

385 South End Av.



ATHENICA
ENVIRONMENTAL SERVICES INC.

45-09 Greenpoint Avenue
Long Island City, N.Y. 11104

Tel (718) 784-7490
Fax (718) 784-4085

 **ORIGINAL**

December 3, 2002

United States Environmental Protection Agency (USEPA)
Region 2
290 Broadway
New York, NY 10007-1866

Attn: Mr. Eric Wilson-Quadrant Coordinator
Tel# (212) 637-3150 Fax# (212) 637-3105

Re: 385 South End Avenue, Manhattan, NY
Evaluation Report for Building HVAC & Environmental Inspection for WTC Related Dust

Dear Mr. Wilson:

Athenica Environmental Services, Inc. and Dust Dusters performed Building HVAC & Environmental inspections on November 1, 2002.

Qualifications:

Dust Dusters (DD) is a NADCA certified corporation. Mr. Frank Troetti and Mr. Tony Gallo of DD performed the inspections of the HVAC and exhaust systems in conjunction New York State certified Asbestos Inspector Mr. Alex Kazakov of Athenica Environmental Services, Inc (AES).

Background:

385 South End Avenue is a 7-story and 83 residential dwellings managed by Gateway Management Corp. The building manager is Mr. Tom De-Francesco and his telephone number is (212) 321-2000.

Post 9/11 Maintenance History:

On December 03, 2002 Athenica's Project Manager, Ms. Theresa Vazquez received a call from Mr. Glen Kassis of Gateway Plaza Management Corp.. The maintenance reports are available in their office but they are unable to provide us copies due to large amount of reports.

385 South End Avenue, Manhattan, NY
December 03,2002

Inspection Details:

As part of the survey, the following HVAC system types were inspected by Mechanical and Environmental professionals and bulk samples were collected from supply duct on the 2nd floor mechanical room and fresh air supply duct on the 1st floor. All identification data and visual inspections are documented in the attached checklists.

- A) Kitchen and bathroom exhaust – located on the roof and basement.
- B) HV Unit – Located on the ground level.
- C) HV Unit#21-Located on the laundry room.

Summary of Findings:

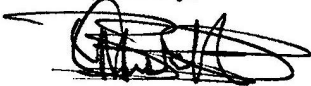
During our visual inspection of the various HVAC systems black dust (more than 1/16th of an inch) was found in most of the units. This was recorded in the Ventilation system evaluation forms. Bulk samples were collected and WTC related dust was NOT detected by EMSL Analytical, Inc. However, during our visual inspection WTC related dust was observed in the exhaust units and in the components of HV unit in the compactor room.

Scope of work:

Cleaning is required to remove WTC related dust from HVAC systems and associated duct work in the ground level and laundry room ,and the exhaust fans along with their associated components and ducts located on the roof.

Should you require any further information, please feel free to contact me.

Sincerely,



Vasilis Bellos
Director of Operations

Attachments: 1) Ventilation System Evaluation forms
2) EMSL results of Chain of custody

VENTILATION SYSTEM EVALUATION FORM

Part 1.0 General Information

Date of Evaluation: <u>11/1/02</u>		Building contact name and phone: <u>THOMAS DI-FRANCESCO</u> <u>212-321-2000</u>	
Evaluation Team (list name and affiliation):			
<u>SA</u>		<u>ALEX KAZAKOV - ATHENICA</u> (Environmental Professional)	
<u>TONY GALLO - DUCT DUSTERS</u>		(HVAC/Electrical Professional)	
<u>FRANK TROTTI - DUCT DUSTERS</u>		(Sheet Metal Professional)	
Building Address:		Type of Facility (check all that apply):	
<u>385 SOUTH END AVE.</u>		☒ Residential	
<u>NEW YORK, NY</u>		☐ Multi-use	
		☐ Other (describe)	
		Number of residential units: <u>83</u> Number of floors: <u>7</u>	
HVAC System Types (check all that apply)			
☒ Unit ventilator (single residence unit)		☐ Wall/window AC unit (single residence unit)	
☐ Fan coil unit (single residence unit)		☒ Central ventilation system	
☐ Heat pump unit (single residence unit)		☒ Passive shaft/duct	
☐ Other (describe)			
Location of outside air intake:			
Outside air intake accessible for inspection ☒ Y ☐ N (explain)			

Part 2.0 Checklists

2.1 Ventilators, wall air conditioning units and window air conditioning units in common spaces

Ventilation System Identification: <u>KITCHEN + BATHROOM EXHAUSTS - SEE ATTACHED</u>						
Location: <u>ROOF + BASEMENT</u>						
Access adequate for inspection of components: <u>YES</u>						
System Components	System Component Substrate Material (sheet metal wrapped) (sheet metal lined) (fiberglass) (flexible connector) (double walled)	Dust/Dirt / Debris			Suspect WTC-Related Dust	
		None	Light (<1/16 inch depth)	Heavy (≥ 1/16 inch depth)	Present? (Y/N)	Estimate % of total dust loading
Outside air intake louvers, grates and/or screens						
Outside air duct						
Outside air damper(s)	<u>SHEET METAL</u>			☒	<u>Y</u>	
Return air grille	<u>SHEET METAL</u>			☒	<u>Y</u>	
Return air plenum	<u>SHEET METAL</u>			☒	<u>Y</u>	
Filter rack						
Filter media						
Coils (evaporator)						
Blower assembly	<u>SHEET METAL</u>			☒	<u>Y</u>	
Condensate drain pan						
In-line electrical resistance strip heaters (in supply ducts connected to unit ventilators)						
Fire dampers						
Turning vanes						
Supply air plenum or supply duct						
Supply air plenum or supply duct liner						
Supply air diffuser						

2.1 Ventilators, wall air conditioning units and window air conditioning units in common spaces (cont.)

11/20/2002 10:41 FAX

NOU-20-2002 11:32

003

P.02

120 Kimball Terrace
Yonkers, New York 10704TEL: 914-778-8700
FAX: 914-237-4390

Inspection Report for Athenica Environmental
Inspection Address: 385 South End Ave., NYC
Inspection Date: 11/01/02

Exhaust Fans

Fan #	Model	Manufacturer	Condition	Comments
1	No Information Available	No Information Available	White	Rooftop Unit
2	6-095-DGEX-QD	Greenheck	Black	Rooftop Unit
3	6-095-DGEX-QD	Greenheck	Black	Rooftop Unit
4	No Information Available	No Information Available	Black	Rooftop Unit
5	No Information Available	No Information Available	White	Rooftop Unit
6	No Information Available	No Information Available	White	Rooftop Unit
7	No Information Available	No Information Available	Black	Rooftop Unit
8	No Information Available	No Information Available	Black	Rooftop Unit
9	No Information Available	No Information Available	Black	Rooftop Unit
10	6-095-DGEX-QD	Greenheck	White	Rooftop Unit
11	No Information Available	No Information Available	Black	Rooftop Unit
12	No Information Available	No Information Available	White	Rooftop Unit
13	No Information Available	No Information Available	Black	Rooftop Unit
14	No Information Available	No Information Available	White	Rooftop Unit
15	6-095-DGEX-QD	Greenheck	Black	Rooftop Unit
16	6-095-DGEX-QD	Greenheck	White	Rooftop Unit
17	No Information Available	No Information Available	Black	Rooftop Unit
18	No Information Available	No Information Available	White	Rooftop Unit
19	No Information Available	No Information Available	White	Rooftop Unit
20	No Information Available	No Information Available	Black	Rooftop Unit
21	No Information Available	No Information Available	White	Rooftop Unit
22	No Information Available	No Information Available	White	Rooftop Unit
23	No Information Available	No Information Available	White	Rooftop Unit
24	6-095-DGEX-QD	Greenheck	Black	Rooftop Unit
25	No Information Available	No Information Available	Black	Rooftop Unit
26	No Information Available	No Information Available	Black	Rooftop Unit
27	No Information Available	No Information Available	White	Rooftop Unit
28	No Information Available	No Information Available	White	Rooftop Unit
29	6-095-DGEX-QD	Greenheck	Black	Rooftop Unit
30	No Information Available	No Information Available	Black	Rooftop Unit
31	No Information Available	No Information Available	White	Rooftop Unit
32	No Information Available	No Information Available	Black	Rooftop Unit
33	No Information Available	No Information Available	White	Rooftop Unit
34	6-095-DGEX-QD	Greenheck	Black	Rooftop Unit
35	6-095-DGEX-QD	Greenheck	White	Rooftop Unit
36	No Information Available	No Information Available	Black	Rooftop Unit
37	No Information Available	No Information Available	White	Rooftop Unit
38	No Information Available	No Information Available	Black	Rooftop Unit
39	No Information Available	No Information Available	Black	Rooftop Unit
40	6-095-DGEX-QD	Greenheck	Black	Rooftop Unit
41	No Information Available	No Information Available	White	Rooftop Unit
	CVD	Loren Cook	White	Exhaust for Garage

11/20/2002 10:41 FAX
 NOV-20-2002 11:33

004
 P.03

CVD20
 4C659

Loren Cook
 Dayton

Black
 Black

Exhaust for Transformer Rm/Laundry Rm
 Dryer Exhaust on 2nd Floor

HVAC Units
 Fan # Model
 HV21 M110E
 HV M110E

Manufacturer
 Cambridge
 Cambridge

Condition
 White
 White

Comments
 Heat for Laundry Rm/Lobby
 White Present in Fresh Air Intake for Unit

☒ Unit cycled prior to inspection	YES	☐ Color of dust/dirt/debris	BLACK - GRAY - WHITE
☐ Filter loading (general impression)	N/A	☐ Water damage	NONE
☐ Filter bypass (describe)	N/A	☐ Visible suspect mold growth	NONE
☐ Abraded/delaminated acoustical lining	NO	☐ Evidence of animal incursion (carcasses, feathers, fecal matter)	NONE

General Impression: ALL EXHAUST FANS NEED TO BE CLEANED. FROM WTC RELATED DUST WAS OBSERVED ON THE MOST OF THE UNITS

2.2 Fan coil/ heat pump units in common spaces

Ventilation System Identification:						
Location:						
Access adequate for inspection of components:						
System Components	System Component Substrate Material (sheet metal wrapped) (sheet metal lined) (fiberglass) (flexible connector) (double walled)	Dust/Dirt/Debris			Suspect WTC-Related Dust	
		None	Light (<1/16 inch depth)	Heavy (≥ 1/16 inch depth)	Present? (Y/N)	Estimate % of total dust loading
Return air grille						
Return air plenum						
Filter rack						
Filter media						
Blower assembly						
Thermal coils						
Supply air plenum						
Supply air diffuser						
Other Information:						
☐ Unit cycled prior to inspection	☐ Color of Dust/Dirt/Debris					
☐ Filter loading (general impression)	☐ Water damage					
☐ Filter bypass (describe)	☐ Visible suspect mold growth					
☐ Abraded/delaminated acoustical lining	☐ Evidence of animal incursion (carcasses, feathers, fecal matter)					
General Impression:						

Ventilation System Identification:	
HV 21 - CAMBRIDGE	
Location: MECHANICAL ROOM BY LAUNDRY ROOM	Area Served: LAUNDRY RM & LOBBY
Mechanical room: clean ☒ Y ☐ N dry ☒ Y ☐ N stored chemicals/refuse ☒ Y ☐ N	
Access adequate for inspection of components: YES	
AHU interior surfaces are visibly accessible: YES	

System Components	System Component Substrate Material	Dust/Dirt/Debris			Suspect WTC-Related Dust	
		None	Light (<1/16 inch depth)	Heavy (≥ 1/16 inch depth)	Present? (Y/N)	Estimate % of total dust loading
Outside air intake louvers, grates and/or screens	Aluminum			✓	Y	
Outside air duct	sheet metal		✓		Y	
Outside air damper(s)	sheet metal		✓	✓	Y	
Return air grilles	sheet metal		✓		Y	
Return air plenum	sheet metal		✓		Y	
Return air plenum damper						
Return air ducts	sheet metal		✓		Y	
Turning vanes	sheet metal		✓		Y	
Mixing chambers						
Filter rack(s)	sheet metal		✓		Y	
Filter banks/media	Fiber glass		✓		Y	
Pre-heat coils	copper / Alum.		✓		Y	
Cooling coils						
Re-heat coils						
Humidification and/or air cleaning equipment						
Fire dampers						
In-line re-heat coils						
Acoustical blower housing lining	Fiber glass		✓		Y	
Duct connectors						
Blower assembly including blower wheel, blower housing, air vanes, in-line noise attenuators, acoustical treatments (e.g. baffles, duct linings)	sheet metal		✓		Y	
Condensate drain pan						
Condensate accumulator						
Supply air plenum						
Supply air plenum damper(s)						
Supply air ducts	sheet metal		✓		Y	
-High pressure - main trunk						
-Low pressure - branches						
Supply plenum or supply duct linings	Fiber glass		✓		Y	
Supply air duct damper(s)						
Supply air diffusers						
Terminal boxes						
Open or ducted passive ventilation shaft(s)						
Other Information:						
☒ Unit cycled prior to inspection YES NOT WORKING		☐ Color of Dust/Dirt/Debris WHITE				
☒ Filter loading (general impression) MEAN		☐ Water damage NONE				
☐ Filter bypass (describe) NO		☐ Visible suspect mold growth NONE				
☐ Abraded/delaminated acoustical lining NONE		☐ Evidence of animal incursion (carcasses, feathers, fecal matter) NONE				

2.4 Sampling

Sampling is required if light to heavy dust is present that is not visually identified as WTC related (maximum 5 samples).

Samples Collected:	☒ Y ☐ N
Sample Locations:	
Location 1:	2 nd FLOOR - MECHANICAL RM - SUPPLY DUCT (HV-21)
Location 2:	1 st FLOOR - FRESH AIR - SUPPLY DUCT. (HV)
Location 3:	
Location 4:	
Location 5:	

USEPA Contract Laboratory Program Generic Chain of Custody

300201004

Origination ID: 033982476 10112002 1035186
Request Type: O
BIN #: 1083376

Zip Code: 10280 Confirmation #: 0020210105568 HPD Sequence ID: 805310		Date Shipped: 11/2/2002 Carrier Name: Hand Delivered Airbill:		Chain of Custody Record Relinquished By (Date / Time) 1. <i>[Signature]</i> 11/2/02 2. <i>[Signature]</i> 11/11/02 3. <i>[Signature]</i> 11/12/02 4. <i>[Signature]</i>	
Floor/Apt: Glenn Kassiss Requestor Name: 385 South End Avenue/ Normalized Address: alex kazakov Project Leader: Special Pre Monitoring Activity: Agency:		Shipped to: EMSL Analytical Inc 307 West 38th Street New York NY 10018 (212) 250-0051			

SAMPLE No.	Col. Method/ SAMPLER	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE No. of Bottles	RESIDENCE/ COMMON AREA ID	SAMPLING LOCATION	VOLUME (L) AREA (cm ²)	SAMPLE COLLECTION DATE/TIME	DURATION (min)	CALC. Vol (L)
05568-305-559	bulk sample/ alex kazakov	HVAC (Std)	667 (1)	385 SE Ave. Air Duct	Mech room 2nd floor supply duct (HV-21)	area:	S: 11/1/2002 E: 11/1/2002	-	0.00
05568-305-560	bulk sample/ alex kazakov	HVAC (Std)	668 (1)	385 SE Ave. Air Duct	1st floor fresh air supply duct	area:	S: 11/1/2002 E: 11/1/2002	-	0.00

02 NOV - 2 PM 7:04

Shipment for Case Completed?	Samples to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: HVAC = HVAC	Shipment lost?		

TR Number: 10280-033982476-110202-0005

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

All flow rates are L/min

Send Copy to: Sample Management Office, 2000 Edmund Hallway Dr., Reston, VA 20191-3400 Phone 703/284-9348 Fax 703/284-9222

WTC
F35.2.8 WTC Page 1 of 1



EMSL Analytical, Inc. - 107 Haddon Avenue
Westmont, NJ. 08108
(856) 858-4800

11/7/02

Attention: **Terry Smith**
U.S.EPA
HQ Financial Services Division
1200 Pennsylvania Avenue
NW Maildrop 2734R
Washington, DC 20460

Project: **WTC**
Ref. Number: **360201004**

**Man Made Vitreous Fiber Analysis Performed
by Scanning Electron Microscopy (SEM),
and Polarized Light Microscopy (PLM).**

<i>Sample ID</i>	<i>Description</i>	<i>Analyte</i>	<i>Concentration (%)</i>	<i>Analytical Sensitivity (%)</i>	<i>Comments</i>
05568-305-556	Fibrous Dust Ball	Fibrous Glass	10%	~1%	pH = 5.66
		Mineral Wool	2%	~1%	
		Ceramic Fiber	ND	~1%	
05568-305-560	Fibrous Dust Ball	Fibrous Glass	5%	~1%	pH = 6.77
		Mineral Wool	<1%	~1%	
		Ceramic Fiber	ND	~1%	

J. Newton
Analyst

7 November, 2002
Date of Analysis

Note: EMSL can only verify the results of the analysis in structures per mm² and not concentration that is based upon data obtained by non-laboratory personnel.
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INTERNAL CHAIN OF CUSTODY

11/6/02 1:32:28 PM

Order ID: 360201004

Attn: U. S. EPA
 HQ Financial Services Division
 1200 Pennsylvania Ave. NW Maildrop 2734R
 Washington, DC 20460

Fax: Phone:
 Project: Residential / 385 South End Ave

Customer ID: USEPA30
 Customer PO: 2W-1104-NNLX
 Received: 11/02/02 7:04 PM

EMSL Order: 360201004
 EMSL Project ID: Residential

Test: Miscellaneous **Matrix:** Bulk **TAT:** 72 Hour **Qty:** 2

Acct Sts: PO **Sisprsn:** rdemalo **Logged:** AKEMP **Date:** 11/6/02

Exempt from prep charge

Exempt from lab opening fee

Exempt from layer/aliquot charges

Prepped: _____ **Date:** _____

Analyzed: _____ **Date:** _____

Data Entry: _____ **Date:** _____

Screened: _____ **Date:** _____

Mailed: _____ **Date:** _____

Special Instructions

REFERENCE 2W-1103-NNLX ON ALL INVOICES IN PO FIELD!!!

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
360201004	360201004-0001	05568-305-559		11/5/02 6:04:00 PM
360201004	360201004-0002	05568-305-560		11/5/02 6:04:00 PM

EMSL Materials Lab, 107 Haddon Ave., Westmont, NJ 08108

Page 1



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Westmont, NJ. 08108
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11/7/02

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NW Maildrop 2734R
Washington, DC 20460

Project: **WTC**
Ref. Number: **360201004**

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Cal. 1
11:28:41 11/07/02
4.80 pH 22.4°C

Cal. 2
11:29:35 11/07/02
10.66 pH 22.4°C

SLOPE = 98 %

11:31:46 11/07/02
7.00 pH 22.4°C

7.0 STD Calc.

11:40:13 11/07/02
6.32 pH 24.7°C

562

11:42:00 11/07/02
5.36 pH 24.5°C

559

11:43:24 11/07/02
6.77 pH 24.4°C

560

11:44:31 11/07/02
6.32 pH 24.5°C

561

11:46:02 11/07/02
7.00 pH 24.1°C

7.0 STD Calc.

J. Newton
Analyst

7 November, 2002
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Client: U.S. EPA

Project ID: WTC

Analyst: J. Newson

Ref. No.: 360201004

Sample ID: 05569-301-

Date: 7 November, 2002

Sample Description	559	/	560		
Identification	FG	mw	5+FG	mw	
Morphology	F	F	F	F	
Color	CL	CL	CL	CL	
Streak Color	CL	CL	CL	CL	
Transparency	CL	CL	CL	CL	
Crystalline	CL	CL	CL	CL	
Pleochroism	CL	CL	CL	CL	
SOE	CL	CL	CL	CL	
Ext. L	CL	CL	CL	CL	
RI - (L)	CL	CL	CL	CL	
RI - (H)	CL	CL	CL	CL	
Other	CL	CL	CL	CL	
Org : In-org	0 : 1	0 : 1	0 : 1	0 : 1	0 : 1
Elemental Comp.	Si72C	Ca72Si	Si72C	Ca72Si	0 : 1
Diffraction	10	2	5	2	
Concentration (%)	10	2	5	2	
Comments					

N/A = not-applicable; [Color - C] = Clear, B = blue, G = green, R = red, O = orange, H = black; [SOE - I] = isotropic, + = positive, - = negative]
 [F = fibrous, A = acicular, T = tabular, L = lamellar, M = massive]; RI of synthetic fibers are reported in DS color based upon 1550 liquid.

WksPID Char dot



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Customer PO: 2W-1104-NNLX
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EMSL Project ID: Residential

Test: Miscellaneous **Matrix:** Bulk **TAT:** 72 Hour **Qty:** 2

Acct Sts: PO **Sisprsn:** rdemalo **Logged:** AKEMP **Date:** 11/6/02
Prepped: **Date:**
Analyzed: **Date:**
Data Entry: **Date:**
Screened: **Date:**
Mailed: **Date:**

Special Instructions

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360201004	360201004-0002	05568-305-560		11/5/02 6:04:00 PM

EMSL Materials Lab, 107 Haddon Ave., Westmont, NJ 08108

Page 1



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11:40:13 11/07/02
6.32 pH 24.7°C

562

11:42:00 11/07/02
5.36 pH 24.5°C

559

11:43:24 11/07/02
6.77 pH 24.4°C

560

11:44:51 11/07/02
6.32 pH 24.3°C

561

11:46:02 11/07/02
7.00 pH 24.1°C

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 Ref. No.: 360201004 Sample ID: 05569-301- Date: 7 November, 2002

Sample Description	559	560			
Identification	FG	MW	SFG	MW	
Morphology	F	F	F	F	
Color	CL	CL	CL	CL	
Streak Color	CL	CL	CL	CL	
Transparency	(Trsp) Trsten : Opqe	(Trsp) Trsten : Opqe	(Trsp) Trsten : Opqe	(Trsp) Trsten : Opqe	Trsp : Trsten : Opqe
Crystalline	Y : N	Y : N	Y : N	Y : N	Y : N
Pleochroism	(D) + : -	(D) + : -	(D) + : -	(D) + : -	I : + : -
SOE	(D) + : -	(D) + : -	(D) + : -	(D) + : -	I : + : -
Ext. L	(D) + : -	(D) + : -	(D) + : -	(D) + : -	I : + : -
RI-(L)	< 1.605	< 1.605	< 1.605	< 1.605	
RI-(H)	1	1	1	1	
Other					
Org : In-org	0 : 1	0 : 1	0 : 1	0 : 1	0 : 1
Elemental Comp.	Si25Ca	Ca25Si	Si25Ca	Ca25Si	
Diffraction					
Concentration (%)	10	2	5	< 1	
Comments					

N/A = not-applicable; [Color - Cl = Clear, B = blue, G = green, R = red, O = orange, BI = black]; [SOE - I = isotropic, + = positive, - = negative]
 [F = fibrous, A = acicular, T = tabular, L = lamellar, M = massive]; RI of synthetic fibers are reported in US color based upon 1.50 liquid

WksPID_Char.dot

EPA USEPA Contract Laboratory Program
Generic Chain of Custody

360201004

Zip Code: 10280 Confirmation #: 0020210105568 HPD Sequence ID: 805310 Floor/Apt: 307 Requestor Name: Glenn Kasas Normalized Address: 385 South End Avenue/ Project Leader: alex kazakov Activity: Special Pre Monitoring Agency:		Date Shipped: 11/2/2002 Carrier Name: Hand Delivered Airbill: Shipped to: EMSL Analytical Inc 307 West 38th Street New York NY 10018 (212) 290-0051		Origin ID: 033982476 10112002 1035186 Request Type: O BIN #: 1083376	
Chain of Custody Record Relinquished By (Date / Time) 1 <i>[Signature]</i> 11/1/02 2 <i>[Signature]</i> 11/2/02 3 <i>[Signature]</i> 4 <i>[Signature]</i>			Sampler Signature: <i>[Signature]</i> Received By (Date / Time) 11/1/02		

SAMPLE No.	Col. Method/ SAMPLER	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE No. of Bottles	RESIDENCE/ COMMON AREA ID	SAMPLING LOCATION	VOLUME (L)/ AREA (cm ²)	SAMPLE COLLECTION DATE/TIME	DURATION (min)	CALC. Vol (L)
C5568-305-559	bulk sample/ alex kazakov	HVAC (Std)	667 (1)	385 SE Ave. Air Duct	Mech room 2nd floor supply duct (HV-21)	area:	S: 11/1/2002 E: 11/1/2002	-	0.00
C5568-305-560	bulk sample/ alex kazakov	HVAC (Std)	668 (1)	385 SE Ave. Air Duct	1st floor fresh air supply duct	area:	S: 11/1/2002 E: 11/1/2002	-	0.00

02 NOV - 2 PM 7:04

Shipment for Case Completed?	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: HVAC = HVAC	Shipment lost?		Shipment lost?

TR Number: 10280-033982476-110202-0005

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
 Send Copy to: Sample Management Office, 2000 Edmund Hallway Dr., Reston, VA 20191-3400 Phone 703/284-9348 Fax 703/284-9222

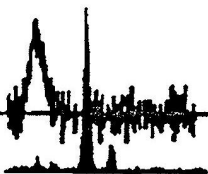
WTC
FAS 2.5 WTC Page 1 of 1



Final Report To US EPA
World Trade Center Residential Study
Crystalline Minerals in Dust
by X-ray Diffraction

Submitted by
Dr. Samudra and Dr. Hu

EMSL Analytical, Inc. Westmont, NJ



List of Documents for EPA_WTC Residential Study EMSL Billing No. 040217975

- 1. EMSL Final Report. (Phase identity assumed but unconfirmed in EPA samples in this report)**
- 2. EMSL Internal Chain of Custody**
- 3. Client's Chain of Custody.**
- 4. Summary Sheet listing Peak Area and Estimated Mineral Mass (ug) for six minerals (Quartz, Cristobalite, Tridymite, Gypsum, Calcite and Portlandite).**
- 5. Bench Sheets**

Appendix

- a. Table of Protocols for X-ray Diffraction Study**
- b. Calibration Curves for six minerals**

EMSL Analytical, Inc.
107 Haddon Ave., Westmont, NJ 08108

Order ID: 040217975

Attn: U.S. EPA
HQ Financial Services Division
1200 Pennsylvania Avenue,
NW Maildrop 273-JR
Washington, DC 20460

Customer ID: USEPA39
Customer PO: 2W-1104-NNLX
Date Received: 11/02/02 7:04 PM

Project: Residential / 385 South End Ave
Washington, DC 20460

EMS Order: 040217975
EMS Project ID:
Date Analyzed: 11/6/11 7:02

**Silica, Crystalline Analysis of Bulk Dust Samples
Performed by X-Ray Diffraction (XRD) NIOSH Method 7500 (Modified), Issue 3, 1/15/98**

Sample ID	Location	Sample Mass (g)	α -Quartz %	Cristobalite %	Tridymite %	Gypsum %	Calcite %	Portlandite %
05568-305-559	Mech. Room 2nd floor supply duct (HV-21)	0.002	6.00	<1.00	<1.00	0.50	<1.00	<1.00
05568-305-560	1st floor fresh air supply duct	0.002	5.20	<1.00	<1.00	2.25	<1.00	<1.00
Ref Std	0.026Q 0.050C 0.050T	N/A	0.024 mg	0.061 mg	0.090 mg	N/A	N/A	N/A

Note: Reported quartz contents may not represent respirable quartz fraction, due to large particle size of the samples.

Instrument Sensitivity: 0.005 mg α -Quartz 0.010 mg Gypsum 0.020 mg Cristobalite/Tridymite/Calcite/Portlandite

< = Less than the stated value. The lowest reportable value is equivalent to the Analytical Sensitivity which is calculated from the lowest reproducible concentration of silica detectable by the instrument.

**Anant Samudra, Ph.D.,
Analyst**


Stephen Siegel, CIH- Lab Manager
Or other approved signatory

AIHA Accredited - Laboratory ID #100192

INTERNAL CHAIN OF CUSTODY

11/6/02 1:14:07 PM

Order ID: 040217975

Attn: U. S. EPA
HQ Financial Services Division
1200 Pennsylvania Ave. NW Maildrop 2734R
Washington, DC 20460

Fax: Phone:
Project: Residential / 385 South End Ave

Customer ID: USEPA30
Customer PO: 2W-1104-NNLX
Received: 11/02/02 7:04 PM
FMSI Order: 040217975
EMSL Project ID: Residential

Test: XRD Matrix Air TAT: 72 Hour Qty: 2

Acct Sts: PO

Sisprsn: rdemalo

Logged: AKEMP

Date:

Exempt from prep charge

Prepped: DS

Date: 11/6/02

Exempt from lab opening fee

Analyzed:

Date:

Exempt from layer/aliquot charges

Data Entry: SI

Date: 11/7/02

Screened:

Date:

Mailed:

Date:

Special Instructions

Email: marian.murphy@ttemi.com and fax: 973-529-0216 REFERENCE 2W-1103-NNLX ON ALL INVOICES IN PO FIELD!!!

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
040217975	040217975-0001	05568-305-559	Mech. Room 2nd floor supply duct (HV-21)	11/5/02 6:04:00 PM
040217975	040217975-0002	05568-305-560	1st floor fresh air supply duct	11/5/02 6:04:00 PM

Used 125 micron sieve, 2.0 mg of each in 10ml alcohol
filtered whole solution

EMSL Analytical, Inc., 107 Haddon Ave., Westmont, NJ 08108

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EPA 040317975
USEPA Contract Laboratory Program
Generic Chain of Custody

Zip Code: 10280 Confirmation #: 0020210105588 HPD Sequence ID: 806310 Floor/Apt: 307 West 38th Street Requestor Name: Glenn Kassiss Normalized Address: 385 South End Avenue/ Project Leader: alex kazakov Activity: Special Pre Monitoring Agency:		Date Shipped: 11/2/2002 Carrier Name: Hand Delivered Airbill: Shipped to: EMSL Analytical Inc 307 West 38th Street New York NY 10018 (212) 280-0051		Chain of Custody Record Relinquished By (Date / Time) 1. Alex Kazakov 11/1/02 2. Glenn Kassiss 11/1/02 3. Alex Kazakov 11/2/02 4. Alex Kazakov 11/2/02		Sampler Signature: Alex Kazakov Received By (Date / Time) Alex Kazakov 11/1/02	
Origination ID: 033982476 10112002 1035166 Request Type: O BIN #: 1083378							

SAMPLE No.	Col. Method/ SAMPLER	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE No. of Bottles	RESIDENCE/ COMMON AREA ID	SAMPLING LOCATION	VOLUME (L)/ AREA (cm2)	SAMPLE COLLECTION DATE/TIME	DURATION (min)	CALC. Vol (L)
05568-305-559	bulk sample/ alex kazakov	HVAC (Std)	667 (1)	385 SE Ave. Air Duct	Mech room 2nd floor supply duct (HV-21)	area:	S: 11/1/2002 E: 11/1/2002	--	0.00
05568-305-560	bulk sample/ alex kazakov	HVAC (Std)	668 (1)	385 SE Ave Air Duct	1st floor fresh air supply duct	area:	S: 11/1/2002 E: 11/1/2002	--	0.00

RECEIVED
 02 NOV -2 PM 7:04

Shipment for Case Completed Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: HVAC = HVAC	Shipment Key:		Shipment Key:

TR Number: 10280-033982476-110202-0005
 PR provides preliminary results. Requests for preliminary results will increase analytical costs.
 Send Copy to: Sample Management Office, 2000 Edmund Halley Dr., Reston, VA. 20191-3400 Phone 703/284-9348 Fax 703/284-9222
WTC
 F25.2.8 WTC Page 1 of 1

WTC_Residential Study

EMSL Billing # 040217975

385 South End Avenue

		Quartz	Cristo	Tridymite	Gypsum	Calcite	Portlandite
		mg	mg	mg	mg	mg	mg
1	05568-305-559	0.120	<DL	<DL	0.010	<DL	<DL
2	05568-305-560	0.104	<DL	<DL	0.045	<DL	<DL

Reference	True Value	0.026	0.050	0.050	0.010	0.030	0.050
	Measured	0.024	0.061	0.090	0.007	0.029	0.036

Peak Areas		Quartz	Cristo	Tridymite	Gypsum	Calcite	Portlandite
		Primary	Primary	Primary	Primary	Primary	Primary
1	05568-305-559	594.9	0.0	0.0	402.9	92.6	0.0
2	05568-305-560	516.5	0.0	0.0	1892.4	106.4	0.0

Reference		118.0	574.4	521.5	300.3	299.6	114.3
Corrected							
124363.5							
2.412283	slope	4.953	9.3758	5.8028	41.603	10.312	3.1625

Equations for obtaining mass of a phase (ug) from Peak Area (if that phase is assumed to be present).

Alpha Quartz (Primary)	ug = (Peak Area) / 4.953	DL = 5 ug
Cristobalite (Primary)	ug = (Peak Area) / 9.3758	DL = 20 ug
Tridymite (Primary)	ug = (Peak Area) / 5.8028	DL = 20 ug
Gypsum (Primary)	ug = (Peak Area) / 41.603	DL = 10 ug
Calcite (Primary)	ug = (Peak Area) / 10.312	DL = 20 ug
Portlandite (Primary)	ug = (Peak Area) / 3.1625	DL = 20 ug

EMSL SILICA WORKSHEET FOR USEPA PROJECTS

Bulk Sample For XRD
 Used 125 micron sieve
 Initial Mass 2.0 mg at each sample
 Vol Filtered 10 ml of 100 ml
 (Filtered entire suspension)

EMSL Order ID# 040217975 Client: USEPA

Client Sample Number	EMSL#	α-Quartz (mg)	Cristob. (mg)	Tridym. (mg)	Calcite (mg)	Gypsum (mg)	Portlandite (mg)
N/A	LB-						
N/A	QC-						
0588-345-559	1	0.120	<DL	<DL	<DL	0.010	<DL
560	2	0.104	<DL	<DL	<DL	0.045	<DL
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						

SILICA STANDARDS

QUARTZ STANDARD WEIGHT(mg)	0.026	XRD READING(mg)	0.024
CRISTOBALITE STANDARD WEIGHT(mg)	0.050	XRD READING(mg)	0.061
TRIDYMYTE STANDARD WEIGHT(mg)	0.050	XRD READING(mg)	0.090

L:\INDUSTRIAL\HYGIENE\Silica\Forms\Infolepassilworksheets\air.doc

Ventilation System Identification:		MODEL # M110E	
H/V Unit		Area Served: FLOORS 1 to 7 th FL	
Location: GROUND LEVEL - COMPACTOR RM		Mechanical room: clean <u>Y</u> <u>N</u> dry <u>Y</u> <u>N</u> stored chemicals/refuse <u>Y</u> <u>N</u>	
Access adequate for inspection of components:		YES	
AHU interior surfaces are visibly accessible:		YES	

System Components	System Component Substrate Material	Dust/Dirt/Debris			Suspect WTC-Related Dust	
		None	Light (<1/16 inch depth)	Heavy (≥ 1/16 inch depth)	Present? (Y/N)	Estimate % of total dust loading
Outside air intake louvers, grates and/or screens	Aluminum			✓	Y	
Outside air duct	sheet metal			✓	Y	
Outside air damper(s)	sheet metal			✓	Y	
Return air grilles	sheet metal			✓	Y	
Return air plenum	sheet metal					
Return air plenum damper				✓	Y	
Return air ducts	sheet metal			✓	Y	
Turning vanes	sheet metal					
Mixing chambers				✓	Y	
Filter rack(s)	sheet metal			✓	Y	
Filter banks/media	Fiber glass		✓		Y	
Pre-heat coils	copper (Alum.)					
Cooling coils						
Re-heat coils						
Humidification and/or air cleaning equipment						
Fire dampers						
In-line re-heat coils			✓		Y	
Acoustical blower housing lining	Fiber glass					
Duct connectors						
Blower assembly including blower wheel, blower housing, air vanes, in-line noise attenuators, acoustical treatments (e.g. baffles, duct linings)	sheet metal		✓		Y	
Condensate drain pan						
Condensate accumulator						
Supply air plenum						
Supply air plenum damper(s)						
Supply air ducts	sheet metal		✓		Y	
-High pressure - main trunk						
-Low pressure - branches						
Supply plenum or supply duct linings	Fiber glass		✓		Y	
Supply air duct damper(s)						
Supply air diffusers						
Terminal boxes						
Open or ducted passive ventilation shaft(s)						

Black ?
discreet w/ duct dusts

Other Information:		Color of Dust/Dirt/Debris BLACK/white	
☒ Unit cycled prior to inspection YES	☐ Filter loading (general impression) MEAN	☐ Water damage NONE OBSERVED	☐ Visible suspect mold growth NONE OBSERVED
☐ Filter bypass (describe) ND	☐ Abraded/delaminated acoustical lining NONE OBSERVED	☐ Evidence of animal incursion (carcasses, feathers, fecal matter) NONE OBSERVED	