Windjammer Environmental LLC
6710 Oxon Hill Road
Suite 210
Oxon Hill, MD 20745
(888) 270-8387
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February 19, 2021

Alex Baylor
Environmental Specialist
PGCPS Environmental Safety Office
13306 Old Marlboro Pike
Upper Marlboro, MD 20772
Alex.baylor@pgcps.org

Re: IAQ and Mold Assessment Report (Retest)
Prince George's County Public Schools
PG County Schools 2021 Oxon Hill 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 PG County Oxon Hill Elementary School at 7701 Livingston Road, Oxon Hill, MD 20745. This assessment is intended to check on effectiveness of cleaning operations in areas that were previously identified as having above normal ecology. This assessment was conducted by Certified Industrial Hygienist (CIH) Damien Hammond on February 16, 2021.

This assessment included:

- Measurement of temperature, relative humidity, carbon dioxide (CO_2) 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 (CO_2) 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 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 Analytical of Beltsville, MD. EMSL Analytical 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 (^{o}F)
- Relative humidity to be maintained below 65%

Carbon Dioxide

CO_2 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 CO_2 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 CO_2 concentrations are measured at 380 ppm, then indoor CO_2 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 (CO_2), 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 (%)	CO_2 (ppm)	CO (ppm)
Outside	41.2	64.7	490	0.1
Cafeteria	71.4	29.5	503	0.0
Learning Area 1	70.8	27.4	480	0.0
Learning Area 2	70.0	29.3	490	0.0

ppm – parts per million

Non-viable Airborne Fungi Sampling

Measured total indoor airborne fungi concentrations were determined have a normal ecology and with indoor airborne fungi concentrations lower than measured total outdoor fungi concentrations at this time. 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 in session at the time of the inspection.

The school was free of evidence of current water intrusion or any unexpected odors. The 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 less than the levels measured outside the building and with the same predominate spore types found. 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
- Clean or paint HVAC grilles that are dirty or have become corroded

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,

Damien Hammond SR, CIH, CSP
Certified Industrial Hygienist

Attachment A: Microbial Laboratory Report (Air)

Attachment A

Windjammer Environmental LLC
info@wjenviro.com

EMSL Analytical, Inc.

10768 Baltimore Avenue Beltsville, MD 20705

Tel/Fax: (301) 937-5700 / (301) 937-5701

http://www.EMSL.com / beltsvillelab@emsl.com

EMSL Order: 192101422
Customer ID: WJEN42
Customer PO:
Project ID:

Attention: Damien Hammond
Windjammer Environmental
6710 Oxon Hill Rd
National Harbor, MD 20745

Phone: (888) 270-8387
Fax:
Collected Date: 02/16/2021
Received Date: 02/17/2021 10:13 AM
Analyzed Date: 02/17/2021

Project: PG COUNTY SCHOOLS 2021; OXON HILL ES RETEST

Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	192101422-0001			192101422-0002			192101422-0003		
Client Sample ID:	021621-5			021621-6			021621-7		
Volume (L):	75			75			75		
Sample Location:	OUTSIDE			CAFETERIA			LEARNING AREA 2		
Spore Types	**Raw Count**	**Count/M³**	**% of Total**	**Raw Count**	**Count/M³**	**% of Total**	**Raw Count**	**Count/M³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	155	6760	48.7	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-
Basidiospores	162	7070	51	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	11*	150*	100
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Pestalotia/Pestalotiopsis	1	40	0.3	-	-	-	-	-	-
Total Fungi	**318**	**13870**	**100**	**-**	**None Detect**	**-**	**11**	**150**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Abubakar Barry, Microbiology Laboratory Manager or other Approved Signatory

No discernable field blank was submitted with this group of samples.

Initial report from: 02/19/2021 12:11 PM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

EMSL Analytical, Inc.

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Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	**192101422-0004**								
Client Sample ID:	**021621-8**								
Volume (L):	**75**								
Sample Location:	**LEARNING AREA 1**								
Spore Types	**Raw Count**	**Count/M³**	**% of Total**						
Alternaria (Ulocladium)	-	-	-						
Ascospores	-	-	-						
Aspergillus/Penicillium	-	-	-						
Basidiospores	-	-	-						
Bipolaris++	-	-	-						
Chaetomium	-	-	-						
Cladosporium	-	-	-						
Curvularia	-	-	-						
Epicoccum	-	-	-						
Fusarium	-	-	-						
Ganoderma	-	-	-						
Myxomycetes++	-	-	-						
Pithomyces++	-	-	-						
Rust	-	-	-						
Scopulariopsis/Microascus	-	-	-						
Stachybotrys/Memnoniella	-	-	-						
Unidentifiable Spores	-	-	-						
Zygomycetes	-	-	-						
Pestalotia/Pestalotiopsis	-	-	-						
Total Fungi	**-**	**None Detect**	**-**						
Hyphal Fragment	-	-	-						
Insect Fragment	-	-	-						
Pollen	-	-	-						
Analyt. Sensitivity 600x	-	44	-						
Analyt. Sensitivity 300x	-	13*	-						
Skin Fragments (1-4)	-	1	-						
Fibrous Particulate (1-4)	-	1	-						
Background (1-5)	-	1	-						

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Abubakar Barry, Microbiology Laboratory Manager or other Approved Signatory

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EMSL ANALYTICAL, INC.
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Cinnaminson, NJ 08077
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FAX: (856) 786-5974

Industrial Hygiene Chain of Custody

EMSL Order Number (Lab Use Only): 192101422

Report To Contact Name: Windjammer Environmental			**Bill To Company:** WINDJAMMER ENVIRONMENTAL		**Client ID #:**
Company Name: WINDJAMMER ENVIRONMENTAL LLC			**Attention To:** Windjammer Environmental		
Street: 6710 Oxon Hill Rd STE 210			**Street:** 6710 Oxon Hill Rd STE 210		
City: National Harbor	**State/Province:** MD	**Zip/Postal Code:** 20745	**City:** National Harbor	**State/Province:** MD	**Zip/Postal Code:** 20745
Phone : 8882708387	**Fax :**		**Phone:** 8882708387	**Fax:**	
Project Name: PG COunty Schools 2021 OXON Hill ES Retest			**Email Results To:** Hammond@wjenviro.com		**U.S. State where Samples Collected:** MD
# Samples In Shipment:	**Date of Shipment:**		**Purchase Order:**		**Sampled By (Signature):**

Turnaround Time (TAT) – Please Check: If No Selection Made, Standard 2 Week TAT Will Apply

☐ 2 Week ☐ 1 Week ☐ 4 Day ☐ 3 Day ☐ 2 Day ☒ 1 Day ☐ Other (Call Lab)

Media Type:

Manufacturer/Part #: **Lot #:**

Client Sample ID	Location/Description	Analyte / Method	Media	Flow (lpm)	Sample Time On	Sample Time Off	Volume / Area	Sample Type	Sample Date	Comments
021621-5	Outside		AOC	15			75L	☒ Area ☐ Personal	021621	
-6	Cafeteria		↓	↓			↓	☐ Area ☐ Personal	↓	
-7	Learning AREA 2		↓	↓			↓	☒ Area ☐ Personal	↓	
-8	Learning AREA 1		↓	↓			↓	☒ Area ☐ Personal	↓	
								☐ Area ☐ Personal		
								☐ Area ☐ Personal		
								☐ Area ☐ Personal		
								☐ Area ☐ Personal		

Note: Most NIOSH and OSHA methods require field blanks. It is the IH field sampler's responsibility to submit the proper number of field blanks and duplicates.

Released By	Date	Received By	Date
	2/17/21	Moses Mebea DB	

Comments: