NYC 9/11 Public Portal Document

World Trade Center Area Public Health Evaluation of Residential Areas

Background/Purpose

Environmental sampling efforts have largely focused on rescue/recovery areas (occupational); some sampling of commercial buildings to ensure office worker safety; and ambient (outdoor) air sampling for asbestos in a number of residential/commercial areas.

City, state and federal health agencies needed sampling data inside and outside of residences to:
1) determine if residents are being exposed to concentrations of materials that may be of public health concern;
2) determine whether areas already cleaned (inside and outside environments) contain materials that may be of public health concern; and
3) provide information to the public on the potential health implications (or lack of implications) of the sample results.

Materials that can be inhaled or respired from airborne dust may cause respiratory irritation and exacerbation of pre-existing problems such as asthma, emphysema, and cardiopulmonary disease.

The **overall objective** of this sampling is to provide results upon which public health agencies can further determine the potential for environmental exposures to WTC collapse-related materials and possible health implications of the exposures. Sampling will assist in characterizing ambient and indoor airborne and potentially airborne particles (surface dust) in residential areas of lower Manhattan from the collapse of the World Trade Center.

Note: The sampling objective/approach is focused on contaminants that emanated from the collapse of the WTC towers and that might cause health problems. However, this investigation will not be able to conclude if contaminants/materials are actually from the disaster. The contaminants that have been selected for testing might be present in some areas from other sources. Examples include: cooking on a stove top can increase indoor airborne particulate matter; vehicle exhaust can increase outdoor airborne particulate matter; recent home renovation can result in an increase in levels of gypsum, fiberglass, etc. in the air and surface dust.

What was sampled:

At each location, both air and surface dust were collected for testing. Air was collected the same way both inside and outside. Surface dust was collected by using a special vacuum cleaner indoors, and by scraping visible dust off of the ground outdoors.

CITY_21MC100_008986736

NYC-WTC_000338331

NYC 9/11 Public Portal Document

Attempts were made to select apartments/units where dust was visible as well as units where dust wasn't visible. Selecting entryways and common areas should provide information on contaminant/material track-in from outdoors. Selecting several apartments/units in the same building–with and without visible dust--should provide information on the ranges of contaminants found in indoor living spaces.

If the building was unoccupied (noone was living there), aggressive (leaf blower, high-power fan) indoor air sampling was be conducted. If the building was occupied, air sampling was conducted with either the air conditioner or heater fan running.

What was tested? (see the table)

The air samples were tested for asbestos and respirable crystalline silica (both known to cause lung cancer in humans). Air samples were also tested for respiratory and eye irritants found in materials in the WTC building structure. These include fiberglass, gypsum, mica, and calcite. Also, air was tested for the amount of dust in the air–as this, too, can result in breathing problems or irritation.

The surface dust samples were tested for the same materials. Results will tell the health agencies and community members if there is a potential for materials in settled dust to become airborne and result in irritation or possible health risk.

CITY_21MC100_008986737

NYC-WTC_000338332

NYC 9/11 Public Portal Document

Parameter	Sample Type	Indoor/Outdoor	Rationale for Selection
Asbestos	breathing ht., time-weighted air	I/O	known use in building construction, evidence of presence in early air sampling and in settled dust, known inhalation carcinogen
Inhalable (<100μm)* thoracic (<10μm)* respirable (<4μm)*	breathing ht., time-weighted, air	I/O	To determine relative amounts of each fraction present and to have each fraction analyzed for silica, gypsum, mica, fiberglass, and calcite to qualitatively determine potential hazards.
Respirable crystalline silica	breathing ht., time-weighted, air	I/O	Known component of concrete, evidence of presence in some settled dust samples, known inhalation carcinogen.
pH**	dust	I/O	Concrete has a high pH, if dust has a high pH, it may be contributing to reported symptoms of ENT irritation
Asbestos**	dust	I/O	Determine if asbestos is present in dust
gypsum, silica, mica, fiberglass, calcite**	dust	I/O	Associated with building materials (concrete, drywall) and known to be irritating to ENT

* results will be used to better understand the potential for ENT and respiratory irritation, and possibly for determining the possibility of acute/chronic health problems. Results will assist in providing information/recommendations to the public (e.g., what is contributing to irritation, how to reduce exposures)

** to assist in characterizing dust that can become airborne (re-entrainment of settled dust that may be the source of continuing air contamination), and to make recommendations for outdoor dust remediation

CITY_21MC100_008986738

NYC-WTC_000338333

NYC 9/11 Public Portal Document

Summary of Results

The table below contains a summary of the asbestos results received as of Jan 22, for each of the 34 buildings sampled. Buildings 1-30 were sampled for asbestos concerns, buildings 31 - 34 represent background levels in unaffected NYC apartment buildings.

Code:

ND - Non-detect lab result
NS - No sample provided to lab
expecting - a result is still expected from the lab
not exp'd - a result is not expected from the lab
ins. mass - insufficient mass to analyze dust sample
Waiting for lab results - Results are required for one or more analyses
Review - Results obtained indicate a review is necessary to evaluated asbestos hazard
No Asbestos Hazard - Asbestos not detected in dust or insufficient dust to collect a sample & low fiber concentration in air

Table Footnotes:

*1 - Surface area covered for asbestos removal, no dust sample available
*2 - No dust available to collect
*3 - Unknown; reason was not specified on survey or chain of custody form
*4 - No consent from building management to do monitoring in outdoor or common areas

Summary of results for buildings 1-30:

Number of buildings with 'No Asbestos Hazard'	= 15
Number of buildings 'Waiting for lab results'	= 8
Number of building where 'Review' is necessary	= 7

Summary of results for the residential units in buildings 1-30:

Total number of residential units	= 59
Number of units with 'No Asbestos Hazard'	= 40
Number of units 'Waiting for lab results'	= 8
Number of units where 'Review' is necessary	= 11

Summary of Results To Date:

- 30 Lower Manhattan buildings were sampled (add: date to date)

- 4 Background buildings were sampled from the area north of 49 Street (add: date to date)
  (We could include Louisa's map of numbered buildings)

- 22 of the Lower Manhattan buildings have all of the results expected from the lab

CITY_21MC100_008986739

NYC-WTC_000338334

NYC 9/11 Public Portal Document

- All of the Background building results have been received from the lab

- Of the 22 Lower Manhattan buildings where all asbestos results have been received:
  - 15 were 'No Asbestos Hazard'
  - 7 Require a review because asbestos was detected in at least one settled dust sample

- Of the 30 Lower Manhattan buildings sampled, the following locations were sampled:
  - 59 Residential units
  - 29 Common areas
  - 29 Outdoor areas

- Of the 59 Residential units sampled, results are available for 51 units:
  - 40 units were 'No Asbestos Hazard'
  - 11 Require a review because asbestos was detected in the settled dust sample

- Of the 29 Common Areas sampled, results are available for 26 areas:
  - 21 Common areas were 'No Asbestos Hazard'
  - 5 Require a review because asbestos was detected in the settled dust sample

- Of the 29 Outdoor Areas sampled, results are available for 25 areas:
  - 20 Outdoor areas were 'No Asbestos Hazard'
  - 5 Require a review because asbestos was detected in the settled dust sample

- The 4 Background Buildings sampled included:
  - No Outside Area settled dust but 3 airborne asbestos results
  - 3 Common Areas with both settled dust and airborne asbestos results
  - 5 Residential Units with both settled dust and airborne asbestos results
  - Results are available for all of these samples

- Asbestos was not detected in any of the dust samples from any of the Background buildings

- Background buildings, airborne fiber concentrations ranged from less than .001 to .003 f/cc

- 126 Air samples were taken from various areas of the Lower Manhattan buildings, results are available for 123 of the samples
  - 5 Air samples had concentrations greater than .003 f/cc
  - 2 Of these samples were from Common areas; results ranged from .005 f/cc to a fiber count that overloaded the measurement system
  - In the first case, no asbestos fibers were detected in the area's settled dust by PLM, TEM results are still expected from the lab
  - In the second case, no asbestos fibers were detected in the settled dust by either PLM or TEM

  - 3 Air samples with fiber concentrations greater than background were measured in residential units
    - Results range from .005 - .012 f/cc →

NYC-WTC_000338335

NYC 9/11 Public Portal Document

- TEM analysis of the .012 f/cc result indicates less than .001 fibers of asbestos/cc
- Dust results indicate that asbestos was not detected by PLM in any of these units
- TEM results are currently only available for 2 units and indicate asbestos was not detected; TEM results are expected from the remaining unit

NYC-WTC_000338336