Ambient and Indoor Sampling for Public Health Evaluations of Residential Areas Near World Trade Center, New York, New York

Results for Asbestos in Air and Settled Dust and Fibrous Glass in Settled Dust

		Asbestos in Dust	Asbestos in Dust	Fibers in Air	Asbestos in Air	Fibrous Glass in Dust	Actions Taken
Residential Buildings in Lower Manhattan							
	Building #	**1**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
1	Outside	ND	NA	0.001		22	
1	Common	Not Sampled	Not Sampled	<.001		Not Sampled	
1	Res 1	ND	NA	0.006	<.001	20	
1	Res 2	ND	NA	<.001		20	
							NAN
	Building #	**2**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
2	Outside	<1	1.2	0.003		28	
2	Common	ND	NA	0.005	<.001	27	
2	Res 1	ND	NA	<.001		25	
2	Res 2	ND	NA	0.002		20	
2	Window Sill	<1	<1	Not Sampled		Not Sampled	
2	Outside X	1.3	NA	Not Sampled		25	
							DEP Inspected And Action Abatement
	Building #	**3**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
3	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
3	Common	Not Sampled	Not Sampled	<.001		Not Sampled	
3	Res 1	Not Sampled	Not Sampled	<.001		Not Sampled	
3	Res 2	Not Sampled	Not Sampled	<.001		Not Sampled	
3	Res 2 X	Not Sampled	Not Sampled	<.001		Not Sampled	
							NAN
	Building #	**4**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
4	Outside	Not Sampled	Not Sampled	0.001		Not Sampled	
4	Common	ND	<1	0.001		15	
4	Res 1	ND	<1	<.001		2	
4	Res 2	ND	<1	0.001		5	
4	Outside X	Not Sampled	Not Sampled	<.001		Not Sampled	
4	Common X	Not Sampled	Not Sampled	0.001		Not Sampled	
							NAN
	Building #	**5**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
5	Outside	3.4	NA	0.002		25	

5	Common	Not Sampled	Not Sampled	0.002		Not Sampled	
5	Res 1	<1	<1	0.002		10	
5	Res 2	ND	<1	<.001		20	
5	Outside X	Not Sampled	Not Sampled	0.003		Not Sampled	
							DEP Inspected, NAN
	Building #	**6**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
6	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
6	Common	ND	<1	<.001		10	
6	Res 1	ND	ND	<.001		15	
6	Res 2	ND	ND	<.001		15	
6	Res 2 X	Not Sampled	Not Sampled	0.002		Not Sampled	
							NAN
	Building #	**7**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
7	Outside	ND	1.7	<.001		35	
7	Common	ND	ND	0.001		5	
7	Res 1	ND	ND	0.001		ND	
7	Res 2	ND	ND	<.001		5	
7	W/Sill (R2)	ND	ND	Not Sampled		40	
							DEP Inspected
							SAMPLE TAKEN NO ACM
	Building #	**8**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
8	Outside	Not Sampled	Not Sampled	0.001		Not Sampled	
8	Common	ND	ND	0.002		ND	
8	Res 1	ND	ND	0.003		ND	
8	Res 2	ND	ND	0.002		ND	
8	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
8	Outside X2	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**9**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
9	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
9	Common	ND	ND	0.001		ND	
9	Res 1	ND	<1	0.001		ND	
9	Res 2	ND	<1	0.003		ND	
9	Common X	Not Sampled	Not Sampled	0.001		Not Sampled	
							NAN
	Building #	**10**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
10	Outside	ND	ND	0.001		ND	
10	Common	ND	1.5	0.002		20	
10	Res 1	ND	ND	0.001		15	
10	Res 2	ND	ND	0.001		10	
10	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
10	Common B	TEM reanalysis	<1	Not Sampled		Not Sampled	
							DOH & DEP inspected NAN

	Building #	**11**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
11	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
11	Common	ND	ND	<.001		ND	
11	Res 1	ND	<1	<.001		ND	
11	Res 2	ND	1.5	<.001		ND	
11	Common X	Not Sampled	~~Not~~ Sampled	<.001		Not Sampled	
		Wood bark - nothing observed					???????
	Building #	**12**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
12	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
12	Common	ND	ND	<.001		ND	
12	Res 1	ND	ND	0.001		5	
12	Res 2	ND	ND	<.001		5	
12	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**13**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
13	Outside	Not Sampled	Not Sampled	0.001		Not Sampled	
13	Common	ND	ND	0.001		ND	
13	Res 1	ND	ND	0.003		10	
13	Res 2	ND	ND	0.002		ND	
13	Common X1	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
13	Common X2	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
13	Res 1 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**14**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
14	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
14	Common	ND	ND	0.003		5	
14	Res 1	ND	ND	0.001		ND	
14	Res 2	ND	ND	<.001		ND	
14	Res 1 X	Not Sampled	Not Sampled	<.001		Not Sampled	
14	Common X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
14	Res 2 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
14	Res 2 X2	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**15**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
15	Outside	ND	1.9	<.001		72	
15	Common	ND	ND	0.001		ND	
15	Res 1	ND	<1	<.001		ND	
15	Res 2	ND	ND	<.001		5	
15	Res 1 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							DEP inspected
							ACM Abatement
	Building #	**16**					

Explain

		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
16	Outside	ND	ND	<.001		ND	
16	Common	ND	ND	<.001		ND	
16	Res 1	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
16	Res 2	ND	ND	<.001		ND	
16	Res 2 X	ND	NA	Not Sampled		ND	
16	R 2 Filter	ND	NA	Not Sampled		ND	
16	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**17**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
17	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
17	Common	ND	ND	<.001		ND	
17	Res 1	ND	ND	<.001		ND	
17	Res 2	ND	ND	<.001		ND	
17	Res 1 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**18**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
18	Outside	ND	ND	<.001		30	
18	Common	ND	ND	<.001		ND	
18	Res 1	ND	ND	0.002		30	
18	Res 2	ND	ND	0.002		35	
18	Res1 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
18	Common X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
18	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**19**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
19	Outside	ND	NA	<.001		Not Sampled	
19	Common	ND	ND	overloaded	<.006	ND	
19	Res 1	ND	ND	<.001		ND	
19	Res 2	ND	ND	<.001		ND	
							NAN
	Building #	**20**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
20	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
20	Common	ND	ND	<.001		ND	
20	Res 1	ND	ND	<.001		ND	
20	Res 2	ND	ND	<.001		ND	
20	Outside X	Not Sampled	Not Sampled	<.001		Not Sampled	
20	Res 1 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**21**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
21	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
21	Common	ND	ND	<.001		ND	

21	Res 1	ND	ND	<.001		ND	
21	Res 2	ND	ND	<.001		ND	
21	Common X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**22**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
22	Outside	ND	ND	<.001		ND	
22	Common	ND	ND	0.001		ND	
22	Res 1	ND	ND	<.001		ND	
22	Res 2	ND	ND	<.001		ND	
22	Res 2 X	Not Sampled	Not Sampled	<.001		Not Sampled	
22	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
22	Res1 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**23**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
23	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
23	Common	ND	ND	<.001		ND	
23	Res 1	ND	ND	<.001		ND	
23	Res 2	ND	ND	<.001		ND	
23	Res2 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**24**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
24	Outside	ND	ND	0.002		55	
24	Common	ND	<1	0.001		5	
24	Res 1	ND	ND	0.001		ND	
24	Res 2	ND	ND	0.005	<.001	10	
24	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
24	Common X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
24	Res 2 X	Not Sampled	Not Sampled	0.005	<.001	Not Sampled	
							NAN
	Building #	**25**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
25	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
25	Common	ND	ND	<.001		5	
25	Res 1	ND	ND	<.001		5	
25	Res 2	ND	ND	0.001		ND	
25	Common X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
25	Res 2 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							no letter
	Building #	**26**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
26	Outside	Not Sampled	Not Sampled	0.001		Not Sampled	
26	Common	ND	ND	0.004	<.001	5	
26	Res 1	ND	ND	0.001		ND	
26	Res 2	ND	ND	0.012	<.001	ND	

26	Common X	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	
26	Res 2 X	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	
							NAN
	Building #	**27**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
27	Outside	ND	<1	<.001		15	
27	Common	ND	<1	<.001		10	
27	Res 1	ND	<1	<.001		10	
27	Res 2	ND	ND	<.001		10	
27	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**28**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
28	Outside	ND	ND	<.001		15	
28	Common	ND	ND	0.001		10	
28	Res 1	ND	Insufficient Material	<.001		ND	
28	Res 2	ND	ND	0.002		ND	
28	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
28	Res 1 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
							NAN
	Building #	**29**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
29	Outside	ND	ND	<.001		ND	
29	Common	ND	ND	<.001		ND	
29	Res 1	ND	ND	<.001		ND	
29	Res 2	ND	ND	<.001		ND	
							NAN
	Building #	**30**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
30	Outside	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
30	Common	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
30	Res 1	ND	ND	<.001		ND	
30	Res 2	ND	ND	<.001		ND	
							NAN
Comparison Buildings Above 59th Street							
	Building #	**31**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
31	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
31	Common	ND	ND	<.001		ND	
31	Res 1	ND	ND	<.001		ND	
31	Res 2	ND	ND	<.001		ND	
31	Outside X	Not Sampled	Not Sampled	0.001		Not Sampled	
31	Common X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
	Building #	**32**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	

32	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
32	Common	ND	ND	0.002		ND	
32	Res 1	ND	ND	<.001		ND	
32	Res 2	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
32	Res 1 X	Not Sampled	Not Sampled	0.001		Not Sampled	
32	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
32	Common X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
	Building #	**33**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
33	Outside	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
33	Common	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
33	Res 1	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
33	Res 2	ND	ND	<.001		ND	
33	Res 2 X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
	Building #	**34**					
		PLM [%]	TEM [%]	PCM [f/cc]	TEM [f/cc]	FG PLM [%]	
34	Outside	Not Sampled	Not Sampled	<.001		Not Sampled	
34	Common	ND	ND	<.001		ND	
34	Res 1	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
34	Res 2	ND	Insufficient Material	0.002		ND	
34	Res 2 X	Not Sampled	Not Sampled	0.003		Not Sampled	
34	Common X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
34	Outside X	Not Sampled	Not Sampled	Not Sampled		Not Sampled	
Notes							
	Definitions of Abbreviations:						
	# is number						
	PLM is Polarized Light Microscopy						
	% is percent of volume						
	TEM is Transmission Electron Microscopy						
	PCM is Phased Contrast Microscopy						
	f/cc is fibers per cubic centimeter						
	FG is fibrous glass						
	Res 1 is Residential Unit 1						
	Res 2 is Residenital Unit 2						
	X is a duplicate sample						
	ND is none detect						
	NA is not analysised						
	Samples were not taken in some locations because:						
		Surface area covered for asbestos removal,					
		No dust available to collect,					
		Unknow; reason was not specified on survey or chain of custody form, and					
		No consent from buiding management ot do monitoring in outdoor or common areas.					
	When dectected only Chrysotile asbestos was found.						

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	TEM analysis was conducted on air samples whenever the PCM results were above the levels found				
	in the comparison units (0.003 f/cc).				