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June 5, 2019

Prince Georges County Environmental Safety Office 13306 Old Marlboro Pike Upper Marlboro, MD 20772

Attention: Mr. Alex Baylor

RE: Indoor Air Quality Screening

Global Project Number: 19-015

School: Dwight D. Eisenhower Middle School

Dear Mr. Baylor,

On June 1, 2019, Global Inc.'s (GLOBAL) Certified Industrial Hygienist, Ms. Lauren Kesslak, conducted an Indoor Air Quality Screening at Dwight D. Eisenhower Middle School located at 1300, 13725 Briarwood Dr, Laurel, MD 20708.

#### Methodology

The IAQ evaluation included a visual assessment, sampling for non-viable mold spores in air, and measurement of comfort parameters (temperature, humidity, carbon dioxide, and carbon monoxide) in randomly selected representative locations within the building. During the visual assessment of representative locations, and when noted, GLOBAL documented those areas with suspected mold growth, water intrusions, and wet conditions that have the potential to lead to mold growth. GLOBAL also noted any unusual odors. At least one microbial air sample was collected for every 10,000 Square Feet (SF) of space in the building and the analytical results for the interior spaces were compared to an outdoor (ambient) sample collected on the same day.

Microbial samples (including a field blank for quality control) were delivered under strict chain-of-custody procedures were to Hayes Microbial Consulting - an AIHA EMPAT-certified laboratory in Midlothian, Virginia for analysis by microscopy. The sample chain-of-custody and laboratory report is attached.

#### **Observations and Results**

GLOBAL's inspector conducted a walkthrough with Prince Georges County Public School (PGCPS) personnel present. Rooms were selected in a random manner throughout the building so as to prevent sampling bias.



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#### Mold-in-Air Samples

There are no definitive regulations or standardized guidelines for addressing airborne mold in an indoor setting. If building systems (ventilation, envelope) are functioning properly, the indoor fungal ecology profile should be consistent with what is encountered outdoors and the spore concentrations should be below the ambient levels. Laboratory analytical results are attached at the end of this report.

#### **Temperature**

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) have published recommendations for year-round acceptable temperatures in Standard 55-2016 (*Thermal Environmental Conditions for Human Occupancy*). The summer comfort range is 73 to 79°F. It is important to note that ASHRAE standards are intended as a suggested guideline as opposed to a regulation.

#### Relative Humidity (RH)

Relative humidity is a key factor for mold growth. Mold has the potential of growing on suitable surfaces with humidity levels above 60%. ASHRAE standard 62.1-2013 (*Ventilation for Acceptable Indoor Air Quality*) recommends a maximum indoor relative humidity of 65% to preclude the likelihood of condensation on cool surfaces encouraging mold growth. All the indoor relative humidity readings were below the ASHRAE recommended level of 65%.

#### Carbon Monoxide

Carbon monoxide (CO) is a colorless and odorless gas that is produced by the incomplete combustion of carbon-containing fuels. Oil, gasoline, diesel fuels, wood, coke, and coal are the major sources of CO. All registered CO concentrations were below the EPA National Ambient Air Quality Standard (NAAQS) of 9 ppm.

#### Carbon Dioxide

Under conditions of maximum occupancy, ASHRAE Standard 62.1-2013, Appendix C, infers that the acceptable carbon dioxide upper limit is the prevailing outdoor carbon dioxide concentration plus 700 parts per million (ppm). On June 1, 2019, the outdoor (ambient) carbon dioxide concentration was approximately 425 ppm so indoor concentrations should not exceed approximately 1125 ppm (700 + 425). All indoor carbon dioxide measurements were within the ASHRAE standards.

Observations are presented in Table 1 and testing results are presented in Table 2.

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**Table 1: Observations** 

Location	Observations
Band Room	No issues found
Cafeteria	No issues found
104	No issues found
107	No issues found
200	No issues found
204	No issues found
209	No issues found
212	No issues found
216	No issues found
221	No issues found
220	No issues found
115	No issues found
112	No issues found

**Table 2: Air Quality Results** 

Sample Location	Temp <sup>0</sup> F	RH%	CO ppm	CO2 ppm	Normal Fungal
Standards	ASHRAE 68 to 75°F	ASHRAE <65%	NAAQS <9	ASHRAE 1125	Ecology?
Ambient	73.8	59.5	0	425	N/A
Band Room	74.35	51.85	0	462	Yes
Cafeteria	69.2	56.25	0	401	Yes
104	68.15	60.25	0	455	Yes
107	67.55	57.4	0	393.5	Yes
200	64.65	62.25	0	425.5	Yes
204	65.65	63.55	0	487	Yes
209	65.9	63	0	402	Yes
212	64.95	66.15	0	459	Yes



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Sample Location	Temp <sup>0</sup> F	RH%	CO ppm	CO2 ppm	Normal Fungal
Standards	ASHRAE 68 to 75°F	ASHRAE <65%	NAAQS <9	ASHRAE 1125	Ecology?
216	62.9	66.6	0	424	Yes
221	62.8	391.5	0	319.5	Yes
220	64.85	61.25	0	436	Yes
115	64.95	60.05	0	427.5	Yes
112	64.35	61	0	399	Yes



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#### **Conclusions**

No indoor air quality issues related to mold were found during the screening performed on June 1, 2019, and all mold samples were found to have a normal ecology for an indoor environment.

It has been our pleasure to conduct these IAQ Screening services for the Prince Georges County Public School system. If you have any questions, please feel free to contact us.

Regards,

Lauren E. Kesslak, MS, CIH, CSP

Certified Industrial Hygienist

Lan E. Yould





Analysis Report prepared for

# Global, Inc.

1818 New York Ave. Suite 217 Washington, DC, 20002

Phone: (443) 691-0455

19-015 Eisenhower MS

Collected: June 3, 2019 Received: June 4, 2019 Reported: June 4, 2019 We would like to thank you for trusting Hayes Microbial for your analytical needs! We received 14 samples by FedEx in good condition for this project on June 4th, 2019.

The results in this analysis pertain only to this job, collected on the stated date, and should not be used in the interpretation of any other job. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC..

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

Steve Hayes, BSMT(ASCP)
Laboratory Director

Hayes Microbial Consulting, LLC.

plan N. Hayes



EPA Laboratory ID: VA01419



Lab ID: #188863



NVLAP Lab Code: 500096-0



DPH License: #PH-0198

1818 New York Ave. Suite 217 Washington, DC, 20002 (443) 691-0455

# **19-015** Eisenhower MS

#19021790

**Spore Trap** SOP - HMC#101

Sample Number	1	DDMS/6	5119-01	2	DDMS/6	5119-02	3	DDMS/6	5119-03	4	DDMS/6	5119-04	
Sample Name	Ambient				Band Room		Cafeteria			104			
Sample Volume	75.00 liter				75.00 liter		75.00 liter			75.00 liter			
Reporting Limit		13 spores/m <sup>3</sup>	1		13 spores/m <sup>3</sup>	ł		13 spores/m <sup>3</sup>		13 spores/m³			
Background		2			2			1			2		
Fragments		27/m <sup>3</sup>			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	
Alternaria	2	27	<1%										
Ascospores	640	8533	76.6%	5	67	100.0%	2	27	100.0%	14	187	93.3%	
Aspergillus Penicillium	6	80	<1%										
Basidiospores	144	1920	17.2%							1	13	6.7%	
Bipolaris Drechslera													
Chaetomium													
Cladosporium	40	533	4.8%										
Curvularia													
Epicoccum	2	27	<1%										
Fusarium													
Memnoniella													
Myxomycetes	1	13	<1%										
Pithomyces													
Stachybotrys													
Stemphylium													
Torula													
Ulocladium													
Polythrincium	1	13	<1%										
Total	836	11146	100%	5	67	100%	2	27	100%	15	200	100%	
Water Damage Indicator	r	Commo	n Allergen	rgen Slightly Higher than Baseline		Signi	Significantly Higher than Baseline			Ratio Abnormal	Ratio Abnormality		

HAYES

Collected: Jun 3, 2019

Project Analyst:

Ramesh Poluri, PhD

Received: Jun 4, 2019

Date:

Reported: Jun 4, 2019

........

06 - 04 - 2019 Steve

Reviewed By: Steve Hayes, BSMT

Stephen N. Hoyes

Date:

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# **19-015** Eisenhower MS

#19021790

Spore Trap SOP - HMC#101

Sample Number	5	DDMS/6	5119-05	6	DDMS/6	5119-06	7	DDMS/6	5119-07	8	DDMS/6	5119-08
Sample Name	107				200		204			209		
Sample Volume	75.00 liter				75.00 liter		75.00 liter			75.00 liter		
Reporting Limit		13 spores/m <sup>3</sup>	}		13 spores/m <sup>3</sup>	}		13 spores/m <sup>3</sup>	ł	13 spores/m <sup>3</sup>		
Background		2			1			1			1	
Fragments		ND			ND			ND			ND	
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	3	40	60.0%	1	13	25.0%	5	67	83.3%	2	27	100.0%
Aspergillus Penicillium												
Basidiospores	1	13	20.0%	3	40	75.0%	1	13	16.7%			
Bipolaris Drechslera												
Chaetomium												
Cladosporium	1	13	20.0%									
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Polythrincium												
Total	5	66	100%	4	53	100%	6	80	100%	2	27	100%
Water Damage Indicato	r	Commo	on Allergen		Slightly Higher	than Baseline	Signi	ficantly Higher	than Baseline		Ratio Abnormal	ity

HAYES
MICROBIAL CONSULTING

Collected: Jun 3, 2019

Project Analyst:

Ramesh Poluri, PhD

Received: Jun 4, 2019

Reported: Jun 4, 2019

Date:

06 - 04 - 2019

Reviewed By:

Steve Hayes, BSMT

Stephen N. Hoyes

Date:

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#### 19-015 Eisenhower MS

#19021790

**Spore Trap** SOP - HMC#101

Sample Number	9	DDMS/6	5119-09	10	DDMS/6	5119-10	11	DDMS/6	5119-11	12	DDMS/6	5119-12
Sample Name	212				216		221			220		
Sample Volume	75.00 liter				75.00 liter		75.00 liter			75.00 liter		
Reporting Limit		13 spores/m <sup>3</sup>	3		13 spores/m <sup>3</sup>	}		13 spores/m <sup>3</sup>	ł	13 spores/m <sup>3</sup>		
Background		2			1			1			1	
Fragments		ND			ND			ND			ND	
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	4	53	80.0%	1	13	33.3%	1	13	100.0%	2	27	66.7%
Aspergillus Penicillium												
Basidiospores	1	13	20.0%	2	27	66.7%				1	13	33.3%
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Polythrincium												
Total	5	66	100%	3	40	100%	1	13	100%	3	40	100%
Water Damage Indicator	r	Commo	on Allergen		Slightly Higher	than Baseline	Sign	ficantly Higher	than Baseline		Ratio Abnormal	ity

MICROBIAL CONSULTING

Collected: Jun 3, 2019

Project Analyst:

Ramesh Poluri, PhD

Received: Jun 4, 2019

Reported: Jun 4, 2019

Date:

06 - 04 - 2019

Reviewed By: Steve Hayes, BSMT

Date:

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#### 19-015 Eisenhower MS

#19021790

**Spore Trap** SOP - HMC#101

Sample Number	13	DDMS/6	5119-13	14	DDMS/6	5119-14					
Sample Name		115			112						
Sample Volume		75.00 liter			75.00 liter						
Reporting Limit		13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>						
Background		1			1						
Fragments		ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total					
Alternaria											
Ascospores	1	13	100.0%	2	27	66.7%					
Aspergillus Penicillium											
Basidiospores				1	13	33.3%					
Bipolaris Drechslera											
Chaetomium											
Cladosporium											
Curvularia											
Epicoccum											
Fusarium											
Memnoniella											
Myxomycetes											
Pithomyces											
Stachybotrys											
Stemphylium											
Torula											
Ulocladium											
Polythrincium											
Total	1	13	100%	3	40	100%					
Water Damage Indicator		Commo	n Allergen		Slightly Higher	than Baseline	Significar	itly Higher than Base	line	Ratio Abnormal	ity



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Project Analyst:

Ramesh Poluri, PhD

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#### 19-015 Eisenhower MS

#19021790

# **Spore Trap Information**

Reporting Limit	The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.
Blanks	Results have not been corrected for field or laboratory blanks.
Background	The Background is the amount of debris that is present in the sample. This debris consists of skin cells, dirt, dust, pollen, drywall dust and other organic and non-organic matter. As the background density increases, the likelihood of spores, especially small spores such as those of Aspergillus and Penicillium may be obscured. The background is rated on a scale of 1 to 5 and each level is determined as follows:
	<ul> <li>NBD: No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)</li> <li>1: &lt;5% of field occluded. No spores will be uncountable.</li> <li>2: 5-25% of field occluded.</li> <li>3: 25-75% of field occluded.</li> <li>4: 75-90% of field occluded.</li> <li>5: &gt;90% of field occluded. Suggested recollection of sample.</li> </ul>
Fragments	Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.
Control Comparisons	There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.
Water Damage Indicator	Blue: These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.
Common Allergen	Green: Although all molds are potential allergens, these are the most common allergens that may be found indoors.
Slightly Higher than Baseline	Orange: The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.  Red: The spore count is significantly higher than the baseline count and probably indicates a source of contamination.
Significantly Higher than Baseline	
Ratio Abnormality	Violet: The types of spores found indoors should be similar to the ones that were identified in the baseline sample. Significant increases (more than 25%) in the ratio of a particular spore type may indicate the presence of abnormal levels of mold, even if the total number of spores of that type is lower in the indoor environment than it was outdoors.
Color Coding	Fungi that are present in indoor samples at levels lower than 200 per cubic meter are not color coded on the report, unless they are one of the water damag indicators.



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#### 19-015 Eisenhower MS

#19021790

# **Organism Descriptions**

Alternaria	Habitat:	Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces.
	Effects:	A common allergen and has been associated with hypersensitivity pneumonitis. Alternaria is capable of producing toxic metabolites which may be associated with disease in humans or animals. Occasionally an agent of onychomycosis, ulcerated cutaneous infection and chronic sinusitis, principally in the immunocompromised patient.
Ascospores	Habitat:	A large group consisting of more than 3000 species of fungi. Common plant pathogens and outdoor numbers become very high following rain. Most of the genera are indistinguishable by spore trap analysis and are combined on the report.
	Effects:	Health affects are poorly studied, but many are likely to be allergenic.
Aspergillus Penicillium	Habitat:	The most common fungi isolated from the environment. Very common in soil and on decaying plant material. Are able to grow well indoors on a wide variety of substrates.
	Effects:	This group contains common allergens and many can cause hypersensitivity pneumonitis. They may cause extrinsic asthma, and many are opportunistic pathogens. Many species produce mycotoxins which may be associated with disease in humans and other animals. Toxin production is dependent on the species, the food source, competition with other organisms, and other environmental conditions.
Basidiospores	Habitat:	A common group of Fungi that includes the mushrooms and bracket fungi. They are saprophytes and plant pathogens. In wet conditions they can cause structural damage to buildings.
	Effects:	Common allergens and are also associated with hypersensitivity pneumonitis.
Cladosporium	Habitat:	One of the most common genera worldwide. Found in soil and plant debris and on the leaf surfaces of living plants. The outdoor numbers are lower in the winter and often relatively high in the summer, especially in high humidity. The outdoor numbers often spike in the late afternoon and evening. Indoors, it can be found growing on textiles, wood, sheetrock, moist window sills and in HVAC supply ducts.
	Effects:	A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.
Epicoccum	Habitat:	It is found in soil and plant litter and is a plant pathogen. It can grow indoors on a variety of substrates, including paper and textiles and is commonly found on wet drywall.



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#### 19-015 Eisenhower MS

#19021790

# **Organism Descriptions**

Found on decaying plant material and as a plant pathogen. Habitat: Myxomycetes

> Some allergenic properties reported, but generally pose no health concerns to humans. Effects:

Habitat: Found in soil and occasionally on plants. Polythrincium

> No known health effects. Allergenic properties are poorly studied. Effects:





Job Number: 19-015

Company:

Job Name:

Address:

Ave NE Suite 24

SHIP: FEDEX - PAK 50 DATE: 06-04-2019

7753 7176 5314

nef

Date Collected:  Analysis Type  Analysis Description						te:		
Spore Trap	S S	Identification 8	Analysis Description  Enumeration of Fungal Spores		Turnaround	Accepted Media Types		
ороге ттар	S+		lysis with Dander, Fiber, and Pollen counts			4 Hour	Air Cassettes, Impact Slides	
Direct ID	D D		tative Enumeration of spores and myceliun			4 Hour	Air Cassettes, Impact Slides	
Direct ID	D+		with Fully Quantitative spore count	n		4 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate	
Culture	C1		Enumeration of Mold only			4 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate	
Juiture	C2		5.			Day	Air Plate, Agar Plate, Swab, Bulk	
	C3		Enumeration of Bacteria only			Day	Air Plate, Agar Plate, Swab, Bulk	
			Enumeration of Mold and Bacteria			Day	Air Plate, Agar Plate, Swab, Bulk	
Particle	C5		for Sewage Bacteria	4		Day 1 Hour	Agar Plate, Swab, Bulk	
	TPA	Total Particulate	Total Particulate Analysis, ID & Count (Does Not Include Mold)				Air Cassettes, Impact Slides, Bio-Tape	
#	Number		Sample		Analysis	Volume	Notes	
1			<u> </u>					
2								
3		See attache	ed _					
4								
5				1			Luga v 1 1 1	
6							1 292	
7								
3				Par				
)				3.				
0								
1								
2								
3				No.				
4								
-			6					
5								

_

SHIP: FEDEX - PAK SO DATL: 06-04-2019

19021790

	7753 7176
	5314

	Eisenhower Middle School		
Sample ID	Location	Analysis	Volume
DDEMS/6119-01	Ambient	S	75
DDEMS/6119-02	Band Room	S	75
DDEMS/6119-03	Cafeteria	\$	75
DDEMS/6119-04	104	S	75
DDEMS/6119-05	107	S	75
DDEMS/6119-06	200	S	75
DDEMS/6119-07	204	S	75
DDEMS/6119-08	209	S	75
DDEMS/6119-09	212	S	75
DDEMS/6119-10	216	S	75
DDEMS/6119-11	221	S	75
DDEMS/6119-12	220	S	75
DDEMS/6119-13	115	S	75
DDEMS/6119-14	112	S	75