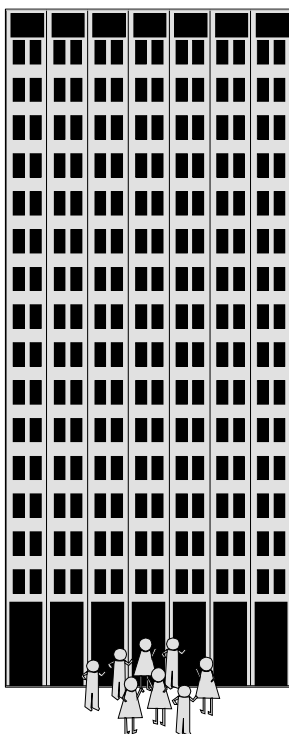




BINGHAMTON STATE OFFICE BUILDING

Post-occupancy Environmental Sampling Final Round



October 2002

BSOBFinalRpt.DOC

New York State Department of Health

Center for Environmental Health Flanigan Square 547 River Street Troy, New York 12180-2216

Abstract

After extensive decontamination, testing and reconstruction, the Binghamton State Office Building (BSOB) was reopened late in 1994. The building had closed in February 1981 after an intense transformer fire spread an oily soot contaminated with polychlorinated biphenyls (PCBs), polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) throughout the 18-story structure. Pre-occupancy sampling in July 1994 found that PCB and PCDD/F levels in air and on surfaces in workspaces were considerably less than the guidelines set for reoccupancy. In fact, they were similar to levels found in buildings that have never experienced a transformer fire.

Six rounds of full sampling and a final round of sampling only tops of in-ceiling light fixtures were scheduled post-occupancy. The first five rounds of sampling found that PCB and PCDD/F levels in the office spaces in the building remain considerably less than the guidelines. Average PCB and PCDD/F levels in air have been 7% or less of the guidelines, and PCB and PCDD/F levels on surfaces were less than one percent of the guidelines.

The tops of in-ceiling light fixtures have also been tested to assess the adequacy of the cleaning schedule. Average PCDD/F levels from the last three rounds (Rounds 4-6) were 13% of the surface guideline, about half the levels found immediately before reoccupancy.

This report summarizes results from the seventh and final round of sampling and only includes wipe samples from the tops of light fixtures, as planned. PCB levels averaged 0.75 micrograms per square meter, considerably less than the guidelines for office surfaces (100 micrograms per square meter).

PCDD/F levels on the tops of in-ceiling light fixtures averaged 1.1 nanograms per square meter, less than any previous measurements. Since reoccupancy, surfaces above the ceiling were cleaned twice before this round of sampling, once before the March 1997 sampling and again before the sixth round of sampling in August 1998. Comparing the sample results from light fixtures before and after the cleaning indicates that the cleaning was effective at lowering the PCDD/F levels. Since reoccupancy, average PCDD/F levels on light fixtures have declined steadily by about one-half every 20-22 months.

This was the last sampling of the building. Because PCB and PCDD/F levels have remained very low throughout the building and the PCDD/F levels on light fixtures have exhibited a steady decline since 1994, additional testing is unnecessary and the testing program will be discontinued as planned.

Binghamton State Office Building: Post-occupancy Environmental Sampling Final Round

Background

On February 5, 1981 an intense electrical fire in the basement mechanical room of the Binghamton State Office Building (BSOB) contaminated the entire building with soot containing high levels of polychlorinated biphenyls (PCBs), polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). Several documents summarize the extensive decontamination effort in the building (NYS DOH, 1994a and 1994b) and the extensive educational outreach with employees scheduled to move into the building (conducted during the summer of 1994, NYS DOH, 1994c). During the decontamination process, New York State adopted guidelines for PCBs and PCDD/Fs with the assistance of a panel of national experts (see box below).

Environmental sampling was performed throughout the building in July 1994, prior to opening the building (NYS DOH, 1994a). PCB and PCDD/F levels in air and on surfaces in workspaces were considerably less than the guidelines for PCBs and PCDD/Fs. However, two of five samples from the tops of recessed light fixtures in the ceiling exceeded the PCDD/F guideline for office work surfaces of 25 nanograms per square meter (ng/m²). In August and September 1994, surfaces in the office ceilings were cleaned and retested (NYS DOH, 1994b). Building reoccupancy began in October 1994 and was completed by mid-December.

In January 1995, a protocol was prepared describing the sampling proposed to be carried out for the next two or three years in the building (NYS DOH, 1995a). Environmental sampling (air and wipe sampling) was proposed to determine that guidelines continue to be met. Additionally, sampling of light fixture surfaces was proposed to evaluate potential changes in PCB and PCDD/F levels on these surfaces and to evaluate the need for additional cleaning above the ceiling.

In September 1996, representatives of the labor unions, the Governor's Office of Employee

Relations, the BSOB Safety and Health Committee, Office of General Services (OGS) and the Department of Health met to discuss future sampling in the building. In November, an agreement was signed specifying full testing in the summer of 1997 (the fifth round of sampling) and again in the summer of 1998. A seventh round of testing light fixtures only was also scheduled for the summer of 1999. In addition, OGS agreed to clean above the ceiling tiles before the final round of sampling in 1999.

The first six rounds of post-occupancy samples were collected in February, June, December 1995, June 1996, June 1997 and August 1998 (NYS DOH, 1995b, 1995c, 1996a, 1996c, 1997 and 1999). This report summarizes results from the seventh and final round of post-occupancy sampling in September 1999.

Figure 1
BINGHAMTON STATE OFFICE BUILDING
GUIDELINES
(established by NYS DOH and approved by
the BSOB Expert Panel)

AIR

PCBs 1 microgram per cubic meter (mcg/m³)
PCDD/Fs 10 picograms per cubic meter (pg/m³)
(for office workers)

SURFACES

PCBs 100 microgram per square meter (mcg/m²)
PCDD/Fs 25 nanograms per square meter (ng/m²)

PCDD/F levels are as 2,3,7,8-TCDD (dioxin)
equivalents.

A microgram is one millionth of a gram.
A nanogram is one billionth of a gram.
A picogram is one trillionth of a gram.

Sampling and Analysis Procedures

Appendix A provides details about the sample locations, conditions and analytical methods. The methods and procedures are summarized here.

Surface Wipe Sampling

On September 29, 1999, the tops of nine recessed, in-ceiling light fixtures were sampled using hexane wet wipes with gauze. PCB Aroclor detection limits were 0.20 micrograms per square meter (mcg/m²). Detection limits for each of the PCDD/F congeners ranged 0.007-0.73 nanograms per square meter (ng/m²).

Sample analysis

Wipe samples were analyzed by the NYS DOH laboratories (Wadsworth Center for Laboratories and Research) following the protocols developed for the Binghamton State Office Building. Congener-specific PCDD/F data for each of the wipe samples can be found in Appendix B.

Results and Discussion

PCB and PCDD/F levels on the tops of light fixtures in the ceiling were less than the guidelines (see box on the previous page for the guidelines). PCBs ranged from 0.38 to 1.9 mcg/m², averaging 0.75 mcg/m². PCDD/F levels ranged from 0.39 ng/m² to 2.4 ng/m², averaging 1.1 ng/m² (Table 1).

In July 1994, PCDD/F levels averaged 23 ng/m² on light fixture tops. Because two samples exceeded the 25 ng/m² guideline and average levels were close to the guideline, these and other surfaces above the ceiling were cleaned (NYS DOH, 1994a). In August 1994 after cleaning, six samples averaged 2.2 ng/m² (NYS DOH, 1994b). These samples were taken from light fixtures that had been vacuumed with high efficiency particulate air (HEPA) vacuums and damp wiped in order to evaluate the efficacy of cleaning. These levels probably represent "best-case" estimates of the effect of cleaning the light fixtures, as the samples were taken immediately after cleaning and the cleaners were present when the light fixtures were sampled and knew they were being tested.

Table 1. Concentration of PCBs and PCDD/Fs on the tops of light fixtures in the Binghamton State Office Building.

Floor	PCBs (mcg/m ²)	PCDD/Fs ¹ (ng/m ²)	
		B-TEQs	I-TEQs
16th	1.2	2.4	2.6
15th	0.76	0.93	0.85
12th	0.60	0.79	0.80
11th	1.9	2.1	1.7
10th	0.42	0.82	0.73
8th	0.42	0.69	0.57
5th	0.38	0.89	0.85
3rd	0.42	0.39	0.34
1st	0.68	0.55	0.47
Average	0.75	1.1	0.99
Glove Blank	<0.20	<0.23	<0.24

¹Concentrations are 2,3,7,8-TCDD equivalents calculated using toxicity equivalence factors (TEFs) derived by Eadon *et al.*, 1986 (B-TEQs) and TEFs derived by NATO/CCMS, 1988a and 1988b and US EPA, 1989 (I-TEQs). Non-detected values were assumed to be one-half the detection limit when calculating the TEQs.

In late August and September 1994, the surfaces above the hanging ceiling were HEPA vacuumed. Soon after that work was completed, five surface samples were taken from above the ceiling and PCDD/Fs averaged 6.2 ng/m². Only one of these samples was from the top of a light fixture. In February 1995, soon after the building was reoccupied, PCDD/Fs on the tops of light fixtures averaged 10 ng/m² (Table 2).

Since February 1995, PCDD/F levels on the tops of light fixtures have generally declined (Figure 1). In this last round of samples, PCDD/F levels were ten-fold lower than in February 1995. Overall, the concentration of PCDD/Fs on the tops of light fixtures declined by about one-half every 20-22 months after reoccupancy.

Surfaces above the ceiling were cleaned twice after the building was reoccupied. The first cleaning began in December 1995 and was completed at the time of sampling in June 1997. The second cleaning occurred between June 1997 and July 1998. PCDD/F levels were less on light fixtures from floors where surfaces above the ceiling had been cleaned than on floors

Table 2. Comparison of PCDD/Fs levels on the tops of light fixtures and other surfaces above the ceiling in the Binghamton State Office Building since July 1994.

Date	PCBs (mcg/m ²)	PCDD/Fs ¹ (ng/m ²)	
		B-TEQs	I-TEQs
July 1994	2.9(4)	23(5)	21(5)
August 1994 ²	-	2.2(6)	1.9(6)
September 1994 ³	-	6.2(5)	4.6(5)
February 1995	1.4(6)	10(6)	9.4(6)
June 1995	0.67(8)	7.1(8)	6.4(8)
December 1995	0.70(7)	5.9(8)	5.5(8)
June 1996	1.6(9)	3.8(9)	3.5(9)
June 1997	1.4(9)	2.5(9)	2.5(9)
August 1998	0.31(9)	3.4(9)	2.9(9)
September 1999	0.75(9)	1.1(9)	0.99(9)

Numbers in parentheses are numbers of samples.

¹Concentrations are 2,3,7,8-TCDD equivalents calculated using toxicity equivalence factors (TEFs) derived by Eadon *et al.*, 1986 (B-TEQs) and TEFs derived by NATO/CCMS, 1988a and 1988b and US_EPA, 1989 (I-TEQs). Non-detected values were assumed to be one-half the detection limit when calculating the TEQs.

²Samples from light fixtures immediately after cleaning.

³Four of these samples were from the tops of ducts and acoustic batting above the ceiling.

where they had not been cleaned (NYS DOH 1997 and NYS DOH, 1999).

PCB levels on the tops of light fixtures have fluctuated since February 1995 (Table 2). Average levels have ranged from 0.31 to 1.6 mcg/m² with levels in this final round of sampling at 0.75 mcg/m². That PCB levels have not changed much is not surprising, as these PCB levels are comparable to buildings that have never experienced a fire or PCB spill. In fact these levels are only slightly greater than what is found on surfaces in offices. Average PCB levels on office surfaces ranged 0.29 to 0.50 mcg/m² from February 1995 through August 1998).

Summary and Conclusions

When last sampled in August 1998, PCB and PCDD/F levels in air and on surface wipe samples throughout the building remained well below cleanup guidelines. Moreover, the levels of these contaminants in 1998 were less than comparable areas sampled when the building was reopening in late 1994 (NYS DOH, 1999). These levels are very close to levels that have been found in buildings that have never experienced a fire (NYS DOH, 1989).

Since reoccupancy, the PCDD/F levels have been consistently greater on the tops of light fixtures and other surfaces above the ceiling than

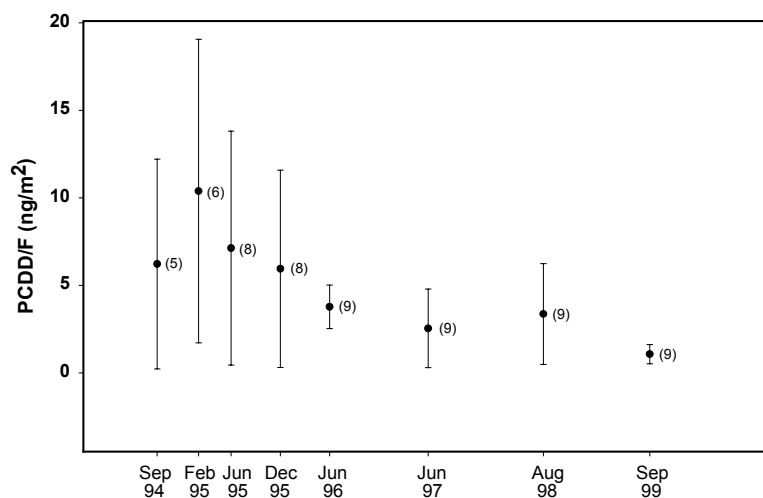


Figure 1. Average PCDD/F levels on the tops of light fixtures since September 1994. Bars are the 95% confidence interval for the means. The numbers in parentheses are the number of samples for each date.

on office furniture. In each of the first three rounds of sampling during 1995, one sample from the top of light fixtures was very close to the PCDD/F surface guideline of 25 ng/m². In the June 1996 sampling event, a sample from the roof above the plaza entrance on the second floor was 18 ng/m². None of these levels posed an exposure concern for people in the building for the following reasons. The guidelines are based on potential exposure of office workers to PCDD/Fs on surfaces contacted all day for 250 days per year for 30 years. The surfaces above the ceiling and on the roof of the plaza entrance are not likely to be contacted by office workers in other than a casual and infrequent manner. For workers who have cleaned the surfaces above the ceiling, potential PCDD/F exposures were evaluated and found to be minimal (NYS DOH, 1996b). Custodial workers have been trained and provided with gloves and dust masks if they wish to use them.

In this final round of sampling, PCDD/F levels in individual samples on the tops of light fixtures did not exceed 2.4 ng/m², and on average levels have continued to decline steadily since 1995.

Because the PCB and PCDD/F levels have remained very low and the PCDD/F levels on light fixtures have exhibited a steady decline, additional testing is unnecessary and the testing program will be discontinued as planned.

References

- Eadon, G, L Kaminsky, J Silkworth, K Aldous, D Hilker, P O'Keefe, R Smith, J Gierthy, J Hawley, N Kim, and A DeCaprio. 1986. Calculation of 2,3,7,8-TCDD equivalent concentrations of complex environmental contaminant mixtures. *Environ. Health Persp.* 70:221-227.
- NATO/CCMS (North Atlantic Treaty Organization, Committee on the Challenges of Modern Society). 1988a. International toxicity equivalency factor (I-TEF) method of risk assessment for complex mixtures of dioxins and related compounds. Report No. 176.
- NATO/CCMS (North Atlantic Treaty Organization, Committee on the Challenges of Modern Society). 1988b. Scientific basis for the development of international toxicity equivalency factor (I-TEF) method of risk assessment for complex mixtures of dioxins and related compounds. Report No. 178.
- New York State Department of Health (NYS DOH). March 1988. Binghamton State Office Building: Results of Air Testing Associated With Restoring Normal HVAC Operation to the Lower Zone. Albany, New York.
- NYS DOH (New York State Department of Health). June 1989a. Comparison of PCBs and PCDD/PCDFs in the Air and on Surfaces of the Binghamton State Office Building and Utica State Office Building. Albany, New York.
- New York State Department of Health (NYS DOH). Aug 1994(a). Binghamton State Office Building: Post-Cleaning Certification. Albany, New York.
- New York State Department of Health (NYS DOH). Oct 1994(b). Binghamton State Office Building: PCDD/Fs on Ceiling Light Fixtures. Albany, New York.
- New York State Department of Health (NYS DOH). 1994(c). Binghamton State Office Building Re-Opening News. Numbers 1-5.
- New York State Department of Health (NYS DOH). Jan 1995(a). Protocol for Post-Occupancy Environmental Sampling in the Binghamton State Office Building. Albany, New York.
- New York State Department of Health (NYS DOH). March 1995(b). Binghamton State Office Building: Post-Occupancy Environmental Sampling - Round 1. Albany, New York.
- New York State Department of Health (NYS DOH). August 1995(c). Binghamton State Office Building: Post-Occupancy Environmental Sampling - Round 2. Albany, New York.
- New York State Department of Health (NYS DOH). March 1996a. Binghamton State Office

Building: Post-Occupancy Environmental Sampling - Round 3. Albany, New York.

New York State Department of Health (NYS DOH). March 1996b. Binghamton State Office Building: Potential Worker Exposure to PCDD/Fs During Cleaning Above the Ceiling. Albany, New York.

New York State Department of Health (NYS DOH). March 1996c. Binghamton State Office Building: Post-Occupancy Environmental Sampling Round 4. Albany, New York.

New York State Department of Health (NYS DOH). October 1997. Binghamton State Office Building: Post-Occupancy Environmental Sampling Round 5. Albany, New York.

New York State Department of Health (NYS DOH). June 1999. Binghamton State Office Building: Post-Occupancy Environmental Sampling -Round 6. Albany, New York.

US EPA (US Environmental Protection Agency). March 1989. 1989 Update to the Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs). Washington, DC. EPA/625/3-89/016.

Acknowledgements

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Joseph Laughney, Building Manager, and his staff provided logistical support which facilitated the sampling effort.

Members of the Binghamton State Office Building Health and Safety Committee helped identify locations in the offices for sampling and provided constructive criticism on this report.

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Appendix A. Description of Sampling and Analysis Methods

Sampling conditions

After normal working hours on September 29, 1999, samples were collected on the tops of light fixtures at the following locations:

<u>Floor</u>	<u>Location</u>
16 th	Room 1607
15 th	Room 1501
12 th	1204
11 th	1106
10 th	1001
8 th	806
5 th	506
3 rd	305
1 st	Former DMV office

At each location two samples were collected, one for PCB analysis and the other for PCDD/F analysis. Thus, a total of 18 wipe samples were collected.

Wipe samples

Surfaces were wiped with 3 in x 3 in (7.5 cm x 7.5 cm) gauze pads saturated with hexane. The pads had been Soxhlet extracted with hexane in the laboratory and brought to the sampling site in bottles with about 10 mL hexane per pad in the bottle (1 pad per bottle for PCB samples and 4 pads/bottle for PCDD/F samples).

An area of about 0.25 m² was wiped for PCB analysis. Four such samples were pooled for PCDD/F analysis. The area that was sampled was measured to provide approximately 0.25 m².

Sample Analysis

The PCB and PCDD/F wipe samples were analyzed at the NYS Department of Health Wadsworth Center for Laboratories and Research (WCL&R) following the protocols developed for air samples from the Binghamton State Office Building in December 1988 (NYS DOH, 1988). The PCB wipe samples were Soxhlet extracted, the extract was concentrated and analysis performed on a high-resolution gas chromatograph with a DB 608 capillary (30M, 0.32 mm ID, 0.5F film thickness) column. For PCDD/Fs, the four gauze pads were spiked with a ¹³C-labelled CDD and CDF mixture, Soxhlet extracted with toluene for 16 hours, and cleaned up on an acidic alumina column. All Cl₄ through Cl₈ PCDD/Fs were quantified in the extract by high-resolution capillary gas chromatography/low-resolution mass spectrometry using a DB5-MS column to provide isomer-specific 2,3,7,8-TCDD/F quantification.

Quantification of TEQs

PCDD/F concentrations were calculated as 2378-TCDD equivalents (TEQs) using toxicity equivalence factors (BSOB-TEFs) derived from Eadon *et al.*, 1986. Calculations using TEFs (I-TEFs) developed by an international committee (NATO/CCMS, 1988a and 1988b) and adopted by the US EPA (US EPA, 1989) were also made. Non-detected values were assumed to be one-half the detection limit when calculating TEQs.

Appendix B. Congener-specific PCDD/F Data for Each Sample

Values preceded by a < (e.g. <0.62) mean that the congener was not detected (ND) and the value is the detection limit. 2378-TCDD equivalents (TEQs) were calculated using toxicity equivalence factors derived by Eadon *et al.*, 1986 (B-TEFs) and by the US Environmental Protection Agency, 1989 (I-TEFs). Where congeners were not detected, TEQs were calculated in three ways: assuming the congener concentration was one-half the detection limit ($\frac{1}{2}$ DL), 0 and the detection limit (DL).

Table B-1. Concentration of PCDD/F congeners and calculated TEQs for air samples collected on August 19, 1998.

Congener	Sample Number				
	9903021	9903022	9903023	9903024	9903025
Units	(ng/m ²)	(ng/m ²)	(ng/m ²)	(ng/m ²)	(ng/m ²)
2378-TCDD	<0.022	<0.008	<0.017	<0.31	<0.016
Total TCDD	<0.022	<0.008	<0.017	<0.31	<0.016
12378-PeCDD	<0.019	<0.007	<0.016	<0.36	<0.017
Total PeCDD	<0.019	<0.007	<0.016	<0.36	<0.017
123478-HxCDD	<0.036	<0.013	0.018	<0.68	0.016
123678-HxCDD	<0.032	<0.011	0.015	<0.62	0.016
123789-HxCDD	<0.034	<0.012	0.013	<0.60	0.016
Total HxCDD	<0.032	<0.011	0.16	<0.62	0.12
1234678-HpCDD	0.21	0.089	0.21	<0.73	0.20
Total HpCDD	0.40	0.15	0.38	<0.73	0.39
OCDD	0.63	0.19	0.53	1.9	0.57
2378-TCDF	0.42	0.28	0.62	0.32	0.59
Total TCDF	2.0	1.5	3.7	1.6	3.5
12378-PeCDF	0.77	0.55	1.2	0.49	1.1
23478-PeCDF	0.34	0.28	0.70	<0.19	0.61
Total PeCDF	3.4	2.9	6.5	2.1	6.2
123478-HxCDF	1.0	0.77	1.9	0.54	1.6
123678-HxCDF	0.49	0.35	0.89	0.24	0.74
123789-HxCDF	0.088	0.079	0.19	<0.34	0.17
234678-HxCDF	0.10	0.082	0.20	<0.31	0.16
Total HxCDF	3.7	2.9	7.1	1.4	5.9
1234678-HpCDF	1.3	0.76	2.3	0.45	1.8
1234789-HpCDF	0.49	<0.014	1.1	<0.61	0.97
Total HpCDF	2.6	0.98	5.0	0.75	3.9
OCDF	1.1	0.91	2.4	0.44	2.3
TEQs using NYS-86 (BSOB) TEFs					
ND=0	0.53	0.39	0.87	0.28	0.80
ND=½DL	0.55	0.39	0.89	0.69	0.82
ND=DL	0.57	0.40	0.91	1.1	0.83
TEQs using EPA-89 (I-TEFs) TEFs					
ND=0	0.45	0.34	0.84	0.14	0.72
ND=½DL	0.47	0.34	0.85	0.57	0.73
ND=DL	0.49	0.35	0.86	1.0	0.75

<u>Sample Number</u>	<u>Sample Description</u>
9903021	1st floor - Former DMV office - Top of light
9903022	3rd floor - Room 305 - Top of light
9903023	5th floor - Room 506 - Top of light
9903024	8th floor - Room 806 - Top of light
9903025	10th floor - Room 1001 - Top of light

Table B-2. Concentration of PCDD/F congeners and calculated TEQs for air samples collected on August 19, 1998.

Congener	Sample Number				
	9903026	9903027	9903028	9903029	9903030
Units	(ng/m ²)	(ng/m ²)	(ng/m ²)	(ng/m ²)	(pg/m ²)
2378-TCDD	<0.021	<0.012	<0.012	<0.017	<17
Total TCDD	<0.021	<0.012	<0.012	<0.017	<17
12378-PeCDD	<0.022	<0.011	<0.011	0.18	<15
Total PeCDD	<0.022	<0.011	<0.011	0.18	<15
123478-HxCDD	0.038	0.02	0.023	0.067	<27
123678-HxCDD	0.03	0.017	0.017	0.062	<24
123789-HxCDD	0.022	0.014	0.02	0.037	<25
Total HxCDD	0.25	0.16	0.16	0.44	<24
1234678-HpCDD	0.44	0.19	0.31	0.42	<40
Total HpCDD	0.82	0.35	0.55	0.70	<40
OCDD	1.3	0.32	1.0	0.56	<61
2378-TCDF	1.8	0.52	0.72	1.2	<11
Total TCDF	11	2.9	4.3	4.5	<11
12378-PeCDF	2.8	1.0	1.2	3.0	<11
23478-PeCDF	1.4	0.69	0.70	2.2	<12
Total PeCDF	17	6.1	6.9	16	<11
123478-HxCDF	3.5	1.8	1.8	5.6	<15
123678-HxCDF	1.6	0.85	0.86	2.8	<14
123789-HxCDF	0.37	0.19	0.22	0.63	<21
234678-HxCDF	0.34	0.18	0.20	0.64	<17
Total HxCDF	13	6.9	6.9	22	<15
1234678-HpCDF	3.9	2.0	2.3	6.0	<23
1234789-HpCDF	2.1	1.0	1.4	3.4	<31
Total HpCDF	8.6	4.4	5.2	14	<23
OCDF	5.5	1.9	3.3	4.8	<44
TEQs using NYS-86 (BSOB) TEFs					
ND=0	2.1	0.78	0.92	2.4	0
ND=½DL	2.1	0.79	0.93	2.4	23
ND=DL	2.1	0.80	0.94	2.4	47
TEQs using EPA-89 (I-TEFs) TEFs					
ND=0	1.7	0.79	0.84	2.6	0
ND=½DL	1.7	0.80	0.85	2.6	24
ND=DL	1.7	0.81	0.86	2.6	47

<u>Sample Number</u>	<u>Sample Description</u>
9903026	11th floor - Room 1106 - Top of light
9903027	12th floor - Room 1204 - Top of light
9903028	15th floor - Room 1501 - Top of light
9903029	16th floor - Room 1607 - Top of light
9903030	Glove blank

New York State Department of Health

Antonia C. Novello, M.D., M.P.H, *Commissioner*