservative: UNPRES	Regular			Rush	X	Mark One
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.		N						
										Analysis: PhB-Asbestos							
1	SSAL5-02-0.00BPC	SSAL5-02	SO	C	N	05/13/2010	12:30	3			X						
2	SSAL5-02-0.33BPC	SSAL5-02	SO	C	N	05/13/2010	12:30	3			X						
3	SA19-0.33BPC	SA19	SO	C	N	05/13/2010	11:55	3			X						
4	SA19-0.33BPC_FD	SA19	SO	C	FD	05/13/2010	11:55	3			X						
5	SSAL5-01-0.00BPC	SSAL5-01	SO	C	N	05/13/2010	11:30	3			X						
6	SSAL5-01-0.33BPC	SSAL5-01	SO	C	N	05/13/2010	11:30	3			X						
7	SSAR6-01-0.00BPC	SSAR6-01	SO	C	N	05/13/2010	10:35	3			X						
8	SSAR6-01-0.33BPC	SSAR6-01	SO	C	N	05/13/2010	10:35	3			X						
9	SA05-0.33BPC	SA05	SO	C	N	05/13/2010	10:20	3			X						

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	05/13/10	13:35		5/13/10	1335
	5/13/10	13:35		5/13/10	10 °C

Sample Receipt Conditions

Temp in 0C	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 #:

PRINT Name of SAMPLER: Francisco Barron

SIGNATURE of SAMPLER: Francisco Barron DATE Signed: 05/13/10 Time: 13:35

SAMPLE LOG-IN SHEET

Lab Name EMS LABS	Page_____of
Received By (Print name) V. Molina	Log in Date 5-19-10
Received By (Signature)	
Sample Delivery Group No.	

Remarks

1. Custody Seal(s) (Present) Absent — (Intact)/Broken
2. Custody Seal Nos 580187/580193 580196/580195
3. Chain of Cutody Records (Present)/ Absent
4. Traffic Reports or Packing List (Present) Absent
5. Air Bill Air Bill Sticker (Present) Absent
6. Air Bill No. 7935506341804135
7. Sample Tags (Present)/ Absent — Sample Tag Numbers (Listed)/Not Listed
8. Sample Condition (Intact)/Broken/Leaking — Chain of Custody
9. Does information on custody records, traffic reports and sample tags agree? (yes)/no
10. Date Received by Lab 5/19
11. Time Received 10:08

EPA SAMPLE #	Corresponding Sample Tag#	Corresponding Assigned Tag#	Remarks Condition of Sample, Shipment etc.
137822	SSAL5-02 0.00BPC	137822-02	GOOD
137822	SSAL5-02 0.33BPC	137822-02 0.33	
137822	SA19-0.33 BPC	137822-0.33	
137822	SA19-0.33 BPC_FD	137822-0.33 FD	
137822	SSAL5-01 0.00 BPC	137822-01	
137822	SSAL5-01 0.033 BPC	137822-01.0.33	
137822	SSAR6-01 0.00BPC	137822-01.000	
137822	SSAR6-01 0.33BPC	137822-01.0.33	
137822	SA05-0.33 BPC	137822-0.33	

Sample Transfer

Fraction	Fraction
Area	Area
By	By
On	On

Contract Client and Attach Records of Resolution

Received By [signature] Logbook No.

Date 5-19-10 Logbook Page No.

FORM DC-1

From: Origin ID: LASA (949) 514-9982
Sonny Nguyen(NGEM)c/o Susan Crowley
Tronox
560 W. Lake Mead Parkway

Henderson, NV 89015

J19191882228224

Ship Date: 18MAY10
ActWgt: 45.0 LB
CAD: 100845654/INET3010

Dims: 24 X 14 X 16 IN

Delivery Address Bar Code

Ref # 10203.01.02
Invoice #
PO #
Dept #

SHIP TO: (626) 568-4065 **BILL SENDER**

Tony Kolk
EMS Laboratories, Inc.
117 W BELLEVUE DR

PASADENA, CA 91105

6 of 6

MPS# 0263 7935 5063 4180

Mstr# 7935 5063 3919 0201

WED - 19 MAY A2
PRIORITY OVERNIGHT

91105
CA-US
BUR

QZ WHPA

Please fold this document in half and place it in the waybill pouch affixed to your shipment so that the barcode portion of the label can be read and scanned.
***WARNING: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

1. Fold the printed page along the horizontal line.
2. Place label in shipping label pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

LEGAL TERMS AND CONDITIONS OF FEDEX SHIPPING DEFINITIONS. On this Air Waybill, "we", "our", "us", and "FedEx" refer to Federal Express Corporation, its subsidiaries and branches and their respective employees, agents, and independent contractors. The terms "you" and "your" refer to the shipper, its employees, principals and agents. If your shipment originates outside the United States, your contract of carriage is with the FedEx subsidiary, branch or independent contractor who originally accepts the shipment from you. The term "package" means any container or envelope that is accepted by us for delivery, including any such items tendered by you utilizing our automated systems, meters, manifests or waybills. The term "shipment" means all packages which are tendered to and accepted by us on a single Air Waybill. AIR CARRIAGE NOTICE. For any international shipments by air, the Warsaw Convention, as amended, may be applicable. The Warsaw Convention, as amended, will then govern and in most cases limit FedEx's liability for loss, delay of, or damage to your shipment. The Warsaw Convention, as amended, limits FedEx's liability. For example in the U.S. liability is limited to $9.07 per pound (20$ per kilogram), unless a higher value for carriage is declared as described below and you pay any applicable supplementary charges. The interpretation and operation of the Warsaw Convention's liability limits may vary in each country. There are no specific stopping places which are agreed to and FedEx reserves the right to route the shipment in any way FedEx deems appropriate. ROAD TRANSPORT NOTICE. Shipments transported solely by road to or from a country which is a party to the Warsaw Convention or the Contract for the International Carriage of Goods by Road (the "CMR") are subject to the terms and conditions of the CMR, notwithstanding any other provision of this Air Waybill to the contrary. For those shipments transported solely by road, if a conflict arises between the provisions of the CMR and this Air Waybill, the terms of the CMR shall prevail. LIMITATION OF LIABILITY. If not governed by the Warsaw Convention, the CMR, or other international treaties, laws, other government regulations, orders, or requirements, FedEx's maximum liability for damage, loss, delay, shortage, misdelivery, nondelivery, misinformation or failure to provide information in connection with your shipment is limited by this Agreement and as set out in the terms and conditions of the contract of carriage. Please refer to the contract of carriage set forth in the applicable FedEx Service Guide or its equivalent to determine the contractual limitation. FedEx does not provide cargo liability or all-risk insurance, but you may pay an additional charge for each additional U.S. $100 (or equivalent local currency for the country of origin) of declared value for carriage. If a higher value for carriage is declared and the additional charge is paid, FedEx's maximum liability will be the lesser of the declared value for carriage or your actual damages. LIABILITIES NOT ASSUMED. IN ANY EVENT, FEDEX WON'T BE LIABLE FOR ANY DAMAGES, WHETHER DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL IN EXCESS OF THE DECLARED VALUE FOR CARRIAGE (INCLUDING BUT NOT LIMITED TO LOSS OF INCOME OR PROFITS) OR THE ACTUAL VALUE OF THE SHIPMENT, IF LOWER, WHETHER OR NOT FEDEX HAD ANY KNOWLEDGE THAT SUCH DAMAGES MIGHT BE INCURRED. FedEx won't be liable for your acts or omissions, including but not limited to incorrect declaration of cargo, improper or insufficient packaging, securing, marking or addressing of the shipment, or for the acts or omissions of the recipient or anyone else with an interest in the shipment or violations by any party of the terms of this agreement. FedEx won't be liable for damage, loss, delay, shortage, misdelivery, nondelivery, misinformation or failure to provide information in connection with shipments of cash, currency or other prohibited items or in instances beyond our control, such as acts of God, perils of the air, weather conditions, mechanical delays, acts of public enemies, war, strike, civil commotion, or acts or omissions of public authorities(including customs and health officials) with actual or apparent authority. NO WARRANTY. We make no warranties, express or implied. CLAIMS FOR LOSS, DAMAGE OR DELAY. ALL CLAIMS MUST BE MADE IN WRITING AND WITHIN STRICT TIME LMITS. SEE OUR TARIFF, APPLICABLE FEDEX SERVICE GUIDE, OR STANDARD CONDITIONS OF CARRIAGE FOR DETAILS. The Warsaw Convention provides specific written claims procedures for damage, delay or non-delivery of your shipment. Moreover, the interpretation and operation of the Warsaw Convention's claims provisions may vary in each country. Refer to the Convention to determine the claims period for your shipment. The right to damages against us shall be extinguished unless an action is brought within two years, as set forth in the Convention. FedEx is not obligated to act on any claim until all transportation charges have been paid. The claim amount may not be deducted from the transportation charges. If the recipient accepts the shipment without noting any damage on the delivery record, FedEx will assume the shipment was delivered in good condition. In order for us to consider a claim for damage, the contents, original shipping carton and packing must be made available to us for inspection. MANDATORY LAW. Insofar as any provision contained or referred to in this Air Waybill may be contrary to any applicable international treaties, laws, government regulations, orders or requirements such provisions shall remain in effect as a part of our agreement to the extent that it is not overridden. The invalidity or unenforceability of any provisions shall not affect any other part of this Air Waybill. Unless otherwise indicated, FEDERAL EXPRESS CORPORATION, 2005 Corporate Avenue, Memphis, TN 38132, USA, is the first carrier of this shipment. Email address located at www.fedex.com.