NYC 9/11 Public Portal Document

ATC ASSOCIATES INC.

104 East 25th St., 10th Floor
New York, New York 10010
www.atc-enviro.com
212.353.8280
Fax 212.353.8306

January 8, 2003

Mr. Bernard P. Orlan
Director, Environmental Health and Safety
New York City Department of Education
28-11 Queens Plaza North
Long Island City, NY 11101

Re: Air Sampling for Hydrocarbons, Mercury, Metals and Silica
P. S. 89M
ATC Project No. 15-19125-0297

Dear Mr. Orlan:

ATC Associates, Inc. (ATC) is pleased to provide this report of air sampling for hydrocarbons, mercury, metals and silica conducted on December 27, 2002, at the referenced school. The New York City Department of Education (DOE) requested this sampling to verify that acceptable air quality is being maintained in the school building.

ATC collected four (4) samples each for hydrocarbon compounds (HC), mercury, metals and ten (10) samples for silica at specified locations. All samples were collected for ten (10) hours.

SAMPLING METHODOLOGY

For the HC, ATC used activated coconut shell charcoal tubes connected to battery-powered sampling pumps at a flow rate of 0.2 liters per minute (L/M). Metal samples were collected using mixed cellulose ester filters and pumps set to draw 2.0 L/M. Mercury vapor samples were collected using Carulite® (Hydrar) tubes connected to battery-powered sampling pumps calibrated to collect 0.2 L/M. Respirable dust (silica) samples were collected using pre-weighed 37mm PVC filters connected to size-selective cyclones to remove the larger (non-respirable) particles prior to deposition on the filters. All sampling pumps were calibrated before and after each sampling period. Three (3) samples for HC, mercury and metals were collected outside the building and one (1) was collected indoors. One blank tube each for HC and mercury were also submitted. Two blank MCE filters for metals were submitted and one blank pre-weighted PVC filter was submitted. All of the silica samples were collected indoors.

METHOD OF ANALYSIS

All samples were sent to PSC Analytical Services, Inc., an American Industrial Hygiene Association-accredited laboratory in Reading, PA.

NYC-WTC_000340828

NYC 9/11 Public Portal Document

Analysis of the HC was performed by capillary gas chromatography/flame ionization detection (NIOSH Methods 1003, 1005, 1022, 1300, 1500, 1501). Each sample was analyzed for a panel of sixteen (16) specific HC compounds. In addition, two non-identified peaks, A-hydrocarbons and B-hydrocarbons, were reported. The A-hydrocarbons are those, such as gasoline or light alcohols, with boiling points less than that of benzene (176°F). The B-hydrocarbons are those, such as mineral spirits or petroleum naphtha, with boiling points greater than that of benzene.

Analysis of the metal samples was performed inductively coupled argon plasma/atomic emission spectroscopy according to NIOSH Method 7300M. Each sample was analyzed for eleven (11) metals.

Analysis of the mercury samples was performed by means of a mercury analyzer according to NIOSH Method 6009.

Analysis for silica was performed by x-ray diffraction according to OSHA Method 142.

Copies of the analytical laboratory reports are attached.

SAMPING LOCATIONS

Four different sampling locations were selected for HC, mercury and metals. They were as follows:

Play ground North; Play ground South; Hallway outside the cafeteria; and Roof.

Respirable dust (silica) samples were collected from the following locations:

First floor hallway outside cafeteria (North); First floor hallway outside cafeteria (South); Cafeteria; 2nd Floor hallway south; 4th floor hallway south; Room 202; Gymnasium; Auditorium; Room 204; and Room 228.

HYDROCARBON RESULTS

Each sample was analyzed for the following sixteen hydrocarbon (HC) compounds: Pentane, Acetone, Methylene chloride, Hexane, Chloroform, Methyl chloroform, Total Other A-Hydrocarbons, Benzene, 1, 2-Dichloroethane, Trichloroethylene, Toluene, Perchloroethylene (tetrachloroethylene), Chlorobenzene, Ethylbenzene, Styrene, Cumene (isopropylbenzene), Xylenes, Total Other B-Hydrocarbons. The limit of detection for each compound was 0.020 milligrams per sample. The airborne concentrations were calculated by dividing the amount found in the sample by the volume of air collected and converting the quotient to parts per million (ppm).

A-Hydrocarbons were detected slightly above the limit of detection in one sample collected from the hallway outside cafeteria at a concentration of 0.18 mg/m^3 (0.05 ppm).

NYC-WTC_000340829

NYC 9/11 Public Portal Document

This is not an unusual situation especially during custodial cleaning of the school which had been conducted around the time these samples were collected during the winter break.

The likely sources were cleaning materials or disinfectants containing some alcohols.

No other hydrocarbons were found above the limits of detection in any of the samples collected.

METAL SAMPLE RESULTS

Metal samples were analyzed for aluminum, cadmium, chromium, cobalt, copper, iron, magnesium, manganese, molybdenum, nickel and zinc. The limits of detection ranged from less than 0.0001 milligrams per sample (mg/sample) for cobalt to 0.002 mg/sample for iron. The airborne concentrations were calculated by dividing the amount found in the sample by the volume of air collected.

Chromium was detected in all samples however it was also detected in both blanks. When the average chromium level in the blanks is subtracted from the amounts in the samples, the airborne concentrations drop below the limits of detection. Any chromium detected were already in the filter and did not come from the ambient air. *Zinc* was detected in both blanks but not in any air samples, indicating that zinc may be a random contaminant of the filter medium.

The Environmental Protection Agency (EPA) has set a screening level for hexavalent chromium (the more toxic form) in air of 0.6 micrograms per cubic meter of air (ug/m^3), this assumes a continuous exposure for one year. These samples were analyzed for total chromium (trivalent and hexavalent). All Cr concentrations detected in the samples higher than the average of the two blanks were *below* the EPA screening level.

The EPA has no standard or screening level for zinc in ambient air.

MERCURY SAMPLE RESULTS

Mercury was detected in these samples at levels that were indistinguishable from that detected in the blank.

The established regulatory value for mercury (OSHA: $0.1mg/m^3$) is intended for industrial workplace exposures and is not generally applicable to office/school settings. There are no standards for mercury in indoor air in non-industrial situations. The EPA has no standard or guideline for mercury vapor in ambient air.

NYC-WTC_000340830

NYC 9/11 Public Portal Document

SILICA SAMPLE RESULTS

Silica was *not present* above the limit of detection (<10 micrograms per sample) in any of the samples.

The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) is the only regulatory standard for silica exposure, however it is intended for occupational exposure in settings such as foundries, sandblasting, rock drilling, etc.

The Environmental Protection Agency (EPA) does not have an ambient-air quality standard or guideline for silica.

CONCLUSIONS

The chromium concentrations detected that were higher than the blank average were below the EPA screening level.

A-Hydrocarbons was detected in one sample below the significant amount. No other hydrocarbons, mercury and silica were not detected in these samples.

ATC appreciates the opportunity to provide this indoor air quality service to the DOE. Please call (212) 353-8280 extension 370 or 212 if you have any questions.

Sincerely,
ATC Associates, Inc.

Tenzin Namgyal
Industrial Hygienist

Reviewed by:

James R. Cohn, CIH, CSP
Regional Manager
Industrial Hygiene Division

Attachments

NYC-WTC_000340831