

**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	Substance Sampled	TWA Exposure over sampling period	PESH 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.
FDNY - 6 Firefighter, Division 14, Team 1	West Street side of N. Tower, Camera Detail	609	carbon monoxide	5 ppm (TWA) 50 ppm (Peak)	35 ppm 200 ppm ³
			benzene	0.03 ppm.	1 ppm.
FDNY - 7 Firefighter, Division 14, Team 1	West Street side of N. Tower, Camera Detail	596	petroleum distillates	0.08 ppm.	400 ppm.
			isopropyl alcohol	0.23 ppm.	400 ppm.
Bulk #1	Dust/debris adjacent to truck loading area at N. Tower	NA	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 #2	insulation-like material on ground near SW corner of S. 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 %	
Bulk #3	Dust/debris - upper pile at S. Tower	NA	calcium	17 %	NA
			asbestos	ND	
			silica	0.6 %	
			lead	0.02 %	
			iron	2.0 %	
			aluminum	0.74 %	
			copper	0.24 %	
			magnesium	0.77 %	
Bulk #3	Dust/debris - upper pile at S. Tower	NA	sulfur	7.8 %	NA
			calcium	17 %	

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
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 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 = 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