



Environmental Consultants and Engineers

1818 New York Avenue Suite 217
Washington, DC 20002

www.globalincusa.net

February 22, 2020

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

Attention: Mr. Alex Baylor

RE: Indoor Air Quality Screening Report

Global Project Number: 20-064
School: Charles Carroll Middle School

Dear Mr. Baylor,

On November 30, 2020, Global Inc.'s (GLOBAL) team of Industrial Hygienists under the supervision of Certified Industrial Hygienist, Dr. Channa Bambaradeniya, conducted an Indoor Air Quality Screening at Charles Carroll Middle School located at 6130 Lamont Drive, New Carrollton, MD.

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. 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.

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.



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Observations

The general observations in the twelve indoor locations inspected are summarized in Table 1 below:

Table 1: Observations

Location	Observations
Social Studies Storage	No issues
Room 304	No issues
Room 312	Decolored CT
Room 204	No issues
Room 210	No issues
Room 200	Decolored CT
Band Room	Decolored CT
Room 104	Decolored CT
Media Center	No issues
Multi-purpose Room	No issues
Gym	No issues
Health Suite	No issues

Comfort Parameter Measurements and Mold-in-Air Sample Results

The comfort parameter measurements and status of fungal ecology is summarized in Table 2.

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 winter comfort range is 68 to 75°F and 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. Most of the indoor temperature readings were lower than the ASHRAE Standard.

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. The indoor relative



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humidity readings in Room 30, Gym and Health Suite were slightly above 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 November 30, 2020, the outdoor (ambient) carbon dioxide concentration was approximately 417 ppm so indoor concentrations should not exceed approximately 1117 ppm (700 + 417). All indoor carbon dioxide measurements were within the ASHRAE standards.

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.

The analytical results of indoor air samples collected from the Multi-Purpose Room and the Gym on November 30, 2020 indicated elevated presence of *Aspergillus/Penicillium*. The horizontal surfaces of these two locations were thoroughly cleaned, and air scrubbers with HEPA filters were operated for 24-36 hours. Both these locations were reinspected on February 17, 2021, and the analytical results of air samples collected indicated normal fungal ecology. Laboratory analytical results are attached at the end of this report.



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Table 2: Air Quality Results (Inspected on November 30, 2020)

Sample Location	Temp °F	RH%	CO ppm	CO2 ppm	Normal Fungal Ecology?
Standards	ASHRAE 68 to 75°F	ASHRAE <65%	NAAQS <9	ASHRAE 1117	
Ambient	62.6	73.3	0	417	-
Social Studies Storage	63.9	65.5	0	434	Yes
Room 304	61.9	67.7	0	421	Yes
Room 312	62.3	60.1	0	416	Yes
Room 204	61.7	60.2	0	405	Yes
Room 210	61.8	58.0	0	415	Yes
Room 200	65.2	63.0	0	420	Yes
Band Room	66.3	55.0	0	412	Yes
Room 104	64.4	63.3	0	407	Yes
Media Center	71.4	54.1	0	421	Yes
Multi-purpose Room	70.6	59.5	0	414	No
Gym	67.7	69.7	0	404	No
Health Suite	66.7	66.7	0	457	Yes

Table 3: Air Quality Results (Inspected on February 17, 2021)

Sample Location	Temp °F	RH%	CO ppm	CO2 ppm	Normal Fungal Ecology?
Standards	ASHRAE 68 to 75°F	ASHRAE <65%	NAAQS <9	ASHRAE 1369	
Ambient	28	14	0	669	-
Multi-purpose Room	56	26	0	563	Yes
Gym	68	18	0	521	Yes



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Conclusions and Recommendations

Among the comfort parameters measured, the indoor temperature readings in most locations were lower than the ASHRAE recommended range for winter. The relative humidity in Room 304, Gym and the Health Suite were slightly above the maximum level specified by ASHARAЕ. The indoor temperature and relative humidity should be maintained at the ASHRAE recommended range for general comfort.

Among the indoor locations sampled for mold spores, samples collected from Multi-Purpose Room and the Gym indicated an elevated presence of *Aspergillus/Penicillium* during the screening performed on November 30, 2020. These two locations were thoroughly cleaned and subsequently reinspected on February 17, 2021. The air sample analytical results indicated normal fungal ecology for both locations.

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,

Channa Bambaradeniya, Ph.D., CIH, CSP, CHMM
Certified Industrial Hygienist
Global, Inc.
Mobile: 443-691-0455



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Washington, DC 20002

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ATTACHMENT I

Air Sample Analytical Results and Chain-Of-Custody Form

Analysis Report prepared for

Global, Inc.

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

Phone: (443) 691-0455

BB203
PGCPS Indoor Air Quality
Carroll Middle School

Collected: **November 30, 2020**
Received: **December 1, 2020**
Reported: **December 1, 2020**

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 December 1st, 2020.

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.



EPA Laboratory ID: VA01419



Lab ID: #188863



DPH License: #PH-0198

Sample Number	1	CCMS-1130-01			2	CCMS-1130-02			3	CCMS-1130-03			4	CCMS-1130-04		
Sample Name	Ambient			Social Studies Storage			Room 304			Room 312						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter						
Reporting Limit	13 spores/m ³			13 spores/m ³			13 spores/m ³			13 spores/m ³						
Background	2			2			2			2						
Fragments	13/m ³			13/m ³			ND			ND						
Organism	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total				
Alternaria				1	13	8.3%				1	13	9.1%				
Ascospores	19	253	33.9%	9	120	75.0%	1	13	25.0%	2	27	18.2%				
Aspergillus Penicillium	32	427	57.1%							6	80	54.5%				
Basidiospores	2	27	3.6%				1	13	25.0%	1	13	9.1%				
Bipolaris Drechslera																
Chaetomium																
Cladosporium							1	13	25.0%							
Curvularia																
Epicoccum																
Fusarium	1	13	1.8%													
Memnoniella																
Myxomycetes	2	27	3.6%				1	13	25.0%							
Pithomyces																
Stachybotrys																
Stemphylium																
Torula				1	13	8.3%				1	13	9.1%				
Ulocladium																
Polythrincium				1	13	8.3%										
Total	56	747	100%	12	159	100%	4	52	100%	11	146	100%				

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: **Nov 30, 2020** Received: **Dec 1, 2020** Reported: **Dec 1, 2020**

Project Analyst: Shareef Abdelgadir, MS *Shareef Abdelgadir* Date: **12 - 01 - 2020** Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes* Date: **12 - 01 - 2020**

Sample Number	5	CCMS-1130-05			6	CCMS-1130-06			7	CCMS-1130-07			8	CCMS-1130-08		
Sample Name	Room 204			Room 210			Room 200			Band Room						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter						
Reporting Limit	13 spores/m ³			13 spores/m ³			13 spores/m ³			13 spores/m ³						
Background	2			2			2			2						
Fragments	ND			ND			ND			ND						
Organism	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total				
Alternaria	1	13	10.0%													
Ascospores	3	40	30.0%	6	80	40.0%				2	27	28.6%				
Aspergillus Penicillium	5	67	50.0%	7	93	46.7%	11	147	91.7%							
Basidiospores																
Bipolaris Drechslera																
Chaetomium				1	13	6.7%										
Cladosporium				1	13	6.7%				1	13	14.3%				
Curvularia										1	13	14.3%				
Epicoccum																
Fusarium																
Memnoniella																
Myxomycetes	1	13	10.0%				1	13	8.3%	2	27	28.6%				
Pithomyces																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Polythrincium										1	13	14.3%				
Total	10	133	100%	15	199	100%	12	160	100%	7	93	100%				

Water Damage Indicator Common Allergen Slightly Higher than Baseline Significantly Higher than Baseline Ratio Abnormality



Collected: Nov 30, 2020

Received: Dec 1, 2020

Reported: Dec 1, 2020

Project Analyst:
 Shareef Abdelgadir, MS *Shareef Abdelgadir*

Date:
12 - 01 - 2020

Reviewed By:
 Steve Hayes, BSMT *Stephen N. Hayes*

Date:
12 - 01 - 2020

Sample Number	9	CCMS-1130-09			10	CCMS-1130-10			11	CCMS-1130-11			12	CCMS-1130-12		
Sample Name	Room 104			Media Center			Multipurpose			Gym						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter						
Reporting Limit	13 spores/m ³			13 spores/m ³			13 spores/m ³			13 spores/m ³						
Background	2			2			2			2						
Fragments	ND			ND			ND			ND						
Organism	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total				
Alternaria																
Ascospores				2	27	100.0%	3	40	8.1%	2	27	4.4%				
Aspergillus Penicillium	8	107	80.0%				32	427	86.5%	42	560	93.3%				
Basidiospores							2	27	5.4%	1	13	2.2%				
Bipolaris Drechslera																
Chaetomium																
Cladosporium																
Curvularia																
Epicoccum																
Fusarium																
Memnoniella																
Myxomycetes	2	27	20.0%													
Pithomyces																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Polythrincium																
Total	10	134	100%	2	27	100%	37	494	100%	45	600	100%				

Water Damage Indicator Common Allergen Slightly Higher than Baseline Significantly Higher than Baseline Ratio Abnormality

Sample Number	13	CCMS-1130-13			14	Field Blank				
Sample Name	Health Suite									
Sample Volume	75.00 liter			0.00 liter						
Reporting Limit	13 spores/m ³			1 spore/m ³						
Background	2			NBD						
Fragments	ND			ND						
Organism	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total				
Alternaria										
Ascospores	1	13	3.0%							
Aspergillus Penicillium	27	360	81.8%							
Basidiospores										
Bipolaris Drechslera										
Chaetomium										
Cladosporium	3	40	9.1%							
Curvularia	1	13	3.0%							
Epicoccum										
Fusarium										
Memnoniella										
Myxomycetes	1	13	3.0%							
Pithomyces										
Stachybotrys										
Stemphylium										
Torula										
Ulocladium										
Polythrincium										
Total	33	439	100%	ND	ND					

Water Damage Indicator Common Allergen Slightly Higher than Baseline Significantly Higher than Baseline Ratio Abnormality



Collected: **Nov 30, 2020** Received: **Dec 1, 2020** Reported: **Dec 1, 2020**

Project Analyst: Shareef Abdelgadir, MS *Shareef Abdelgadir* Date: **12 - 01 - 2020** Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes* Date: **12 - 01 - 2020**

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	<p>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:</p> <p>NBD: No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)</p> <p>1 : <5% of field occluded. No spores will be uncountable.</p> <p>2 : 5-25% of field occluded.</p> <p>3 : 25-75% of field occluded.</p> <p>4 : 75-90% of field occluded.</p> <p>5 : >90% of field occluded. Suggested recollection of sample.</p>					
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.					
<table border="1"> <tr><td>Water Damage Indicator</td></tr> <tr><td>Common Allergen</td></tr> <tr><td>Slightly Higher than Baseline</td></tr> <tr><td>Significantly Higher than Baseline</td></tr> <tr><td>Ratio Abnormality</td></tr> </table>	Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality	<p>Blue: These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</p> <p>Green: Although all molds are potential allergens, these are the most common allergens that may be found indoors.</p> <p>Orange: The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</p> <p>Red: The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</p> <p>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.</p>
Water Damage Indicator						
Common Allergen						
Slightly Higher than Baseline						
Significantly Higher than Baseline						
Ratio Abnormality						
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 damage indicators.					

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.
Chaetomium	Habitat: Ascomycete fungus, commonly isolated from soil and decaying plant materials. It is cellulolytic and grows well indoors on damp sheetrock and other paper substrates. It is often found growing with Stachybotrys. Effects: It is reported to be allergenic and may produce toxins.
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.

Organism Descriptions

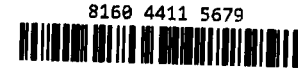
Curvularia	Habitat: They exist in soil and plant debris, and are plant pathogens. Effects: They are allergenic and a common cause of allergic fungal sinusitis. An occasional cause of human infection, including keratitis, sinusitis, onychomycosis, mycetoma, pneumonia, endocarditis and disseminated infection, primarily in the immunocompromised.
Fusarium	Habitat: Commonly found in soil and plant debris and some species are plant pathogens. It is occasionally found indoors on a variety of substrates and in humidifiers, and requires very moist conditions. Effects: Reported to be allergenic and several species may produce potent mycotoxins, including trichothecenes, fumonisin, and vomatoxin. It has a history of severe toxicoses with the ingestion of contaminated grains. An occasional cause of keratitis and mycetoma and can cause disseminated infection in immunocompromised patients.
Myxomycetes	Habitat: Found on decaying plant material and as a plant pathogen. Effects: Some allergenic properties reported, but generally pose no health concerns to humans.
Polythrincium	Habitat: Found in soil and occasionally on plants. Effects: No known health effects. Allergenic properties are poorly studied.
Torula	Habitat: Found in soil and on wood and grasses. Occasionally found growing indoors on cellulose containing materials. Effects: A known allergen. No known cases of human infection.



Company: Global Inc.
 Address: 1818 New York Avenue,
Suite 217 Washington, DC 20002

N

SHIP: FEDEX - PAK 50
 DATE: 12-01-2020



Job Number: BB203	Job Name: PGCPs Indoor Air Quality- Charles Carroll Middle School	Mobile: 443-691-0455	Email: channab@globalincusa.net
Collector: Kenna Leonzo		Note:	
Date Collected: 11/30/2020			

Analysis Type	Analysis Description	Turnaround	Accepted Media Types	
Spore Trap	S	Identification & Enumeration of Fungal Spores	24 Hour	Air Cassettes, Impact Slides
	S+	Spore Trap Analysis with Dander, Fiber, and Pollen counts	24 Hour	Air Cassettes, Impact Slides
Direct ID	D	ID & Semi-Quantative Enumeration of spores and mycelium	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
	D+	Direct Analysis with Fully Quantitative spore count	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
Culture	C1	Identification & Enumeration of Mold only	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C2	Identification & Enumeration of Bacteria only	4 Day	Air Plate, Agar Plate, Swab, Bulk
	C3	Identification & Enumeration of Mold and Bacteria	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C5	Coliform Screen for Sewage Bacteria	2 Day	Agar Plate, Swab, Bulk
Particle	TPA	Total Particulate Analysis, ID & Count (Does Not Include Mold)	24 Hour	Air Cassettes, Impact Slides, Bio-Tape

#	Number	Sample	Analysis	Volume	Notes
1	CCMS-1130-01	Ambient	S	75 L	
2	CCMS-1130-02	Social Studies Storage	↓	↓	
3	CCMS-1130-03	Room 304			
4	CCMS-1130-04	Room 312			
5	CCMS-1130-05	Room 204			
6	CCMS-1130-06	Room 210			
7	CCMS-1130-07	Room 200			
8	CCMS-1130-08	Band Room			
9	CCMS-1130-09	Room 104			
10	CCMS-1130-10	Media Center			
11	CCMS-1130-11	Multipurpose			
12	CCMS-1130-12	Gym			
13	CCMS-1130-13	Health Suite			
14	Field Blank	-			S
15					
16					

Released by: <u>Kenna Leonzo</u>	Date: <u>11/30/20</u>	Received By: <u>UH</u>	<u>12/1</u>	Date:
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Analysis Report prepared for

Global, Inc.

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

Phone: (443) 691-0455

BB203
Indoor Air Quality
Charles Carroll Middle School

Collected: February 17, 2021
Received: February 19, 2021
Reported: February 19, 2021

We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 4 samples by FedEx in good condition for this project on February 19th, 2021.

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.



EPA Laboratory ID: VA01419



Lab ID: #188863



DPH License: #PH-0198

Sample Number	1	CCMS-021721-01			2	CCMS-021721-02			3	CCMS-021721-03			4	CCMS-021721-04		
Sample Name	Ambient			Multi Purpose Room			Gym			Field Blank						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			0.00 liter						
Reporting Limit	13 spores/m ³			13 spores/m ³			13 spores/m ³			1 spore/m ³						
Background	2			2			2			NBD						
Fragments	ND			ND			ND			ND						
Organism	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total				
Alternaria																
Ascospores	2	27	15.4%	2	27	16.7%	3	40	75.0%							
Aspergillus Penicillium	5	67	38.5%	8	107	66.7%										
Basidiospores	4	53	30.8%	1	13	8.3%	1	13	25.0%							
Bipolaris Drechslera																
Chaetomium																
Cladosporium	1	13	7.7%	1	13	8.3%										
Curvularia																
Epicoccum																
Fusarium																
Memnoniella																
Myxomycetes	1	13	7.7%													
Pithomyces																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Total	13	173	100%	12	160	100%	4	53	100%	ND	ND					

Water Damage Indicator Common Allergen Slightly Higher than Baseline Significantly Higher than Baseline Ratio Abnormality



Collected: **Feb 17, 2021** Received: **Feb 19, 2021** Reported: **Feb 19, 2021**

Project Analyst: Connor Gailliot, BS *[Signature]* Date: **02 - 19 - 2021** Reviewed By: Steve Hayes, BSMT *[Signature]* Date: **02 - 19 - 2021**

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	<p>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:</p> <p>NBD: No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)</p> <p>1 : <5% of field occluded. No spores will be uncountable.</p> <p>2 : 5-25% of field occluded.</p> <p>3 : 25-75% of field occluded.</p> <p>4 : 75-90% of field occluded.</p> <p>5 : >90% of field occluded. Suggested recollection of sample.</p>					
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.					
<table border="1"> <tr><td>Water Damage Indicator</td></tr> <tr><td>Common Allergen</td></tr> <tr><td>Slightly Higher than Baseline</td></tr> <tr><td>Significantly Higher than Baseline</td></tr> <tr><td>Ratio Abnormality</td></tr> </table>	Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality	<p>Blue: These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</p> <p>Green: Although all molds are potential allergens, these are the most common allergens that may be found indoors.</p> <p>Orange: The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</p> <p>Red: The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</p> <p>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.</p>
Water Damage Indicator						
Common Allergen						
Slightly Higher than Baseline						
Significantly Higher than Baseline						
Ratio Abnormality						
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 damage indicators.					

Organism Descriptions

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.

Myxomycetes	Habitat: Found on decaying plant material and as a plant pathogen.
	Effects: Some allergenic properties reported, but generally pose no health concerns to humans.



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 DATE: 02-19-2021



Job Number: BB203	Job Name: Indoor Air Quality Charles Carroll Middle School
Collector: Shane Prabuddha	
Date Collected: 02/17/2021	

Mobile: 443-691-0455	Email: channab@globalincusa.net
Note:	

Analysis Type		Analysis Description	Turnaround	Accepted Media Types
Spore Trap	S	Identification & Enumeration of Fungal Spores	24 Hour	Air Cassettes, Impact Slides
	S+	Spore Trap Analysis with Dander, Fiber, and Pollen counts	24 Hour	Air Cassettes, Impact Slides
Direct ID	D	ID & Semi-Quantative Enumeration of spores and mycelium	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
	D+	Direct Analysis with Fully Quantitative spore count	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
Culture	C1	Identification & Enumeration of Mold only	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C2	Identification & Enumeration of Bacteria only	4 Day	Air Plate, Agar Plate, Swab, Bulk
	C3	Identification & Enumeration of Mold and Bacteria	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C5	Coliform Screen for Sewage Bacteria	2 Day	Agar Plate, Swab, Bulk
Particle	TPA	Total Particulate Analysis, ID & Count (Does Not Include Mold)	24 Hour	Air Cassettes, Impact Slides, Bio-Tape

#	Number	Sample	Analysis	Volume	Notes
1	CCMS-021721-01	Ambient	S	75L	
2	CCMS-021721-02	Multi Purpose Room	S	75L	
3	CCMS-021721-03	Gym	S	75L	
4	CCMS-021721-04	Field Blank	S		
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16					

Released by: Shane Prabuddha	Date: 02/17/2021	Received By: <u>CRP</u>	Date: <u>2/19/21</u>
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