EnvironmentalSafetyHealthGeotechnical

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November 6, 2014
J0325-06-03

Mr. Ed Cenedella
Director of Facilities & Maintenance
Hampden Wilbraham Regional School District
621 Main Street
Wilbraham, Massachusetts 01095

RE: Industrial Hygiene Assessment Services Report
Wilbraham Middle School - Lower Level Rooms

Dear Ed,

This letter conveys the results of industrial hygiene assessment services that were performed in select lower level rooms of the Wilbraham Middle School located in Wilbraham, Massachusetts. Specifically indoor air quality testing (including collection of air samples to be analyzed for mold) was conducted in the select lower level rooms (Rooms 5, 6, and 8), and from outside (ambient) conditions for comparison.

It has been reported to OTO that Room 5 of the lower level, an adult and student expressed concerns regarding the quality of air.

The results of our assessment indicate the air quality results (relative humidity, carbon monoxide, and volatile organic compounds) are generally within the indoor air quality criteria recommended by the American Society of Heating, Refrigeration Air Conditioning Engineers (ASHRAE), Occupational Safety & Health Administration (OSHA), and the National Institute for Occupational Safety and Health (NIOSH). The temperature in the areas assessed averaged 68° and was slightly lower than the recommended range of 70-73°; relative humidity averaged 49 in the assessed areas and was within the recommended range (30%-60%). The averaged carbon dioxide levels throughout the assessed areas were not elevated at the time of our assessment with the exception of one room (Room 8). This room was observed to have carbon dioxide levels up to 1,178 PPM (parts per million). Elevated carbon dioxide levels may indicate the need for additional fresh air to be introduced to the spaces being evaluated based on the occupant load and the activities being performed in the space. There was no carbon monoxide (less than 0.5 ppm) detected on the day of our evaluation.

No odors were detected on the day of our assessment. No significant water staining or discolorations were observed on building surfaces (i.e. floors, walls, and ceilings).

The results of the mold spore sampling indicate the total fungal counts from the indoor samples were not amplified when compared to ambient conditions. The fungal spores identified are common to the environment and not typically pathogenic to healthy humans.

In summary, the results of the indoor air quality sampling on the day of the assessment indicate that overall the air quality criteria were within recommended parameters. The temperature was slightly below the recommended range, and carbon dioxide in one room was observed to be above the recommended differential when compared to ambient carbon dioxide levels. These conditions may change and are typically dependent on various factors such as occupant load and activity, as well as open or closed window and/or door conditions.

We appreciate the opportunity to provide you with these industrial hygiene services. If you have any questions, please contact our office at your convenience.

Sincerely,
O'Reilly, Talbot & Okun Associates, Inc.

Christine Arruda, CIEC
Certified Indoor Environmental Consultant

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Senior Safety and Industrial Hygiene Specialist

INDUSTRIAL HYGIENE ASSESSMENT SERVICES
WILBRAHAM MIDDLE SCHOOL
ROOMS 5, 6, AND 8
WILBRAHAM, MASSACHUSETTS
November 6, 2014

INTRODUCTION

Industrial hygiene assessment services were performed on October 24, 2014 at the Wilbraham Middle School in Wilbraham, Massachusetts. Specifically, an indoor air quality evaluation was performed in response to occupant concerns regarding the quality of air within lower level Room 5. The indoor air quality assessment included visual observations and industrial hygiene sampling in Rooms 5, 6, and 8.

The industrial hygiene assessment focused on the indoor air quality throughout the identified areas and included real-time measurements for carbon monoxide, carbon dioxide, temperature, relative humidity, and volatile organic compounds (VOCs). In addition, air sampling for mold spores was performed in each of the above classrooms, and included ambient air sampling as a control sample.

This report details the sampling methodology, monitoring results, and our observations and conclusions. The information provided in this report is subject to the Limitations as attached.

AIR MONITORING METHODOLOGY & RESULTS

The following describes the indoor air quality monitoring and assessment that was performed on October 24, 2014.

Air Monitoring

Carbon dioxide, carbon monoxide, temperature and relative humidity readings were generally taken in Rooms 5, 6, and 8, and from ambient conditions using a Solomat MP Surveyor Pro Multimeter manufactured by Zellweger Analytics. The unit has a real-time readout in parts per million (PPM) carbon dioxide and carbon monoxide as well as real time relative humidity (%) and temperature (°F) readings.

Carbon Dioxide

Carbon dioxide levels are commonly used as a means of determining the adequacy of ventilation in occupied areas. Unless concentrations reach exceptionally high levels, such as in excess of 5,000 PPM, carbon dioxide is not considered a contaminate. Carbon dioxide monitoring is used as a surrogate for indicating elevated levels of other contaminates that are more difficult to measure. People exhale and generate carbon dioxide gas as part of normal respiration.

Outdoor ambient concentrations of carbon dioxide are typically in the 300-450 PPM range. Elevated levels of carbon dioxide that are 300 PPM above normal ambient air are usually found in urban areas. Increased levels of carbon dioxide above outdoor ambient conditions can also be related to the occupant load, various activities being performed within the space and the quantity of fresh air ventilation being introduced into the space.

The American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) have determined that occupants are apt to experience stuffiness, headaches, fatigue, eye and respiratory tract irritation if the indoor levels of carbon dioxide levels exceed the outside ambient levels by 2-3 times. The concentration of carbon dioxide itself is not responsible for the complaints. Rather, it is an indicator that other contaminates in the building may have increased to undesirable levels. As a result, the recommended level of carbon dioxide level for indoor air quality evaluation is to maintain a differential of less than 700 PPM above outdoor ambient levels. The averaged carbon dioxide levels within the monitored rooms were below the 700 PPM differential and averaged 810 PPM (ambient/outside level average of 409) on the day of our assessment. One room, however, was observed to have a carbon dioxide level up to 1,178 PPM. Various factors may contribute to variances in the carbon dioxide measurements, and may include occupant load, occupant activity, closed or open windows and/or doors. Results are summarized in Table 1.

Carbon Monoxide

Carbon monoxide concentrations were recorded throughout each Room included in the assessment. Carbon monoxide is produced by the incomplete combustion of various fuels, such as natural gas fuel oil, and vehicle exhaust.

There was no carbon monoxide (i.e. less that 0.5 PPM) detected in the monitored areas on the day of our assessment.

Temperature & Relative Humidity

Temperature and relative humidity readings were taken throughout each space involved in the assessment. The relative humidity levels were generally within the range recommended by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) (Relative humidity 30-60%); however, temperature was slightly below the recommended range (Temperature 70-73°).

The temperature and relative humidity levels on October 24, 2014 averaged 68° F and 49% respectively. The temperature and relative humidity levels were typically uniform and representative of ambient conditions. Temperature and relative humidity values can change quickly due to occupancy level and type, the performance of the HVAC systems, ambient conditions, and other factors (i.e. solar heat gain or loss from the windows).

Direct reading air quality parameters are summarized in Table 1 on the following page.

TABLE 1
AIR MONITORING RESULTS

October 24, 2014

Location	Carbon Dioxide (PPM)	Carbon Monoxide (PPM)	Relative Humidity (%)	Temperature (°F)	Number of Occupants
Main Office	563	0	48	69	7
Room 8	1,178	0	52	70	None
Room 5	885	0	48	69	None
Room 6	612	0	48	66	None
Outside/Ambient	409	0	59	56	---

Bioaerosol Sampling

During the assessment bioaerosol samples (fungal spores) were collected in Rooms 5, 6, and 8, and from ambient conditions as a comparison. The air sampling was conducted using Air-O-Cell cassettes. The Air-O-Cell cassette is a particulate sampler/spore trap designed for the rapid collection and analysis of a wide range of aerosols including mold spores, pollen and mycelial fragments.

Samples were collected using the Air-O-Cell cassettes connected to a precision rotometer and electric pump with a flow rate of 15 liters of air per minute. Each sample was collected over a 5-minute period to pass approximately 75 liters of air through the sampler. The EMSL Laboratories Report is located in Appendix A, with the summarized results located in Table 2 on the following page.

The results are expressed in total fungal spores (viable and non-viable). The fungal spores identified are common to the environment and not typically pathogenic to healthy humans. By comparing the ambient outside air samples to the samples collected inside the building we are able to identify that there is no amplification of airborne mold spores inside the assessed rooms when the samples are compared to the ambient air samples.