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September 30, 2002

Mr. Bernard P. Orlan
Director, Environmental Health & Safety
New York City Department of Education
28-11 Queens Plaza North
Long Island City, NY 11101-4008

**Re: Indoor Air Quality Assessment
P.S. 65Q
103-22 99th Street
Ozone Park, New York
ATC Project No. 13-19125-0334**

Dear Mr. Orlan:

ATC Associates Inc. (ATC) is pleased to provide this report of indoor air quality (IAQ) measurements collected on September 27 2002, at the referenced school. The New York City Department of Education (DOE) requested these measurements as part of a program to verify that acceptable indoor air quality is being maintained.

SCOPE OF WORK

ATC conducted this evaluation to assess the basic parameters of temperature, relative humidity, carbon dioxide (CO₂) and carbon monoxide (CO) with a Q-Trak® Model 8551, manufactured by TSI, Inc.

ATC's findings are based on a visual inspection, real-time environmental measurements and conditions present in the school at the time of the assessment.

Mariana Medinets, Environmental Technician of ATC's New York City office, conducted the assessment consistent with generally accepted indoor air quality assessment practices. As with all such assessments, there were inherent limitations created by constraints of time, operational and work practice variability, variations in indoor air quality parameters and sampling and analytical accuracy. The results represent conditions found on the date of the survey.

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EVALUATION CRITERIA

Currently, there are no regulatory standards for indoor air quality in non-industrial buildings, such as offices and schools. For the real-time data collected, ATC uses the commonly accepted guidelines cited in the following publications:

- *Ventilation for Acceptable Indoor Air Quality (ASHRAE 62-2001)*, American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE);
- *Thermal Environmental Conditions for Human Occupancy (ASHRAE 55-1992)*;
- *Industrial Hygienists Guide to Indoor Air Quality Investigations* (1993), American Industrial Hygiene Association (AIHA).

Table 1 lists target guidelines for the parameters that ATC evaluated during this investigation. Meeting one, some, or all of the listed values does not assure that acceptable indoor air quality will be achieved at all times.

TABLE 1

TARGET GUIDELINES FOR INDOOR AIR QUALITY PARAMETERS EVALUATED

PARAMETER	TARGET LEVEL	REFERENCE OR ORGANIZATION
Carbon Dioxide (CO ₂)	<700 parts per million (ppm) above background level	ASHRAE 62
Carbon Monoxide (CO)	9 ppm	ASHRAE 62 (adopted from USEPA NPAAQS)
Temperature	Summer: 73-79°F at 50% RH Winter: 68-75°F at 50% RH	ASHRAE 55
Relative Humidity	30 - 60 %	ASHRAE 55

USEPA = United States Environmental Protection Agency

REAL-TIME ENVIRONMENTAL MEASUREMENTS

ATC collected one hundred and sixteen (116) sets of real-time environmental measurements consisting of one hundred and twelve (112) from inside the school building and four (4) outdoors. All three floors of the school were surveyed. These results are described below. Field data sheets are found in Attachment 1. Readings began at approximately 08:00A.M.

Temperature

Indoor dry bulb temperature measurements ranged from 66.6 to 73.8°F. Ninety-nine (99) of the indoor temperature measurements were below the range of 73 to 79°F (at 50 percent relative humidity) as recommended by ASHRAE Standard 55-1992 during the mechanical cooling season (summertime conditions). The outdoor temperature measurements ranged from 67.9 to 72.4 °F.

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Relative Humidity

The relative humidity indoors ranged from 55.3 percent to 74.8 percent. Sixty-one (61) of the indoor measurements for relative humidity were above the ASHRAE-recommended range of 30 to 60 percent for occupant comfort. The outdoor relative humidity measurements ranged from 61.6 to 76.3 percent.

Carbon Dioxide Concentration

Carbon dioxide concentrations indoors ranged from 441 ppm to 1005 ppm. All of the indoor measurements were within the ASHRAE Standard 62-2001 recommended maximum concentration of <700 ppm above the background level. The maximum outdoor (background) CO₂ concentration was 583 ppm. Therefore, the maximum acceptable level of CO₂ at this location was 1283 ppm (background level + 700 ppm). The highest reading (1042 ppm) was recorded in Room 1 approximately at 11:30 A.M. with 30 occupants. Levels above the recommended maximum *do not* indicate a health risk. Carbon dioxide measurements are used as an indicator of available outdoor air. The primary source of CO₂ indoors is occupant respiration.

Carbon Monoxide Concentration

Carbon monoxide concentrations indoors ranged from 1 ppm to 2 ppm for all readings. These concentrations were within the NPAAQS/ASHRAE guideline of 9 ppm. The outdoor CO concentrations also ranged from 1 ppm to 2 ppm.

OBSERVATIONS

During this assessment, ATC noted the following:

- The building was occupied at the time of the assessment;
- No unusual odors were detected.

FINDINGS

Based on the real-time measurements, the following findings are presented:

1. Ninety-nine (99) of the indoor temperature measurements were below the range of 73 to 79°F (at 50 percent relative humidity) as recommended by ASHRAE Standard 55-1992 during the mechanical cooling season (summertime conditions).
2. Sixty-one (61) of the indoor measurements for relative humidity were above the ASHRAE-recommended range of 30 to 60 percent for occupant comfort.
3. All of the indoor CO₂ measurements were within the ASHRAE Standard 62-2001 recommended maximum concentration of <700 ppm above the background level.
4. Concentrations of CO were within applicable guidelines.

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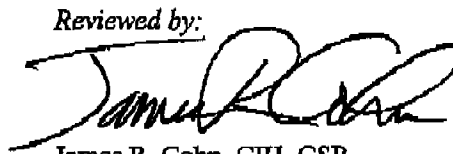
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It is our pleasure to provide these indoor air quality services to the New York City Department of Education. If you have any questions about this report, please call (212) 353-8280, extension 211 or 212.

Sincerely,
ATC ASSOCIATES INC.


Yiannis Efstathiou
Senior Project Manager

Reviewed by:

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

Attachment