



Windjammer Environmental LLC
6710 Oxon Hill Road
Suite 210
Oxon Hill, MD 20745
(888) 270-8387
info@wjenviro.com

May 29, 2019

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
Prince George's County Public Schools
Potomac Landing 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 Potomac Landing Elementary School located at 12500 Fort Washington Road, Fort Washington, MD 20744. This assessment is intended to check on effectiveness of operations activities that are focused on preventing conditions that can lead to the development of an environment which is historically associated with an increase in reports of poor IAQ. This assessment was conducted by Certified Industrial Hygienist (CIH) Katherine Dietrich on May 21, 2019.

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 May 21, 2019)				
Measurement Location	Temperature (°F)	Relative Humidity (%)	CO₂ (ppm)	CO (ppm)
Cafetorium*	74.1	40.3	498	0.0
Classroom 21*	73.9	40.7	576	0.0
Classroom 17*	74.8	47.2	1076	0.0
Library	72.7	41.3	575	0.0
Gym	71.8	43.9	460	0.0
Classroom 13*	71.0	46.4	699	0.0
Area B, classroom 6*	72.1	45.2	1138	0.0
Front hall	71.6	44.5	660	0.0
Classroom 9*	72.9	45.0	1492	0.0
Outdoors*	68.6	40.9	440	0.0

ppm – parts per million

* - spore-trap sample

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 in 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. This school has central air conditioning and is co-located with a community center. The housekeeping was acceptable.

The following areas for further investigation or improvement were noted:

- Library – stained ceiling tiles in area below skylight.
- Gym – 3 stained ceiling panels on east side.

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.

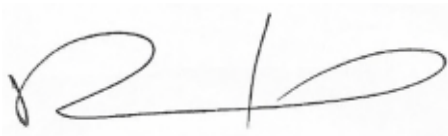
Please note the following considerations for improvement.

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

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, MS, CSP, CIH
President



Katherine (Kay) Dietrich, CIH, CSP
Certified Industrial Hygienist

Attachment A: Microbial Laboratory Report (Air)

Attachment A



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: 191905804

Customer ID: WJEN42

Customer PO:

Project ID:

Attn: Kay Dietrich
Windjammer Environmental
6710 Oxon Hill Rd
National Harbor, MD 20745

Phone: (301) 351-4213

Fax:

Collected: 05/21/2019

Received: 05/21/2019

Analyzed: 05/24/2019

Project: PGCPs POTOMAC LANDING ES

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	191905804-0001 190521-1 75 CAFETORIUM			191905804-0002 190521-2 75 ROOM 21			191905804-0003 190521-3 75 ROOM 17		
	Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³
Alternaria (Ulocladium)	-	-	-	1	40	15.4	-	-	-
Ascospores	15	660	29.5	1	40	15.4	1	40	9.5
Aspergillus/Penicillium	-	-	-	1	40	15.4	-	-	-
Basidiospores	15	660	29.5	1	40	15.4	5	200	47.6
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	1*	10*	2.4
Cladosporium	20	870	38.8	3	100	38.5	2	90	21.4
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	1	40	1.8	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1*	10*	0.4	-	-	-	1	40	9.5
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	1	40	9.5
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Bispora	-	-	-	-	-	-	-	-	-
Total Fungi	52	2240	100	7	260	100	11	420	100
Hyphal Fragment	1*	10*	-	-	-	-	1	40	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	3	100	-	1	40	-	1*	10*	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	3	-
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.

Stefanie Schneider, Microbiology Laboratory Manager
or other approved signatory

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

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. *** Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Beltsville, MD AIHA-LAP, LLC --EMLAP Accredited #102891

Initial report from: 05/29/2019 14:55:36

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



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Attn: Kay Dietrich Windjammer Environmental 6710 Oxon Hill Rd National Harbor, MD 20745	Phone: (301) 351-4213 Fax: Collected: 05/21/2019 Received: 05/21/2019 Analyzed: 05/24/2019
Project: PGCPs POTOMAC LANDING ES	

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	191905804-0004 190521-4 75 ROOM 13			191905804-0005 190521-5 75 ROOM 6			191905804-0006 190521-6 75 OUTDOORS			
	Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	1	40	5.3	-	-	-	-	-	-	-
Ascospores	5	200	26.3	2	90	40.9	191	8340	61.9	
Aspergillus/Penicillium	1	40	5.3	-	-	-	1	40	0.3	
Basidiospores	3	100	13.2	2	90	40.9	84	3700	27.5	
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-	30	1300	9.7	
Curvularia	1	40	5.3	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	2	90	0.7	
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	5.3	1	40	18.2	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-	-
Bispora	6	300	39.5	-	-	-	-	-	-	-
Total Fungi	18	760	100	5	220	100	308	13470	100	
Hypthal Fragment	5	200	-	-	-	-	1	40	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-	-
Pollen	2	90	-	-	-	-	3	100	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-	-
Skin Fragments (1-4)	-	3	-	-	3	-	-	1	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-	-
Background (1-5)	-	1	-	-	1	-	-	2	-	-

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

Stefanie Schneider, Microbiology Laboratory Manager
or other approved signatory

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

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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:	191905804-0007		
Client Sample ID:	190521-7		
Volume (L):	75		
Sample Location	ROOM 9		
Spore Types	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	1*	10*	4.5
Ascospores	-	-	-
Aspergillus/Penicillium	1	40	18.2
Basidiospores	-	-	-
Bipolaris++	-	-	-
Chaetomium	-	-	-
Cladosporium	1	40	18.2
Curvularia	-	-	-
Epicoccum	1	40	18.2
Fusarium	-	-	-
Ganoderma	-	-	-
Myxomycetes++	2	90	40.9
Pithomyces++	-	-	-
Rust	-	-	-
Scopulariopsis/Microascus	-	-	-
Stachybotrys/Memnoniella	-	-	-
Unidentifiable Spores	-	-	-
Zygomycetes	-	-	-
Bispora	-	-	-
Total Fungi	6	220	100
Hypthal Fragment	1*	10*	-
Insect Fragment	-	-	-
Pollen	1	40	-
Analyt. Sensitivity 600x	-	44	-
Analyt. Sensitivity 300x	-	13*	-
Skin Fragments (1-4)	-	4	-
Fibrous Particulate (1-4)	-	2	-
Background (1-5)	-	2	-

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

Stefanie Schneider, Microbiology Laboratory Manager
or other approved signatory

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