1075987 - R8 SDMS

Hygeia Laboratories Inc.
82 W. Sierra Madre Blvd.
Sierra Madre, CA 91024-2434
(626) 355-4711 (626) 355-4497 Fax

June 29, 2006

Ms. Anni Autio
CDM Federal Programs Corporation
50 Hampshire Street
One Cambridge Place
Cambridge, MA 02139

Subject: EDS Study by TEM
Hygeia Job No.: 22887050046
Client Project Ref.: Libby Asbestos Investigation
BIR 1-G Study (Additional Analysis)

Dear Ms. Autio:

This report contains the result of additional analyses of the BIR-1G study sample submitted to this laboratory on February 21, 2005.

This report contains the mass percent and peak height data. If you have any questions regarding this report, please contact us at (626) 355-4711.

Sincerely,
Hygeia Laboratories Inc.

Kyeong H. Corbin
Supervisor of Electron Microscopy

Attachments
kc

Sample List

Client: CDM Federal Programs Corporation	Project Ref: BIR-1G
Hygeia Job No.: 22887050046	Subcontract number: 2616-000-003-AL

Hygeia ID	Client ID	Sample Type	Test Type
967616a	BIR-1G	Powder	Calibration Standard (Additional analysis)

Request for Laboratory Services / Chain of Custody - Asbestos

Hygeia Laboratories Inc.
82 W. Sierra Madre Blvd.
Sierra Madre, CA 91024
(626) 355-4711
(626) 355-4497 FAX

Send Report To: Anni Autio
Company Name: CDM Federal Programs Corp.
Company Address: 50 Hampshire St., One Cambridge Plac
Company Address: Cambridge, MA 02139
Phone: (617) 452-6309 Fax: (617) 452-8309
Client Project No:
Client Project Ref: Bir-1G Additional Analysis
Purchase Order No:
Original Job # 2288705 0005
Samples Submitted: 1 Samples Analyzed: 1 Hygeia Reference No: 2288705 0046

Reporting Fax: Cell/Pager:
Phone: E-mail:

Turnaround Time X Normal (3-5 business days) ___ Next Day (24 hrs) ___ Same Day (Rush) ___ Weekend Rush

Type of Sample ___ Air ___ Bulk ___ Dust (microvac) ___ Dust (wipe) ___ Soil ___ Paint ___ Water X Other

Asbestos (Optical)
- ___ PLM
- ___ PLM Point Count 400 pts
- ___ PLM Point Count 1000 pts
- ___ PCM

Asbestos (TEM)
- ___ AHERA
- ___ EPA Level II
- ___ NIOSH 7402 (PCM Equivalent)
- ___ ISO 10312

- ___ Qualitative Dust (microvac or wipe)
- ___ Quantitative Dust (microvac or wipe)
- ___ Drinking Water (potable)
- ___ Wastewater (non-potable)
- X other

- ___ Qualitative Bulk
- ___ Semi-Quantitative Bulk
- ___ Full-Quantitative Bulk

- ___ Particle Characterization
- ___ Supplies

Additional Instructions
1) Bill Brattin of SRC requested mass % determination for this standard. Reported results on 11/15/05.
2) Mary requested peak height data on this standard. (see attached email). Reported results on 1/12/06

For Lab Use Only Sample Integrity X accept ___ reject
1st Sample No: 967616a
Price / Sample: $65 x 4
Results reported by:
Date ___ Time ___ Initials ___ Verbal Fax E-mail
Date ___ Time ___ Initials ___ Verbal Fax E-mail
Date ___ Time ___ Initials ___ Verbal Fax E-mail
Invoice No. 77-41291
Log Out Date 6.29.06

Comments

Relinquished By (Signature)	Received By (Signature)	Time	Date	Reason for Change of Custody
Archive	[illegible]	3:15 pm	12/19/05	

The sample collector is responsible for ensuring that all samples have been preserved according to the appropriate and appplicable methodology.

Laboratory name:	Hygeia
TEM Manufacturer:	Hitachi
TEM Model:	H-600
Voltage (kV):	100
Window type:	Be
Window thickness:	0.005 mm
EDS manufacturer:	Kevex
EDS Model:	Delta 1
eV per channel:	10
Spot size	0.2µm
Beam current	lowest setting

Quadrant	Grid	Grid Opening	Particle Index	Net Peak Height							Adjusted to Silicon Net Peak Height						
				Na	Mg	Al	Si	K	Ca	Fe	Na	Mg	Al	Si	K	Ca	Fe
NW	CDM59,B1	C4-1	1-1	40	215	367	1013	0	351	199	0.4	2.1	3.6	10.0	0.0	3.5	2.0
NW	CDM59,B1	C4-1	1-2	24	213	355	1002	0	347	221	0.2	2.1	3.5	10.0	0.0	3.5	2.2
NW	CDM59,B1	C4-1	1-3	48	201	386	1004	0	353	193	0.5	2.0	3.8	10.0	0.0	3.5	1.9
NW	CDM59,B1	C4-1	2-1	47	189	378	1001	0	303	173	0.5	1.9	3.8	10.0	0.0	3.0	1.7
NW	CDM59,B1	C4-1	2-2	41	219	366	1032	0	362	228	0.4	2.1	3.5	10.0	0.0	3.5	2.2
NW	CDM59,B1	C4-1	2-3	32	202	355	1009	0	363	202	0.3	2.0	3.5	10.0	0.0	3.6	2.0
NE	CDM59,B1	C5-4	3-1	32	221	362	1012	0	331	185	0.3	2.2	3.6	10.0	0.0	3.3	1.8
NE	CDM59,B1	C5-4	3-2	39	221	331	1010	0	371	174	0.4	2.2	3.3	10.0	0.0	3.7	1.7
NE	CDM59,B1	C5-4	3-3	35	197	354	1007	0	425	264	0.3	2.0	3.5	10.0	0.0	4.2	2.6
NE	CDM59,B1	C5-4	4-1	24	220	354	1006	0	322	181	0.2	2.2	3.5	10.0	0.0	3.2	1.8
NE	CDM59,B1	C5-4	4-2	42	395	677	1805	0	628	345	0.2	2.2	3.8	10.0	0.0	3.5	1.9
NE	CDM59,B1	C5-4	4-3	50	310	583	1588	0	558	323	0.3	2.0	3.7	10.0	0.0	3.5	2.0
SE	CDM59,B1	G5-2	5-1	31	226	366	1005	0	351	195	0.3	2.2	3.6	10.0	0.0	3.5	1.9
SE	CDM59,B1	G5-2	5-2	77	444	689	1974	0	735	413	0.4	2.2	3.5	10.0	0.0	3.7	2.1
SE	CDM59,B1	G5-2	5-3	73	477	779	2365	0	862	477	0.3	2.0	3.3	10.0	0.0	3.6	2.0
SE	CDM59,B1	G5-2	6-1	31	226	358	1004	0	335	195	0.3	2.3	3.6	10.0	0.0	3.3	1.9
SE	CDM59,B1	G5-2	6-2	58	350	549	1506	0	490	274	0.4	2.3	3.6	10.0	0.0	3.3	1.8
SE	CDM59,B1	G5-2	6-3	28	284	454	1220	0	426	218	0.2	2.3	3.7	10.0	0.0	3.5	1.8
SW	CDM59,B1	G3-2	7-1	39	218	390	1005	0	319	187	0.4	2.2	3.9	10.0	0.0	3.2	1.9
SW	CDM59,B1	G3-2	7-2	45	253	433	1165	0	424	226	0.4	2.2	3.7	10.0	0.0	3.6	1.9
SW	CDM59,B1	G3-2	7-3	60	346	549	1540	0	561	298	0.4	2.2	3.6	10.0	0.0	3.6	1.9
SW	CDM59,B1	G3-2	8-1	46	231	323	993	0	293	177	0.5	2.3	3.3	10.0	0.0	3.0	1.8
SW	CDM59,B1	G3-2	8-2	53	348	615	1705	0	548	294	0.3	2.0	3.6	10.0	0.0	3.2	1.7
SW	CDM59,B1	G3-2	8-3	37	243	383	1205	0	392	224	0.3	2.0	3.2	10.0	0.0	3.3	1.9
Center	CDM59,B1		center-10 sec	4	30	41	118	0	36	23	0.3	2.5	3.5	10.0	0.0	3.1	1.9
Center	CDM59,B1		center-1 min	22	154	253	704	0	242	132	0.3	2.2	3.6	10.0	0.0	3.4	1.9
Center	CDM59,B1		center-4 min	86	537	966	2747	0	901	494	0.3	2.0	3.5	10.0	0.0	3.3	1.8

15-Nov-1905 11:11:06 Bir-1G-#1

THIN FILM ANALYSIS
(THEORETICAL K-FACTORS)

Accelerating voltage 100.0 KeV

Beam - sample incidence angle 90.0 degrees

Xray emergence angle 68.0 degrees

Xray - window incidence angle 0.0 degrees

Element & Line		Weight Percent	Oxide Percent	Formula	Precision 2 Sigma	Intensity	No. of Cations
Na	Ka	0.49	0.66	Na2O	0.20	6.39	0.077
Mg	Ka	5.89	9.76	MgO	0.76	114.23	0.876
Al	Ka	8.32	15.72	Al2O3	0.99	197.28	1.115
Si	Ka	23.23	49.69	SiO2	1.89	648.64	2.991
K	Ka	0.01	0.01	K2O	0.02	0.25	0.001
Ca	Ka	8.93	12.49	CaO	0.86	257.28	0.806
Ti	Ka	0.54	0.91	TiO2	0.27	13.93	0.041
Mn	Ka	0.26	0.33	MnO	0.16	5.76	0.017
Fe	Ka	8.10	10.42	FeO	0.97	173.06	0.525
O	*	44.23					
Total			100.00				6.449

Number of cations calculated on basis of 10 oxygen atoms.

* DETERMINED BY STOICHIOMETRY

15-Nov-1905 11:11:51 BIR-1G-#2

THIN FILM ANALYSIS
(THEORETICAL K-FACTORS)

Accelerating voltage 100.0 KeV

Beam - sample incidence angle 90.0 degrees

Xray emergence angle 68.0 degrees

Xray - window incidence angle 0.0 degrees

Element & Line		Weight Percent	Oxide Percent	Formula	Precision 2 Sigma	Intensity	No. of Cations
Na	Ka	0.91	1.22	Na2O	0.24	15.27	0.142
Mg	Ka	5.82	9.66	MgO	0.68	146.52	0.865
Al	Ka	8.57	16.19	Al2O3	0.91	263.57	1.147
Si	Ka	23.09	49.40	SiO2	1.69	836.16	2.969
K	Ka	0.07	0.09	K2O	0.06	2.68	0.007
Ca	Ka	9.21	12.89	CaO	0.78	344.14	0.830
Ti	Ka	0.61	1.02	TiO2	0.25	20.30	0.046
Mn	Ka	0.05	0.06	MnO	0.06	1.43	0.003
Fe	Ka	7.36	9.47	FeO	0.83	204.01	0.476
O	*	44.30					
Total			100.00				6.486

Number of cations calculated on basis of 10 oxygen atoms.

* DETERMINED BY STOICHIOMETRY

15-Nov-1905 11:12:53 BIR-1G-#3

THIN FILM ANALYSIS
(THEORETICAL K-FACTORS)

Accelerating voltage 100.0 KeV

Beam - sample incidence angle 90.0 degrees

Xray emergence angle 68.0 degrees

Xray - window incidence angle 0.0 degrees

Element & Line		Weight Percent	Oxide Percent	Formula	Precision 2 Sigma	Intensity	No. of Cations
Na	Ka	0.61	0.83	Na2O	0.19	13.99	0.096
Mg	Ka	5.71	9.47	MgO	0.63	194.48	0.845
Al	Ka	8.38	15.83	Al2O3	0.85	348.90	1.118
Si	Ka	23.51	50.30	SiO2	1.62	1152.70	3.012
K	Ka	0.00	0.00	K2O	0.00	0.00	0.000
Ca	Ka	9.40	13.15	CaO	0.75	475.45	0.844
Ti	Ka	0.61	1.01	TiO2	0.24	27.28	0.046
Mn	Ka	0.02	0.03	MnO	0.04	0.87	0.001
Fe	Ka	7.30	9.39	FeO	0.78	273.68	0.470
O	*	44.46					
Total			100.00				6.431

Number of cations calculated on basis of 10 oxygen atoms.

* DETERMINED BY STOICHIOMETRY

15-Nov-1905 11:14:15 BIR-1G-#4

THIN FILM ANALYSIS
(THEORETICAL K-FACTORS)

Accelerating voltage 100.0 KeV

Beam - sample incidence angle 90.0 degrees

Xray emergence angle 68.0 degrees

Xray - window incidence angle 0.0 degrees

Element & Line		Weight Percent	Oxide Percent	Formula	Precision 2 Sigma	Intensity	No. of Cations
Na	Ka	0.95	1.28	Na2O	0.31	9.19	0.149
Mg	Ka	5.45	9.04	MgO	0.82	78.41	0.808
Al	Ka	8.50	16.07	Al2O3	1.13	149.45	1.136
Si	Ka	23.70	50.71	SiO2	2.15	490.63	3.042
K	Ka	0.01	0.01	K2O	0.03	0.24	0.001
Ca	Ka	9.19	12.86	CaO	0.98	196.24	0.826
Mn	Ka	0.45	0.58	MnO	0.24	7.42	0.030
Fe	Ka	7.34	9.44	FeO	1.04	116.24	0.474
O	*	44.39					
Total			100.00				6.466

Number of cations calculated on basis of 10 oxygen atoms.

* DETERMINED BY STOICHIOMETRY

15-Nov-1905 11:20:53 BIR-1G-#5

THIN FILM ANALYSIS
(THEORETICAL K-FACTORS)

Accelerating voltage	100.0 KeV
Beam - sample incidence angle	90.0 degrees
Xray emergence angle	68.0 degrees
Xray - window incidence angle	0.0 degrees

Element & Line		Weight Percent	Oxide Percent	Formula	Precision 2 Sigma	Intensity	No. of Cations
Na	Ka	0.84	1.14	Na2O	0.26	11.53	0.132
Mg	Ka	5.66	9.38	MgO	0.74	115.47	0.838
Al	Ka	8.49	16.04	Al2O3	1.00	211.72	1.132
Si	Ka	23.43	50.12	SiO2	1.89	688.16	3.003
K	Ka	0.04	0.04	K2O	0.04	1.07	0.003
Ca	Ka	9.53	13.33	CaO	0.89	288.71	0.856
Ti	Ka	0.54	0.91	TiO2	0.27	14.68	0.041
Mn	Ka	0.12	0.16	MnO	0.11	2.86	0.008
Fe	Ka	6.91	8.89	FeO	0.89	155.24	0.445
O	*	44.45					
Total			100.00				6.458

Number of cations calculated on basis of 10 oxygen atoms.

* DETERMINED BY STOICHIOMETRY