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February 19, 2021

Alex Baylor
Environmental Specialist
PGCPS Environmental Safety Office
13306 Old Marlboro Pike
Upper Marlboro, MD 20772
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Re: IAQ and Mold Assessment Report (Retest)
Prince George's County Public Schools
Flintstone Elementary School

Dear Mr. Baylor,

Windjammer Environmental LLC (Windjammer) was contracted to conduct a visual assessment, measure indoor air quality (IAQ) parameters and sample for mold in a limited number of areas at the Flintstone Elementary School located at 800 Commanche Drive, Oxon Hill, MD 20745. This assessment is intended to check the effectiveness of cleaning activities in areas previously identified as having above normal ecology. This assessment was conducted by Certified Industrial Hygienist (CIH) Damien Hammond SR on February 16, 2021.

This assessment included:

- Measurement of temperature, relative humidity, carbon dioxide (CO₂) and carbon monoxide (CO)
- Collection of nonviable airborne mold samples; and
- Visual assessment of select areas.

Methods

A TSI IAQ-Calc Model 7545 was used to measure temperature, relative humidity, carbon dioxide (CO₂) and carbon monoxide (CO).

Air samples for non-viable airborne fungi were collected on Air-O-Cell cassettes using a Zefon Bio-Pump Plus portable sampler calibrated to collect 15 liters of air per minute (lpm). The sampling period for the all samples was five minutes.

Direct read instrumentation used were calibrated in accordance with the manufacturer's specifications prior to the start of this assessment.

All samples collected were hand delivered to and analyzed by EMSL of Beltsville, MD. EMSL is accredited by the American Industrial Hygiene Association (AIHA) for microbial analysis and participates in the Environmental Microbiology Laboratory Accreditation Program (EMLAP).

Guidance

The Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs) are the only enforceable regulatory standards for indoor air quality. However, other organizations such as the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) and the Environmental Protection Agency (EPA) have developed widely accepted consensus standards that can be used to assess the suitability of indoor air quality.

ASHRAE Standards

62.1-2013 and 55-2013 are consensus standards that outline acceptable practices for the design of ventilation systems in commercial and residential structures. Both documents were developed "to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to minimize the potential for adverse health effects." The standards also consider chemical, physical, and biological contaminants and other factors that impact indoor air quality and affect occupant health and comfort.

ASHRAE 55-2013 recommends temperature and relative humidity ranges that are considered suitable for indoor air quality. Recommended ranges are as follows:

- Temperature be maintained between 67 and 82 degrees Fahrenheit (°F)
- Relative humidity to be maintained below 65%

Carbon Dioxide

CO₂ is widely used as a surrogate gas in the assessment of indoor air quality. It is a byproduct of respiration and can be used to determine the effectiveness and/or management of building ventilation systems. Based on ASHRAE recommendations, indoor CO₂ concentrations that are below 1000 parts per million (ppm) or have a differential of less than 700 ppm compared to outside concentrations are considered to be suitable.

For example, if outside CO₂ concentrations are measured at 380 ppm, then indoor CO₂ concentrations measured up to 1080 ppm would be considered suitable.

Carbon Monoxide

OSHA has established a PEL for CO of 35 ppm over a time weighted average (TWA) of 8 hours and a ceiling CO exposure limit of 200 ppm in a five-minute period. ASHARE has adopted the EPA National Ambient Air Quality Standard (NAAQS) for CO of 9 ppm when evaluating indoor air quality. In nonindustrial settings, the NAAQS standard is commonly used to assess the suitability of IAQ.

Nonviable Airborne Fungi (Mold)

There are no set regulatory limits established for acceptable airborne fungi levels. However, indoor levels within schools and offices are generally lower than outdoor levels. The distribution of airborne species of fungi found in indoor air is expected to be similar in proportion to outside distributions. The type and concentrations of the airborne microorganisms can be used to determine if there is a potential hazard to occupants which requires action.

Findings

Indoor Air Quality

Indoor air quality measurements collected were satisfactory with respect to temperature, relative humidity, carbon dioxide (CO₂), and carbon monoxide (CO). Recorded indoor air quality results are summarized in the following Table.

Table 1				
Indoor Air Quality Measurement Summary				
(Measurements Recorded on February 16, 2021)				
Measurement Location	Temperature (°F)	Relative Humidity (%)	CO₂ (ppm)	CO (ppm)
Outdoors	32.4	15.3	461	0.0
Cafeteria	71.0	14.5	507	0.0
Room 117	70.0	14.6	474	0.0
Room 141	71.5	22.1	476	0.0

ppm – parts per million

Non-viable Airborne Fungi Sampling

Measured total indoor airborne fungi concentrations were determined to have a normal ecology. Measured total indoor fungi concentrations were slightly above measured outdoor concentrations in the Cafeteria likely due to wet outdoor conditions. A complete laboratory analysis report is available for viewing in Attachment A.

Visual Assessment

A walk-through of the hallways and a limited number of classrooms and public areas was carried out. No bathrooms, staff offices, mechanical rooms, kitchen areas or storage areas were visited. The school was not session at the time of the inspection.

The school was free of evidence of current water intrusion or any unexpected odors. Except as noted, floors, walls and ceiling tiles observed were in acceptable condition. The housekeeping was acceptable.

Conclusions & Recommendations

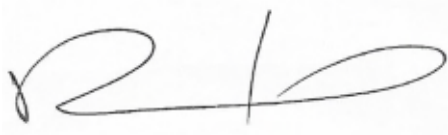
Indoor air quality spore trap measurements collected in all areas assessed were determined to be consistent with normal ecology. This is an indication that the spores sampled in the rooms assessed are more likely to be originating in the outdoor environment rather than an interior source - reducing the chance of undetected overgrowth or colonization in the building. While there are no standards for airborne levels of mold, this approach of comparing indoor to outdoor, and looking at the species found, is one tool identified by organizations such as the American Industrial Hygiene Association when identifying assessment methods and improvement measurement in indoor air quality. Please note the following considerations for improvement.

- Identify the cause of any staining on ceiling tiles and fix

At this time, no other recommendations are provided.

Windjammer appreciates the opportunity to provide this indoor air quality assessment. If you have any questions or comments, please feel free to contact us at (888) 270 - 8387.

Best regards,

A handwritten signature in black ink, appearing to read 'D Hammond Sr', written over a light gray rectangular background.

Damien Hammond Sr, MS, CSP, CIH
President

Attachment A: Microbial Laboratory Report (Air)

Attachment A