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New York City Department of Environmental Protection
Bureau of Environmental Compliance

WTC Unoccupied Building Cleaning Program
114 Liberty Street
Scope of Work
Project #WTC-LBA

A MANDATORY PRE-BID meeting is scheduled for February 18, 2003 at 10:00 A.M. at 114 Liberty Street, Building Lobby, New York, N.Y. This conference will include a walk through of the entire building.

Background

A follow-up visit to 114 Liberty Street revealed minor dust accumulations present on surfaces within the interior of the building. The interior cleaning is to be accomplished by a licensed asbestos abatement contractor and monitored by a Monitoring Contractor.

Purpose

The Monitoring Contractor shall provide personnel experienced, trained, and certified in environmental sampling and asbestos air monitoring to be on-site, full-time, during work area preparation and cleaning phases of building interiors (12 stories –5,000 to 6,000 square feet per floor). Each apartment occupies an entire floor with the exception of the top floor that is a duplex and the apartment on the third floor that shares the floor with two commercial spaces. The entire interior of the building (residential, commercial, retail spaces, common spaces, etc.) is included in this work. Each floor has central HVAC systems.

The Monitoring Contractor shall provide qualified staff to observe the work, conduct air monitoring and sampling, and monitor the cleanup of the building interiors to ensure compliance with the project specifications and appropriate regulatory requirements. The Monitoring Contractor shall provide clearance sampling and analyses.

The Monitoring Contractor shall provide qualified staff to collect samples for asbestos, lead, polyaromatic hydrocarbons (PAHs), dioxin, fibrous glass, and crystalline silica.

An accredited laboratory shall perform all sample analyses.

Contract Term

The Work shall be performed 24 hours per day, seven (7) days per week. Pre-clean up sampling must begin within 24 hours of receipt of the *Commence Work* letter. All pre-clean up samples must be completed and submitted to the laboratory for analysis within 48 hours. This contract shall be in force for 90 consecutive calendar days from the DEP commencement date. However, work must be completed within three (3) weeks of the commencement date. Post clean up sampling shall begin within 4 hours of successful visual inspection and shall be completed within 2 days.

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NYC-WTC_000282437

NYC 9/11 Public Portal Document

Air Monitoring/Construction Inspection Services

Air monitoring by a Monitoring Contractor shall be conducted during all cleanup activities. The Monitoring Contractor shall provide individuals certified as project monitors and air sampling technicians to perform daily air sampling and inspections from the commencement of the project through final clearance sampling. The Monitoring Contractor shall provide sufficient equipment and experienced personnel to monitor work area preparation and cleaning phases of the building interiors.

Qualifications

Project Monitoring

The Project Monitors must posses valid NYS Asbestos Project Monitor certificates. Monitors must have served as a third party project monitor on at least 25 asbestos abatement projects. The Project Monitor must have performed final clearance inspections on at least 25 asbestos abatement projects. A single individual with Asbestos Project Monitor and Asbestos Project Sampling Technician certification shall not perform the functions of both Monitor and Technician during this project.

Air Sampling Technicians

Air monitoring technicians must posses valid NYS Asbestos Project Sampling Technician (APST) certificates. Technicians must have performed air sampling for at least 6 months. At a minimum at least 5 Air Sampling Technicians must be assigned to this project. A single individual with Asbestos Project Monitor and Asbestos Project Sampling Technician certification shall not perform the functions of both Monitor and Technician during this project.

Wipe Sampling Technicians

Wipe sampling technicians must have 1-year experience in wipe sampling for a variety of contaminants and have received state certified training in dust sampling. At a minimum at least 2 Wipe Sampling Technicians must be assigned to this project.

Equipment

Sampling equipment must be in sufficient quantity to provide the amount and type of samples required for this project. The following equipment is required: air-sampling pumps with flow rate capacities of 2 to 15 liters per minute, tripods, rotometers, sample cassettes with mixed cellulose ester filters having pore size of 0.8μm, micro vacuum, disposable porous cellulosic towellettes moistened with wetting agent, solvent-wetted sampling agent, and all other equipment required to perform the specified monitoring and sampling.

Analytical Laboratory

The environmental laboratory must be certified by the New York State Department of Health. Certification for all the analytes specified herein must have been maintained for at least six (6) consecutive proficiency testing rounds. The laboratory must possess a gas chromatograph equipped with a capillary column and high-resolution mass spectrometer for analyzing dioxin and inductively coupled plasma for total metals.

Proof of qualifications must be presented to the NYCDEP prior to commencement of work. The NYCDEP reserves the right to disqualify any individual(s) from work on this project for non-compliance with these specifications or the requirements of applicable rules and regulations.

CITY_DEP_WORBY_CANNATA_SUBP_000005370

NYC-WTC_000282438

NYC 9/11 Public Portal Document

Sampling and Analytical Procedures for Lead, PAHs, Dioxin, Fibrous Glass, and Silica

1. Sampling for lead, PAHs, and dioxin shall be performed by the wipe sampling technician. A completed chain of custody must accompany all samples. A unique sample number shall be assigned to each sample. A complete written description and diagram shall clearly identify each sampling location.

2. Wipe samples shall be collected before and after cleaning for lead, dioxin, and PAHs.

   Prior to the cleaning activities, three wipe samples shall be collected for each of these parameters in each apartment. The sampling locations shall be a wall, a bare floor, and a counter or tabletop.

   After cleaning activities, three wipe samples shall be collected for each of these parameters in each apartment. The sampling locations shall be a wall, a bare floor, and a counter or tabletop; preferably at the same location as the pre-cleaning samples.

3. Post cleaning air samples for fibrous glass and silica shall be collected concurrently with the asbestos clearance air sampling procedures specified herein. Five samples for fibrous glass and one sample for silica shall be collected in each apartment.

4. The required sampling and analytical procedures are specified in Table 1.

5. The detection limit for PAHs shall be no greater than 1 $\mu g/m^2$.

6. Samples containing concentrations of specific congeneric analytes (PCDDs and PCDFs) considered within the scope of the dioxin sampling method that are greater than ten times the upper MCLs must be analyzed by a protocol designed for such concentration levels, e.g., Method 8280. Analytical results shall be reported using a 2,3,7,8-TCDD toxicity equivalence (TEQ). The TEQs shall be reported four ways. A TEQ which sets non-detects to zero (i.e., TEQ (ND=0), a TEQ which sets non-detects at 1/2 the detection limit (i.e., TEQ (ND=1/2), a TEQ Estimated Maximum Potential Concentration with non-detects set to zero (i.e., TEQ EMPC (ND=0), and a TEQ Estimated Maximum Potential Concentration with non-detects set to 1/2 the detection limit (i.e., TEQ EMPC (ND=1/2). Please see attachment 2 for the format and data to report for dioxin wipe samples.

CITY_DEP_WORBY_CANNATA_SUBP_000005371

NYC-WTC_000282439

NYC 9/11 Public Portal Document

Table 1: Sampling and Analytical Methods

Parameter	Description	Sampling Methodology	Analytical Method	Maximum Turnaround Time
Lead	Wipe samples	HUD Appendix 13.1	EPA Method SW-846-6010B	1 day
PAHs	Wipe samples	ASTM D6661-01	ASTM-6661-01 EPA SW-846-8270C	14 days
Dioxin	Wipe samples	ASTM 6661-01	ASTM 6661-01 EPA Method SW-846-8290	14 days
Fibrous Glass	Air samples	NIOSH 7400	NIOSH 7400, Counting Method "B"	3 days
Crystalline Silica	Air samples	NIOSH 7500	NIOSH 7500 (XRD)	14 days
Asbestos	Air samples	Collection using NIOSH 7400	Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CRF Part 763 Final Rule (AHERA) [see Attachment 1] and NIOSH 7400 (PCM)	1 day

Asbestos Air Sample Collection and Analysis

1. All asbestos air sampling methodologies shall be in accordance with the applicable sections of Title 15, Chapter 1 of the Rules of the City of New York and AHERA. (see reference in Table 1)

2. Asbestos air samples shall be analyzed in accordance with EPA 40 CRF Part 763 Final Rule (AHERA) using a transmission electron microscope (TEM) and reported as shown in Attachment 1. For the TEM analysis, two size fractions should be reported, a fraction that represents fibers >0.5 microns and a fraction that represents fibers >5 microns. The fraction that represents the fibers >5 microns is considered to be the PCM equivalent (i.e., PCMe) that should be compared to the primary clearance value of 0.0009 s/cc. In addition, the asbestos air samples shall be analyzed in accordance with NIOSH 7400 for standard PCM analysis. These results shall be reported on a separate sheet. The detection limit shall be 0.0004 f/cc.

3. A turnaround time of 24 hours is required for all samples.

Asbestos Air Monitoring

1. Five (5) pre-cleanup air samples shall be collected outside but in the general vicinity of the work site. Samplers shall be placed in reasonable proximity to the building and away from obstructions, vents, and drafts that may unduly affect airflow.

2. Five (5) air samples shall be collected per day during cleanup activities. The flow rate shall be set at 5-6 liters per minute. A minimum sampling volume of 3600 liters shall be collected.

   Samples shall be collected at isolation barriers outside the work area, the clean room of the worker/waste decontamination facility, and outside of the building.

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3. Sample collection methodologies shall be in accordance with Title 15, Chapter 1 of the Rules of the City of New York (RCNY) and AHERA regarding documentation and sample locations and the requirements set forth herein regarding the rates of flow, and required volumes to achieve the necessary analytical sensitivity.

4. Sampling equipment shall be placed at representative locations and away from obstruction. Sampling cassette must be placed on a tripod and not taped to existing surfaces. All air sampling equipment shall be pre- and post- calibrated to insure accurate air sampling volumes.

5. The Air Sampling Technician shall perform clearance air sampling after the areas are free of dust accumulations as determined by the Project Monitor. All surfaces must be completely dry prior to the start of sampling. Clearance air sampling shall be performed at each apartment, commercial space, and the basement. Five samples shall be collected in each apartment, commercial space, and basement and two samples shall be collected at the first floor lobby. The elevator shaft shall be cleared separately. Clearance air monitoring shall be performed after the completion of **all** clean up activities at the work site. Clearance air sampling shall be aggressive and performed in accordance with Title 15, Chapter 1 of the RCNY Section 1-43 (a)-(d).

6. Clearance air samples shall be collected in accordance with the procedures specified in the NIOSH 7400 Method. The flow rate for collection of air samples shall be at least 10 liters per minute and no more than 15 liters per minute. Air sampling cassettes must be monitored to ensure the filters do not develop dark spots that would indicate clogging. The minimum sampling volume is 3600 liters. If clogging develops, the cassette must be changed.

7. All clearance air samples and completed chain of custody forms must be transported to the laboratory immediately after sampling is completed.

Clearance Criteria

1. The following clearance levels have been established by the USEPA for clean up activities resulting from the collapse of the WTC.

Table 2: Clearance Criteria

Parameter	*Clearance Level*	*Note*
Asbestos in air	0.0009 f/cc PCMe	Primary clearance level
Lead in settled dust	<25 $\mu g/ft^2$	Primary clearance level
Dioxin in settled dust	<4ng/m^2	Primary clearance level
Fibrous glass in air	<0.01 f/cc	Secondary clearance level
Crystalline silica in air	1$\mu g/m^3$	Secondary clearance level
PAHs in settled dust	<0.3 mg/m^2	Primary clearance level

2. Cleaning shall not be considered complete unless the primary clearance levels are achieved (see Table 2). The apartment will be re-cleaned and retested if the primary clearance levels are not achieved. These clearance levels may be re-evaluated and revised if determined necessary based on field conditions and analytical limitations. Secondary clearance levels shall be considered in determining the need for additional cleanup, however failure to meet the secondary clearance levels does not automatically trigger the re-cleaning. In the event re-cleaning is required, re-sampling shall be performed immediately upon completion of the cleaning.

NYC 9/11 Public Portal Document

Project Monitoring

1. The project monitor shall provide oversight of clean-up activities to ensure compliance with project specifications, tenants authorizations, and applicable rules and regulations. The project monitor shall be present on site during all cleaning activities. The project monitor shall coordinate all scheduling requirements for timely completion of the work (completion of work area preparation and cleaning activities within three (3) weeks. The project monitor shall maintain the inventory of valuable items in each unit as provided by tenants. A copy of the contractor requirements is attached. For additional and specific tasks, refer to this attachment.

2. The project monitor shall provide daily monitoring of all work activities to insure compliance with the scope-of-work, the applicable rules and regulations, and the contracts. This includes but is not limited to the verification of worker certification status, the use of proper engineering controls and appropriate work practices.

3. The project monitor shall direct corrective actions when appropriate and shall be responsible to stop work until corrections are made. Findings must be reported immediately to DEP via telephone call. Written notification of observation and corrective actions must be received by the DEP within 48 hours of telephone call.

4. A final report shall be submitted to the DEP within 7 days of project completion. The report shall clearly identify the work performed in each unit and shall include all laboratory reports, chain-of-custody forms, field notes, copies of employee credentials (i.e. certificates), tenant and owner authorizations, etc.

NYC-WTC_000282442

NYC 9/11 Public Portal Document

Attachment 1: Reporting Asbestos Sampling Results

1. The laboratory shall submit sample results in tabular format on the laboratory's letterhead. The table must contain, at a minimum, columns with the following headings and information.
    - Sample Identification Number
    - Sampling Date
    - Air Volume Collected
    - Area Analyzed
    - Non-Asbestos Fibers
    - Asbestos Type (s)
    - Structures 0.5μ<5μ,
    - Structures 5μ
    - Analytical Sensitivity (s/cc)
    - Asbestos Concentration (s/mm^2)
    - Asbestos Concentration (s/cc)
    - Asbestos Concentration (s>5μ/cc)

2. For the TEM analysis, two size fractions should be reported, a fraction that represents fibers >0.5 microns and a fraction that represents fibers >5 microns. The fraction that represents the fibers >5 microns is considered to be the PCM equivalent (i.e., PCMe) that should be compared to the primary clearance value of 0.0009 s/cc. In addition, the asbestos air samples shall be analyzed in accordance with NIOSH 7400 for standard PCM analysis. These results shall be reported on a separate sheet.

Attachment 2: Reporting Dioxin Sampling Results

1. The laboratory shall submit sample results in tabular format on the laboratory's letterhead. The date of sample collection, the matrix (e.g. wipe), and date analyzed must be printed on each page of the report. The table must contain, at a minimum, columns with the following headings and information.
    - Sample Identification Number
    - Analytical Method
    - Analyte
    - Result (including units)
    - Detection Limit
    - EMPC
    - Laboratory Flags
    - Standard Type
    - Dilution Factor
    - Recovery Limits
    - TEF, max TEF
    - # Isomers

2. Analytical results shall be reported using a 2,3,7,8 -TCDD toxicity equivalence (TEQ). The TEQs shall be reported four ways. A TEQ which sets non-detects to zero (i.e., TEQ (ND=0), a TEQ which sets non-detects at 1/2 the detection limit (i.e., TEQ (ND=1/2), a TEQ Estimated Maximum Potential Concentration with non-detects set to zero (i.e., TEQ EMPC (ND=0), and a TEQ Estimated Maximum Potential Concentration with non-detects set to 1/2 the detection limit (i.e., TEQ EMPC (ND=1/2).

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