

TO: Commissioner Miele 718-595-3525
 CC: First Deputy Commissioner Chapin 718-595-3557
 Deputy Commissioner Ayaltroni 718-595-4544
 Deputy Commissioner Greeley 718-595-5342
 Deputy Commissioner Lopez 718-595-6950
 Deputy Commissioner Principe 914-741-0348
 FROM: Paul Bennett - 917-769-1282 PB
 RE: WTC Daily Report for 10/30/01
 DATE: Oct. 30, 2001 via FAX

Summary of outstanding activities for 10/30/01.

Site visit - Debris moved by NYC DOT

Update: OEM requests site visit by various agencies including DEP to assess situation. Arranged for 1130 hrs, 10/31 @ West and Warren Streets. DEP-Emergency Mgmt to attend. Could a representative from DEP HazMat also attend?

OEM requests guidance regarding the testing/disposal of debris removed early-on by NYC DOT from the Park within Battery park City to the ball field located at West Street and Chambers Street. About 600 tons of debris from the WTC collapse was moved in order to clear space needed. OEM states that FBI does not need this debris. Please inform of any testing or special method of disposal required.

EPA requests meeting on Tuesday, 10/30/01

Update: EPA would like to transition to a Public Assistance Project at the beginning of December. EPA would like for the City or State to assume responsibility for the work that EPAS is currently performing. OEM states that the City could take over operations but the time has not been determined. EPA to provide a detailed report of their activities by the end of the week. The City will review report and develop a transition plan.

EPA has asked for a meeting to discuss their current and future involvement with the WTC response and recovery efforts.

Health and Safety meeting

Incident Command now Unified Command

Incident Command has transitioned to a Unified Command structure with FDNY and DDC having joint command. Beginning Friday, November 2, the 0700hr FDNY meeting will be combined with the 0900hr DDC operational meeting. Meetings will be held at IS 89, second floor, at 0900hrs.

Reassess noise suppression activities at SI Landfill

Noise monitoring at SI Landfill will be expanding in an effort to determine if noise suppression efforts could be decreased. This is done for worker safety issues. Currently, the noise suppression activities adversely impact the ability safety gained by auditable signals.

Activities at 7 WTC decreased

Contractor working at 7 WTC reports most debris removed. 7 WTC now at grade level. Contractor going to 12hr / day, 6 days / week schedule.

Reports attached:

OSHA Sampling results as of 10/24. PESH Sampling results as of 10/18.

Manpower hours for EMRP on 10/30/01:

Paul Bennett	Pier 92	10:30 PM - 11:30 PM	13 12 hrs
Frank Vazquez	Command Bus	off	
Robert Kepich	Command Bus	12:00 PM - 12:00 AM	12 hrs
Joe Scafidi	Command Bus	12:00 AM - 12:00 PM	12 hrs
-end-			

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 Deputy Commissioner Principe 914-741-0348
 FROM: Paul Bennett - 917-769-1282 PB
 RE: WTC Daily Report for 10/29/01
 DATE: Oct. 29, 2001 via FAX
Summary of outstanding activities for 10/29/01.

Debris moved by NYC DOT

OEM requests guidance regarding the testing/disposal of debris removed early-on by NYC DOT from the Park within Battery park City to the ball field located at West Street and Chambers Street. About 600 tons of debris from the WTC collapse was moved in order to clear space needed. OEM states that FBI does not need this debris. Please inform of any testing or special method of disposal required.

FDNY to increase fire-fighting efforts beginning Saturday at 7 PM.

Update: FDNY reports that the fire is still burning. They expect it to continue to burn until the pile has been removed.

EPA requests meeting on Tuesday, 10/30/01

Update: Bob A.- Please have someone contact me regarding this meeting.
EPA has asked for a meeting to discuss their current and future involvement with the WTC response and recovery efforts. I would like a representative from HazMat and Air Resources to attend. The meeting will be held on Tuesday, October 30, 2001 at 1:00 PM at Pier 92 (stop by the DEP desk at Pier 92 for the room where the meeting will be.)

Health and Safety meeting

Dust Control

Update: Angle Aerial, the dust control contractor, has brought in more equipment. Additional equipment is scheduled to arrive over the next few days.

Freon

EPA measured 40 ppm and 300 ppm Freon-22 in air samples collected last week. Bechtel Co. collected and analyzed standing water samples from the B5/B6 levels and found Freon-22 at 2 ppm (2000 ppb) concentration. This is greater the levels detected in samples collected three weeks ago and suggests an active leak of freon. Bechtel advised caution when entering confined spaces because of the displacement of air by leaking freon.

Manpower hours for EMRP on 10/29/01:

Paul Bennett	Pier 92	11:00 PM -- 11:00 PM	12 hrs
Frank Vazquez	Command Bus	12:00 PM -- 12:00 AM	12 hrs
Robert Kepich	Command Bus	12:00 AM -- 12:00 PM	12 hrs
Joe Scaffidi	Command Bus	off	

-end-

OSHA SAMPLING RESULTS SUMMARY AS OF 10/24

- Asbestos:** A total of 587 air monitoring samples for asbestos have been taken. From 9/13 -9/22, 177 samples were taken in the financial district. They were taken on OSHA personnel as they walked within certain predetermined zones. Results revealed asbestos concentrations ranging from ND to .037 f/cc., well below OSHA's permissible exposure limit (PEL) of .1 f/cc.
- After 9/22, sampling focused on the rubble pile and those workers working on or immediately next to it. 53 of 410 samples exceeded OSHA's limit via PCM analysis. However, upon further analysis using discriminating counting methods and/or TEM analysis, the number of asbestos fibers found dropped dramatically to below detectable levels or well below .1 f/cc.
- Carbon Monoxide:** 41 personal samples of workers on the rubble pile showed results ranging from 1 ppm to 34 ppm well below the OSHA 50 ppm permissible exposure limit
- Noise:** OSHA has been conducting noise monitoring in the rubble pile. Twelve personal samples have been conducted on employees performing (or working near) various operations such as jack hammering. Employee's exposure to the noise range from 80.6 dBA to 89 dBA. OSHA's permissible noise exposure for construction is 90 dBA
- Respirable Silica:** As of October 22, the overwhelming majority of the 189 silica samples show no detectable levels of airborne silica. The highest sample result was approximately twice the OSHA limit, whereas the next highest level was less than half of this limit. Both of these levels were found on personnel working in the rubble pile; an area where OSHA continues to encourage the use of respiratory protection.
- Volatile Organic Compounds:** OSHA has taken 173 samples for (VOCs) such as acetaldehyde, acrylonitrile, acrolein, benzene, 2-butanone, chlorodiphenyl (PCB), ethyl benzene, formaldehyde, hexone, isocyanates e.g. (MDI)(HDI), perchloroethylene, styrene, toluene, trichloroethylene, vinyl chloride and xylene. Screening samples initially showed elevated levels of some organic chemicals resulting from the fires burning in the rubble pile. Subsequent personal and area samples show worker exposure levels to be below OSHA limits. However, one personal sample result for benzene was found to be at the 8hr OSHA Allowable Limit concentration of 1ppm. This was found on a backhoe operator moving debris.
- Oxides of Nitrogen:** Sampling on employees manning the truck wash stations found no detectable levels of nitrous or nitric oxide
- Metals:** As of 10/19 OSHA has taken 261 air samples to monitor worker exposures to dusts, fumes, oxides, and other compounds of metals such as antimony, beryllium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, vanadium, zinc, cadmium, magnesium, arsenic, and mercury. Results from these samples are generally well below the applicable OSHA limits. However, torch cutting and burning structural steel at the pile have resulted in instances of overexposures as follows: copper (6); iron oxide (6); lead (1); and cadmium (3). Accordingly, OSHA is recommending that workers engaged in these operations wear appropriate respiratory protection.

Ionizing Radiation: A survey of the rubble pile was conducted on 10/22-10/23 to check for latent radiation with particular attention to alpha radiation. Preliminary results show no elevated levels.

Dioxins: The single sample taken by OSHA and analyzed by the EPA, representing exposure on the pile, showed elevated levels of dioxins. These levels were substantially higher than background levels but comparable to levels found by the EPA on the rubble pile. The dioxins found here are emitted from the on-going rubble fire. OSHA does not have a worker standard for dioxins. Dioxins are considered collectively as suspect human carcinogens. Some of the individual compounds are considered to be known human carcinogens. OSHA is performing additional sampling and will coordinate with EPA to more fully characterize exposure around the rubble pile.

Polynucleated Aromatic

Hydrocarbons:

OSHA identified several elevated samples, three of which reached or exceeded OSHA's PEL of $2\text{mg}/\text{M}^3$. These samples were taken on the pile. OSHA continues to strongly recommend the use of respiratory protection when working on the rubble pile.

Pending Analysis: In response to information about exposure to the combustion by-products of Freon 22 used in the air conditioning systems of WTC towers, OSHA conducted sampling for fluorides as HF . Results are pending.



**New York State Department of Labor
Public Employee Safety & Health Bureau
State Office Campus, Bldg #12, Rm 158
Albany, NY 12240**

**New York City Fire Department
Personal Exposure Monitoring
World Trade Center Site
September 26, 2001**

Employee/Job title	Location	minutes sampled	Substance sampled	TWA sampling results	PESH 8 hr PEL
FDNY - I Firefighter	Barclay and West Broadway	120	Asbestos	0.022 f/cc ¹ 0.007 f/cc ²	0.1 f/cc
FDNY - II Firefighter	West St., In front of N. Tower	179	Asbestos	0.121 f/cc ¹ <0.001 f/cc ²	0.1 f/cc
FDNY - III Firefighter	West St., In front of N. Tower	184	Asbestos	0.071 f/cc ¹ 0.007 f/cc ²	0.1 f/cc
FDNY - IV Firefighter	West St., In front of N. Tower	179	Respirable Dust Respirable Quartz Silica	ND <0.174 mg/M ³ <0.053 mg/M ³	5 mg/M ³ 0.1 mg/M ³
			% Silica	<63	NA
FDNY - V Firefighter **	West St., In front of N. Tower	140	Total Dust Cadmium Lead Zinc Cobalt	0.252 mg/M ³ ND <0.315 ug/M ³ ND <2.0 ug/M ³ ND <0.0019 mg/M ³ ND <0.0003 mg/M ³	15 ug/M ³ 5 ug/M ³ 50 ug/M ³ 5 mg/M ³ 0.05 mg/M ³

Employee/Job title Location minutes sampled Substance sampled TWA sampling results PESH 8 hr PEL

FDNY - VI Captain **	West St., In front of N. Tower	175	Total Dust Cadmium Lead Zinc Cobalt Carbon Monoxide	0.261 mg/M ³ <0.251 ug/M ³ ND < 1.6 ug/M ³ ND < 0.0015 mg/M ³ ND < 0.0002 mg/M ³ 0 ppm (TWA) 22 ppm (Peak) 2 ppm (STEL)	15 mg/M ³ 5 ug/M ³ 50 ug/M ³ 5 mg/M ³ 0.05 mg/M ³ 35 ppm 200 ppm NA
FDNY - VII Firefighter	West St., In front of N. Tower	183	Carbon Monoxide	0 ppm (TWA) 28 ppm (Peak) 2 ppm (STEL)	35 ppm 200 ppm NA
Bulk #1	On Plaza, from Church St.	NA	% Silica % Tridymite % Asbestos (Crynotile) **	5.1 0.10 5	NA NA NA
Bulk # 2	Pile Near Bldg #7	NA	% Silica % Cristobalite % Asbestos	23 ND < 0.01 < 1	NA NA NA

f/cc = Fibers per Cubic Centimeter

TWA = Time Weighted Average

PEAK = Highest Level Seen During Test

PEL = Permissible Exposure Limit

PESH = NYS Public Employee Safety and Health Bureau

ppm = parts per million

STEL = Short Term Exposure Limit

mg/M³ = milligrams per cubic meter

ug/M³ = microgram per cubic meter

NA = Not Applicable

% = Percent

< = Less Than

<= = Less Than or Equal To

** = Metals scan also included; Aluminum, Chromium, Copper, Iron, Magnesium, Manganese, Molybdenum, and Nickel. All were below detectable levels.

Analytical Method for total dust is based on NIOSH 0600

Analytical Method for silica is based on OSHA ID142 and NIOSH 7500

Analytical Method for metals is based on OSHA ID 125G

¹ = Sample result based on analytical method NIOSH 7400. This method utilizes Phase Contrast Microscopy (PCM) which counts ALL FIBERS longer than 5 microns in length and have a length to width ratio equal to or greater than 3:1.

² = Sample result based on analytical method NIOSH 7402. This method utilizes Transmission Electron Microscopy (TEM) to identify and quantify asbestos fibers present.

**New York State Department of Labor
Public Employee Safety & Health Bureau
State Office Campus, Bldg #12, Rm 158
Albany, NY 12240**

***New York City Police Department
Personal Exposure Monitoring
Fresh Kills Landfill
September 26, 2001***

Employee/ Job Title	Location	Minutes Sampled	Substance Sampled	TWA Sampling Results	PESH 8-hour PEL
P - 1 Policeman	Sifting Crew	95	Asbestos	0.023 f/cc ¹ <0.002 f/cc ²	0.1 f/cc
D - 1 Detective	Auto Crime	215	Asbestos	0.016 f/cc ¹ <0.001 f/cc ²	0.1 f/cc
P - 2 Policeman	Sifting Crew	90	Total Dust Total Quartz Silica % Silica	ND <0.280 mg/M ³ <=0.053 mg/M ³ <=23	5 mg/M ³ 0.1 mg/M ³ * NA
D - 2 Detective	Auto Crime	191	Total Dust Total Quartz Silica % Silica	0.293 mg/M ³ 0.085 mg/M ³ 29	15 mg/M ³ 0.1 mg/M ³ * NA

f/cc = Fibers per Cubic Centimeter

TWA = Time Weighted Average

PEL = Permissible Exposure Limit

PESH = NYS Public Employee Safety and Health Bureau

mg/M³ = milligrams per cubic meter

NA = Not Applicable

* = Indicates PEL for respirable fraction of silica, however, sample was for total silica.

% = Percent

< = Less Than

<= = Less Than or Equal To

Analytical Method for total dust is based on NIOSH 0600

Analytical Method for silica is based on OSHA ID142 and NIOSH 7500

¹ = Sample result based on analytical method NIOSH 7400. This method utilizes Phase Contrast Microscopy (PCM) which counts ALL FIBERS longer than 5 microns in length and have a length to width ratio equal to or greater than 3:1.

² = Sample result based on analytical method NIOSH 7402. This method utilizes Transmission Electron Microscopy (TEM) to identify and quantify asbestos fibers present.

**New York State Department of Labor
Public Employee Safety & Health Bureau
State Office Campus, Bldg #12, Rm 158
Albany, NY 12240**

**New York City Police Department
Chief Medical Examiners Office
Personal Exposure Monitoring
520 First Avenue, NY, NY
September 27, 2001**

Employee Job Title	Location	Exposure Station	Substance Monitored	TWA - Time Weighted Average (ppm)	PEL - Permissible Exposure Limit (ppm)
P - A Police Officer	Property ID	113	Ethyl Alcohol	≤ 0.28	1000
P - B Police Officer	Property ID	112	Ethyl Alcohol	ND < 0.14	1000
D - A Detective	Remains ID	97	Ethyl Alcohol	≤ 0.33	1000

TWA = Time Weighted Average
 PEL = Permissible Exposure Limit
 PESH = NYS Public Employee Safety and Health Bureau
 ppm = Parts Per Million
 ND = Not Detected
 < = Less Than
 $\leq$ = Less Than or Equal To

Analytical method is based on a modification on the OSHA 7 method. This analysis looks for 82 common regulated organic solvents. No other solvents were detected.

**New York State Department of Labor
Public Employee Safety & Health Bureau
State Office Campus, Bldg #12, Rm 158
Albany, NY 12240**

**New York City Fire Department
Personal Exposure Monitoring
World Trade Center Site
October 16, 2001**

Employee/ Job Title	Location	Minutes Sampled	Substances Sampled	TWA Exposure over sampling period	PEEL 8-hour TWA - PEL
FDNY - 1 Lieutenant, Division 15, Team 2	Observing debris removal on N. Tower, Camera Detail	335	asbestos	0.081 f/cc ¹ 0.004 f/cc ²	0.1 f/cc
FDNY - 1 Lieutenant, Division 15, Team 2	On rubble pile east of N. Tower, operating hose	175	asbestos	0.019 f/cc ¹ 0.034 f/cc ²	0.1 f/cc
FDNY - 2 Firefighter, Division 15, Team 2	On N. Tower and on rubble pile east of N. Tower, Camera Detail	487	dust iron oxide lead cadmium ..	0.385 mg/m ³ 0.014 mg/m ³ ≤0.0018 mg/m ³ ND	15 mg/m ³ 10 mg/m ³ 0.050 mg/m ³ 0.005 mg/m ³
FDNY - 3 Firefighter, Division 15, Team 2	On N. Tower and on rubble pile east of N. Tower, Camera Detail	485	respirable dust respirable quartz silica % silica	0.104 mg/m ³ ND ≤12	5 mg/M ³ 0.1 mg/M ³ NA
FDNY - 4 Firefighter, Division 15, Team 2	On N. Tower and on rubble pile east of N. Tower, Camera Detail	523	acrolein phosgene formaldehyde acetaldehyde carbon monoxide	ND ND 0.02 ppm ND 3 ppm (TWA) 163 ppm (Peak)	0.1 ppm 0.1 ppm 0.75 ppm 100 ppm 35 ppm 200 ppm ³

FDNY - 5 Firefighter, Division 15, Team 2	On N. Tower and on rubble pile east of N. Tower, Camera Detail	130	nitrogen dioxide	≤ 0.074 ppm.	1 ppm. (STEL)
		503	nitric oxide	0.02 ppm.	25 ppm.
		519	carbon monoxide	5 ppm (TWA) 50 ppm (Peak)	35 ppm 200 ppm ³
FDNY - 6 Firefighter, Division 14, Team 1	West Street side of N. Tower, Camera Detail	609	benzene	0.03 ppm.	1 ppm.
			petroleum distillates	0.08 ppm.	400 ppm.
			isopropyl alcohol	0.23 ppm.	400 ppm.
FDNY - 7 Firefighter, Division 14, Team 1	West Street side of N. Tower, Camera Detail	596	hydrochloric acid	ND	7 mg/m ³ (Ceiling Limit)
			hydrofluoric acid	ND	3 ppm
			nitric acid	0.01 mg/m ³	5 mg/m ³
			phosphoric acid	ND	1 mg/m ³
			sulfuric acid ⁴	0.02 mg/m ³	1 mg/m ³
Bulk #1	Dust/debris adjacent to truck loading area at N. Tower	NA	asbestos-chrysotile	present at < 1 %	NA
			silica	0.7 %	
			lead	0.01 %	
			iron	2.6 %	
			aluminum	0.52 %	
			copper	1.0 %	
			magnesium	0.82 %	
			sulfur	10 %	
			calcium	17 %	
Bulk #2	Insulation-like material on ground near SW corner of S. Tower	NA	asbestos	ND	NA
			silica	≤ 0.3 %	
			lead	ND	
			iron	0.55 %	
			aluminum	3.3 %	
			copper	ND	
			magnesium	2.9 %	
			sulfur	0.46 %	
			calcium	23 %	
Bulk #3	Dust/debris - upper pile at S. Tower	NA	asbestos	ND	NA
			silica	0.6 %	
			lead	0.02 %	
			iron	2.0 %	
			aluminum	0.74 %	
			copper	0.24 %	
			magnesium	0.77 %	
			sulfur	7.8 %	
			calcium	17 %	

fcc = Fibers per Cubic Centimeter
 TWA = Time Weighted Average
 PEAK = Highest Level Seen During Test
 PEL = Permissible Exposure Limit
 PESH = NYS Public Employee Safety and Health Bureau
 ppm = parts per million
 STEL = Short Term Exposure Limit
 mg/m³ = milligrams per cubic meter
 ug/M³ = microgram per cubic meter
 ND = not detected
 NA = not Applicable
 % = Percent
 < = Less Than
 ≤ = Less Than or Equal To
 ** = Metals scan also included; Aluminum, Chromium, Manganese, Molybdenum, Strontium, and Nickel.

Analytical Method for total dust is based on NIOSH 0600

Analytical Method for silica is based on OSHA ID 142 and NIOSH 7500

Analytical Method for metals is based on OSHA ID 125G

¹ = Sample result based on analytical method NIOSH 7400. This method utilizes Phase Contrast Microscopy (PCM) which counts ALL FIBERS longer than 5 microns in length and have a length to width ratio equal to or greater than 3:1.

² = Sample result based on analytical method NIOSH 7402. This method utilizes Transmission Electron Microscopy (TEM) to identify and quantify asbestos fibers present.

³ = The Ceiling Limit for carbon monoxide is to be measured over a 5 minute sample.

⁴ = Results may include soluble non-sulfuric acid sulfur compounds

**New York State Department of Labor
Public Employee Safety & Health Bureau
State Office Campus, Bldg #12, Rm 158
Albany, NY 12240**

**New York City Fire Department
Personal Exposure Monitoring
World Trade Center Site
October 17, 2001**

Employee/ Job Title	Location	Minutes Sampled	Substance Sampled	TWA Exposure over sampling period	PEOSH 2-hour TWA - PEL
FDNY - A Battalion Chief, Division 13	Mid-section, between two Towers, West Command	250	asbestos	0.112 f/cc ⁽¹⁾ <0.005 f/cc ⁽²⁾	0.1 f/cc
FDNY - A Battalion Chief, Division 13	Mid-section, between two Towers, West Command	335	asbestos	0.068 f/cc ⁽¹⁾ 0.004 f/cc ⁽²⁾	0.1 f/cc
FDNY - B Relief Chief, Battalion, Division 17	Church & Dey, East Command	169	asbestos	0.069 f/cc ⁽¹⁾ ⁽²⁾	0.1 f/cc
FDNY - C Firefighter	ATV Driver, East Command	373	asbestos	0.059 f/cc ⁽¹⁾ <0.003 f/cc ⁽²⁾	0.1 f/cc
FDNY - D Firefighter, Division 15, Team 2, TL 153	Mid-section, between two Towers, West Command	585	dust iron oxide lead cadmium --	38.9 mg/m ³ 0.785 mg/m ³ 0.040 mg/m ³ 0.000923 mg/m ³ (0.923 ug/m ³)	15 mg/m ³ 10 ug/m ³ 0.050 mg/m ³ ⁽⁴⁾ 0.005 mg/m ³
FDNY - E Firefighter, Division 15, Team 2	Mid-section, between two Towers, West Command	585	respirable dust respirable quartz silica % silica	1.70 mg/m ³ 0.015 mg/m ³ 0.90 %	5 mg/M ³ 0.1 mg/M ³ NA ⁽⁵⁾

FDNY - F Firefighter, Division 13, Team 2	Mid-section, between two Towers, West Command	562	acrolein	ND	0.1 ppm.
		313	acetaldehyde formaldehyde phosgene	0.003 ppm. ≤ 0.007 ppm. ND	100 ppm. 0.75 ppm. 0.1 ppm.
FDNY - G Firefighter, Division 13, Team 1	Mid-section, between two Towers, West Command	584	carbon monoxide	5 ppm. 49 ppm. (Peak)	35 ppm 200 ppm ⁽⁶⁾
			nitrogen dioxide nitric oxide	≤ 0.05 ppm. ≤ 0.05 ppm.	1 ppm (STEL) 25 ppm.
FDNY - H Firefighter, Division 15, Team 2	Mid-section, between two Towers, West Command	584	petroleum distillates benzene ethyl alcohol	0.019 ppm. 0.015 ppm. 0.046 ppm.	400 ppm. 1 ppm. 1000 ppm.
FDNY - I Firefighter, Division 13, Team 2	Mid-section, between two Towers, West Command	568	hydrochloric acid hydrofluoric acid nitric acid phosphoric acid sulfuric acid	ND ND ND ND 0.48 mg/m ³ ⁽⁷⁾	7 mg/m ³ (Ceiling Limit) 3 ppm. 5 mg/m ³ 1 mg/m ³ 1 mg/m ³
		568	carbon monoxide	4 ppm. 60 ppm. (Peak)	35 ppm 200 ppm ⁽⁶⁾
Bulk # 4	powdery debris from mid-section	NA	asbestos silica lead iron aluminum copper magnesium sulfur calcium	ND 2.1 % 0.07 % 1.1 % 0.70 % 0.21 % 0.62 % 5.2 % 14 %	NA
Bulk # 5 (IL)	from debris pile, Plaza area	NA	asbestos silica lead iron aluminum copper magnesium sulfur calcium	ND 1.9 % 0.01 % 1.1 % 0.94 % 0.03 % 0.81 % 2.0 % 11 %	NA

Bulk # 5 (NL)	coating on 4' x 2" steel beam on rubble pile	NA	asbestos-chrysotile	15 %	NA
			silica	1.0 %	
			lead	<= 0.01 %	
			iron	1.5 %	
			aluminum	2.6 %	
			copper	ND	
			magnesium	5.7 %	
			sulfur	3.4 %	
			calcium	21 %	

TWA = Time Weighted Average

PEL = Permissible Exposure Limit

PESH = NYS Public Employee Safety and Health Bureau

f/cc = Fibers per Cubic Centimeter

ppm = parts per million

mg/m³ = milligrams per cubic meter

ug/m³ = microgram per cubic meter

STEL = Short Term Exposure Limit

Peak = Highest Level Seen During Test

ND = not detected

NA = not Applicable

% = Percent

< = Less Than

<= = Less Than or Equal To

** = Metals scan also included; Aluminum, Chromium, Copper, Iron, Magnesium, Manganese, Molybdenum, and Nickel.

Analytical Method for total dust is based on NIOSH 0600

Analytical Method for silica is based on OSHA ID142 and NIOSH 7500

Analytical Method for metals is based on OSHA ID 125G

¹ = Sample result based on analytical method NIOSH 7400. This method utilizes Phase Contrast Microscopy (PCM) which counts ALL FIBERS longer than 5 microns in length and have a length to width ratio equal to or greater than 3:1.

² = Sample result based on analytical method NIOSH 7402. This method utilizes Transmission Electron Microscopy (TEM) to identify and quantify asbestos fibers present.

³ = Cassette sample was overloaded for the purpose of TEM analysis

⁴ = The Action Level for lead is 0.030 mg/m³

⁵ = silica containing materials are generally considered as silica dust when the % silica is > 1%.

⁶ = The Ceiling Limit for carbon monoxide is to be measured over a 5 minute sample.

⁷ = Results may include soluble non-sulfuric acid sulfate compounds

**New York State Department of Labor
Public Employee Safety & Health Bureau
State Office Campus, Bldg #12, Rm 158
Albany, NY 12240**

**New York City Police Department
Emergency Services Units
Personal Exposure Monitoring
World Trade Center Site
October 18, 2001**

Employee ID #	Location	Sample #	Substance Monitored	NY State Department of Labor Results	NY State Department of Labor FSL
CO - 1 Captain, NYC Dept. of Corrections - ESU	Search of debris - east side of N. Tower	277	dust (1) iron oxide lead cadmium	0.218 mg/m ³ 0.013 mg/m ³ ND ND	15 mg/m ³ 10 mg/m ³ 0.050 mg/m ³ (2) 0.005 mg/m ³
CO - 2 NYC Dept. of Corrections - ESU	Search of debris - east side of N. Tower	277	respirable dust respirable quartz silica % silica	ND ND ≤ 19 %	5 mg/M ³ 0.1 mg/M ³ NA
NYPD - 1 Sergeant, NYC Police Dept. - ESU	Search of debris - east side of N. Tower, bucket brigade S. Tower	331	asbestos	(2)	0.1 f/cc
NYPD - 2 NYC Police Dept. - ESU	Search of debris - east side of N. Tower, bucket brigade S. Tower	187	acrolein acetaldehyde formaldehyde phosgene	ND 0.021 ppm 0.061 ppm ND	0.1 ppm 100 ppm 0.75 ppm 0.1 ppm
PAP - 1 Port Authority Police Dept.	Search of debris - east side of N. Tower, bucket brigade S. Tower	365	acrolein acetaldehyde formaldehyde phosgene	ND ≤ 0.004 ppm 0.017 ppm ND	0.1 ppm 100 ppm 0.75 ppm 0.1 ppm

CO - 3 NYC Dept. of Corrections - ESU	Search of debris - east side of N. Tower	260	nitrogen dioxide	<= 0.05 ppm.	1 ppm. (STEL)
			nitric oxide	0.08 ppm.	25 ppm.
			carbon monoxide	< 1 ppm. 10 ppm. (Peak)	35 ppm 200 ppm ^(*)
CO - 2 NYC Dept. of Corrections - ESU	Search of debris - east side of N. Tower	274	petroleum distillates	0.013 ppm.	400 ppm.
			benzene	0.011 ppm.	1 ppm.
			ethyl alcohol	0.085 ppm.	1000 ppm.
CO - 4 NYC Dept. of Corrections - ESU	Search of debris - east side of N. Tower	272	hydrochloric acid	ND	7 mg/m ³ (Ceiling Limit)
			hydrofluoric acid	ND	3 ppm.
			nitric acid	ND	5 mg/m ³
			phosphoric acid	ND	1 mg/m ³
			sulfuric acid	0.04 mg/m ³ ^(*)	1 mg/m ³
		568	carbon monoxide	< 1 ppm. 12 ppm. (Peak)	35 ppm 200 ppm ^(*)

TWA = Time Weighted Average
 PEL = Permissible Exposure Limit
 PESH = NYS Public Employee Safety and Health Bureau
 f/cc = Fibers per Cubic Centimeter
 ppm = parts per million
 mg/m³ = milligrams per cubic meter
 STEL = Short Term Exposure Limit
 Peak = Highest Level Seen During Test
 ND = not detected
 NA = not Applicable
 % = Percent
 < = Less Than
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Analytical Method for total dust is based on NIOSH 0600
 Analytical Method for silica is based on OSHA ID142 and NIOSH 7500
 Analytical Method for metals is based on OSHA ID 125G

¹ - Metals scan also included; aluminum, chromium, copper, magnesium, manganese, molybdenum, nickel, and zinc.

² = The Action Level for lead is 0.030 mg/m³

³ = Cassette sample was overloaded with particulate material for the purpose of PCM or TEM analysis

⁴ = The Ceiling Limit for carbon monoxide is to be measured over a 5 minute sample.

⁵ = Results may include soluble non-sulfuric acid sulfate salts