GLOBAL
Environmental Consultants and Engineers

1818 New York Av NE, Suite 217
Washington, DC 20002

Telephone: (443) 691-0455

March 30, 2021

Eric Derin, MBA, MSA
Director of Operations
Chesapeake Education Services, LLC.
Chesapeake Lighthouse Foundation
Via email: ederin@clfmd.org

RE: Indoor Air Quality Inspection Report – CMIT Academy North Middle School

Global Job #: 21-010

Dear Mr. Derin,

On March 25th, 2021, Global, Inc. (GLOBAL), performed an indoor air quality (IAQ) inspection at CMIT Academy North Middle School located at 6100 Frost Place, Laurel, MD 20707. The Operations Manager - Mr. Yilmaz Goktepe provided building floor plans, and facilitated access. This report elaborates on the inspection methodology, observations, measurements of indoor air quality parameters, mold sample analysis, conclusions, and recommendations (if any).

Methodology

The inspection conducted by GLOBAL included a visual assessment, indoor air quality instrumentation screening, and sampling for non-viable mold and visible mold growth. The specific locations for screening of IAQ parameters and mold spores in air were selected to represent different functional spaces, including Multi-purpose Room, Auditorium, Gymnasium, Cafeteria, Library, Health/Nurse Room, Class Rooms/Activity Rooms/Labs, and Office Rooms spread across the school.

Visual inspection: A walkthrough of all occupied locations within the school was performed to document the status of general cleanliness and issues that could affect healthy indoor air quality. All restrooms were inspected for cleanliness, and the functionality of 'P-traps' in drain lines and sinks.

Real-time Measurement of IAQ Parameters: Real-time measurements of comfort parameters (i.e., temperature, relative humidity, carbon monoxide, and carbon dioxide) and respirable particulate matter in air (PM2.5µm and PM10µm size classes) were obtained using calibrated portable digital instruments. The measurements were compared with relevant industry standards and guidelines.

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Air sampling for mold spores: Air samples for non-viable fungal spores were collected in representative locations where IAQ screening was performed. Additionally, one ambient set of IAQ measurements and an air sample was collected for comparison. Non-viable fungal spore samples were collected on *Air-O-Cell* cassettes using a Buck BioAire® calibrated pump. The air samples were taken within the breathing zone and no closer than three feet from the ground.

Swab sampling for mold: If any signs of visible and/or suspected mold growth was observed, a composite swab sample was collected with a sterilized swab.

Mold sample analysis: Microbial samples (including a field blank for quality assurance) were shipped under strict chain-of-custody procedures to Hayes Microbial Consulting, an AIHA-accredited laboratory in Midlothian, Virginia, for analysis.

Observations

All locations inspected were in a clean condition, without any signs of visible microbial growth. No musty odors were detected. All restrooms were in a clean condition, with properly functioning P-traps and no sewer gas odor. Some locations had water-stained ceiling tiles.

Measurements of Indoor Comfort Parameters and Respirable Particulates

The real-time measurements of comfort parameters and respirable particulates in each location tested, including the relevant standards are summarized in **Table 1** below. The specific locations screened are indicated in the floor plans in **Attachment I**.

Table 1: Measurements of Indoor Air Quality Parameters on 03/25/2021 (9.30 am- 1.30 pm)

IAQ Parameter	Temp ^{0}F	RH%	CO Ppm	CO2 ppm	PM 2.5 ug/m^3	PM 10 ug/m^3
Indoor Standards	**ASHRAE 68-79°F**	**ASHRAE <65%**	**NAAQS <9**	**ASHRAE <1271**	**NAAQS 12**	**NAAQS 150**
Ambient	63	65	0	571	9.7	13.1
204: Teacher's Lounge	68	54	0	615	1.7	2.9
205: Conference Room	70	53	0	607	1.5	2.0
207: Office Room	72	50	0	618	2.0	3.4

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IAQ Parameter	Temp ^{0}F	RH%	CO Ppm	CO2 ppm	PM 2.5 ug/m^3	PM 10 ug/m^3
Indoor Standards	**ASHRAE 68-79°F**	**ASHRAE <65%**	**NAAQS <9**	**ASHRAE <1271**	**NAAQS 12**	**NAAQS 150**
153: Classroom	71	52	0	571	2.3	3.5
156: Computer Room	70	53	0	547	2.8	3.4
169 Storage Room	70	55	0	534	1.2	1.8
158: Classroom	70	55	0	540	2.1	2.8
160: Storage Room	71	55	0	535	2.6	4.1
161: Office Room	70	55	0	538	1.9	3.2
Gymnasium	70	56	0	527	1.8	1.9
166: Science Lab	69	58	0	583	1.3	1.9
127: Art Room	70	55	0	578	2.3	3.2
129: Classroom	71	54	0	568	1.6	2.5
Cafeteria	73	48	0	552	1.4	1.5
118: Classroom	74	48	0	574	1.9	2.8
145: Science Lab	74	48	0	584	1.8	2.8
115: Classroom	73	50	0	623	1.7	2.6
113: Classroom	72	51	0	632	1.5	1.6
108: Classroom	71	51	0	626	1.6	2.4
141: Classroom	72	53	0	615	2.1	2.5

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IAQ Parameter	Temp ^{0}F	RH%	CO Ppm	CO2 ppm	PM 2.5 ug/m^3	PM 10 ug/m^3
Indoor Standards	**ASHRAE 68-79°F**	**ASHRAE <65%**	**NAAQS <9**	**ASHRAE <1271**	**NAAQS 12**	**NAAQS 150**
104: Conference Room	72	52	0	594	1.6	2.2
130: Nurse Room	72	51	0	561	2.3	2.8
103-B: Principal's Office	70	52	0	638	2.6	4.0
106: Classroom	71	53	0	654	2.7	4.0

Comfort Parameters

Temperature: The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) have published recommendations for year-round acceptable temperatures in Standard 55-2010 (*Thermal Environmental Conditions for Human Occupancy*). The winter comfort range is 20 to 24°C (68 to 75°F) and 23 to 26°C (73 to 79°F) is the summer comfort range. The indoor temperature in all locations tested were within the comfort range specified by ASHRAE.

Relative Humidity: 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 62.1-2010 (*Ventilation for Acceptable Indoor Air Quality*) recommends a maximum indoor relative humidity of 65% to preclude the likelihood of condensation of cool surfaces encouraging mold growth. The relative humidity readings in all locations tested were within the ASHRAE recommended range.

Carbon Dioxide: Under conditions of maximum occupancy, ASHRAE Standard 62.1-2010, Appendix C, infers that the acceptable carbon dioxide upper limit is the prevailing outdoor carbon dioxide concentration plus 700 parts per million (ppm). On the day of the space evaluation, the outdoor (ambient) carbon dioxide concentration was approximately 571 ppm so indoor concentrations should not exceed approximately 1271 ppm. The indoor carbon dioxide concentration in all locations tested was within the ASHRAE standard.

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 indoor CO concentrations were below the EPA National Ambient Air Quality Standard (NAAQS) of 9 ppm.

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Respirable Particulates

The respirable particulate concentrations under the PM2.5 and PM10 size classes in all indoor locations tested were within the National Ambient Air Quality Standard (NAAQS) levels. The highest average PM2.5 concentration during the monitoring period was 2.8 $\mu g/m^3$ in the Computer Room #156. This is compared to the NAAQS primary standard for PM2.5 of 12 $\mu g/m^3$ annual mean. The highest average PM10 concentration during the same period was 4.1 $\mu g/m^3$, in Storage Room #160. This is compared to NAAQS standard for PM10 of 150$\mu g/m^3$ 24 hr. average.

Mold in Indoor Locations

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 population profile should mimic what is encountered outdoors and the concentrations (spore count/m^3) should be below the ambient levels.

The total mold spore concentrations in all indoor air samples collected from the representative functional spaces were below the outdoor mold spore concentration. The mold population profiles and spore counts in all indoor air samples indicated normal fungal ecology. The sample analytical results and chain-of-custody forms are provided in **Attachment II**.

Conclusions and Recommendations

The comfort parameters and respirable particulate matter (PM2.5 and PM10 size classes) in all indoor locations screened were within the relevant ASHRAE and/or NAAQS standards. The air sample analytical results for mold indicated normal fungal ecology for all the indoor locations sampled at CMIT Academy North Middle School on March 25, 2021.

Thank you for the opportunity to provide indoor air quality inspection services for CMIT Academy North MS. If you have any questions, please contact me at 443-691-0455 (mobile).

Sincerely,

Channa Bambaradeniya, PhD, CIH, CSP, CHMM, PMP
Certified Industrial Hygienist

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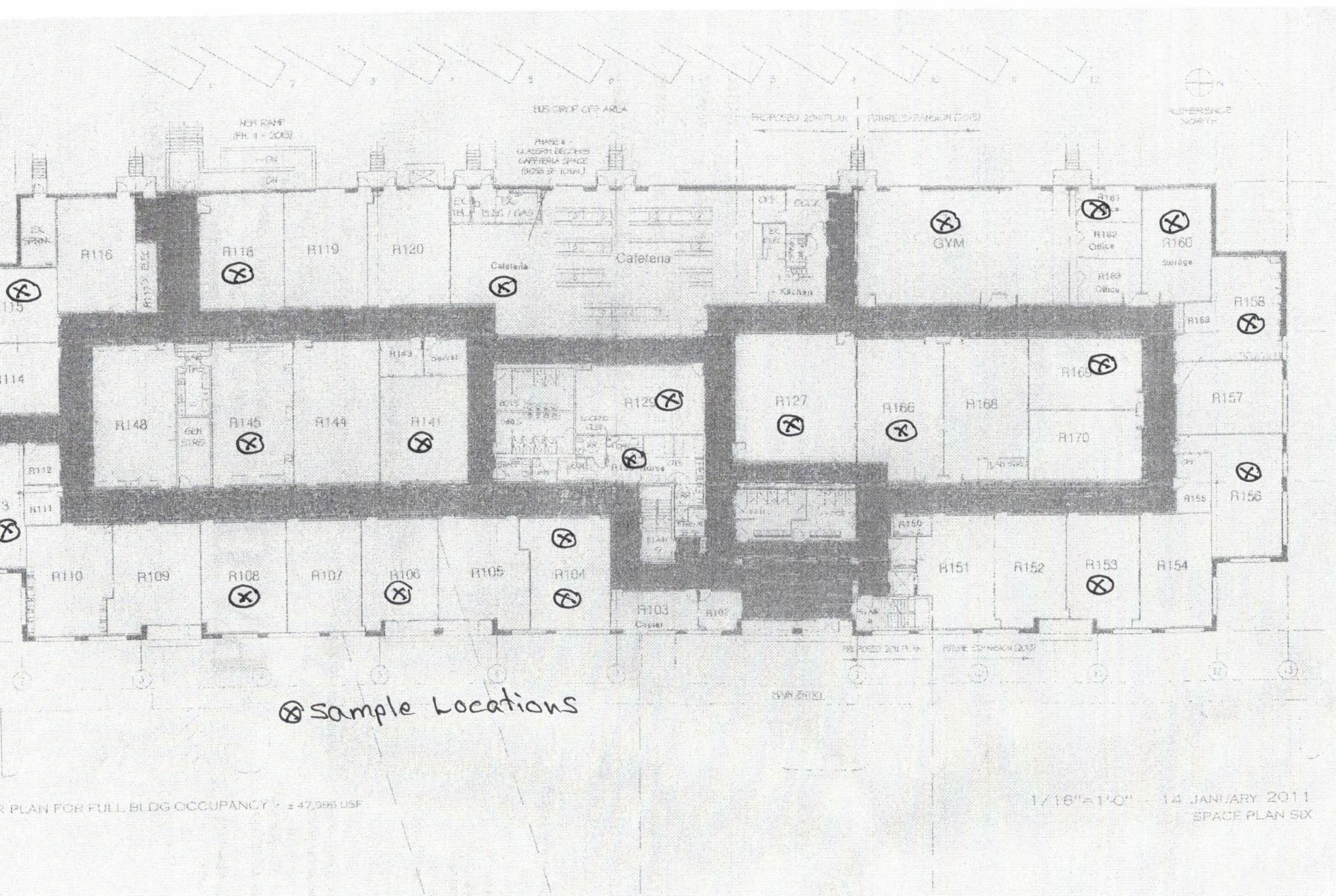
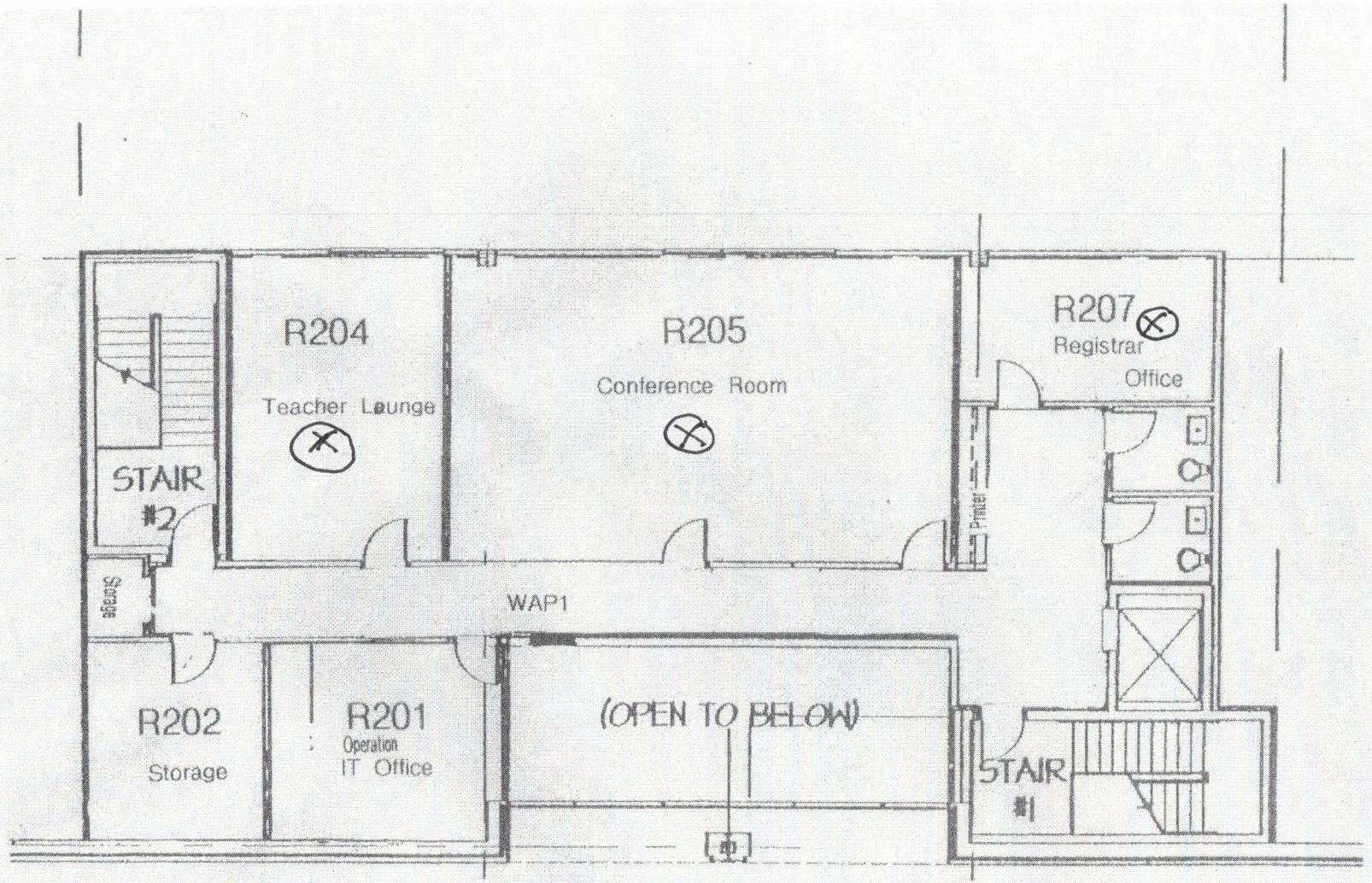
Attachment I:

Floor Plans with Sample Locations


BUS DROP OFF AREA
PROPOSED 2ND FLOOR
FUTURE EXPANSION (2ND)
REFERENCE NORTH
R116
R118
R119
R120
Cafeteria
Cafeteria
GYM
R160
R158
R148
R145
R144
R141
R129
R127
R166
R168
R170
R157
R156
R110
R109
R108
R107
R106
R105
R104
R103
R151
R152
R153
R154
⊗ Sample Locations
PLAN FOR FULL BLDG OCCUPANCY - ± 47,998 USF
1/16"=1'-0" - 14 JANUARY 2011
SPACE PLAN SIX



⊗ sampling Locations

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Attachment II:

Laboratory Analytical Results and Chain-of-custody Forms

HAYES MICROBIAL CONSULTING

Company: Global Inc
Address: 1818 New York Ave NE Suite 217
Washington DC 20002

N

SHIP: FEDEX - BOX 50
DATE: 03-29-2021

7732 3490 8725

MOLD
21010515

Job Number: 21-010	Job Name: CMI Academy MS IAQ Inspection 6100 Frost Place, Laurel, MD 20707
Collector: Channa Bambaradeniya	
Date Collected: 3/25/2021	

Mobile: 443-691-0455 | Email: Channab@globalincusa.net

Note: Page 1

Analysis Type		Analysis Description	Turnaround	Accepted Media Types
Spore Trap	S XX	Identification & Enumeration of Fungal Spores	24 Hour XX	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	6100-1	Ambient	S	75L	
2	6100-2	204 - Teacher Lounge			
3	6100-3	205 - Conf. room			
4	6100-4	207 - Office room			
5	6100-5	153 - Classroom			
6	6100-6	156 - Computer / Storage-room			
7	6100-7	169 - Storage room			
8	6100-8	158 - Classroom			
9	6100-9	160 - Storage-room			
10	6100-10	161 - Office room			
11	6100-11	Gymnasium			
12	6100-12	166 - Science Lab			
13	6100-13	127 - Art room			
14	6100-14	129 - Classroom			
15	6100-15	Cafeteria			
16	6100-16	118 - class-room			

Released by: Channa Bambaradeniya | Date: 3/25/2021 | Received By: CRP | Date: 3/29/21

HAYES MICROBIAL CONSULTING

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Washington DC 20002

N

SHIP: FEDEX - BOX SO
DATE: 03-29-2021

7732 3490 8725

MOLD

21010515

Job Number: 21-010	Job Name: CMI Academy MS IAQ Inspection 6100 Frost Place, Laurel, MD 20707
Collector: Channa Bambaradeniya	
Date Collected: 3/25/2021	

Mobile: 443-691-0455 | Email: Channab@globalincusa.net

Note: Page 2

Analysis Type		Analysis Description	Turnaround	Accepted Media Types
Spore Trap	S XX	Identification & Enumeration of Fungal Spores	24 Hour XX	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	6100-17	Science Lab - 145	S	75L	
2	6100-18	Classroom - 115			
3	6100-19	Classroom - 113			
4	6100-20	Classroom - 108			
5	6100-21	Classroom - 141			
6	6100-22	Conf. room - 104			
7	6100-23	Nurse - 130			
8	6100-24	Principal's office 103B			
9	6100-25	Classroom - 106			
10					
11	FB	Field Blank			
12					
13					
14					
15					
16					

Released by: Channa Bambaradeniya	Date: 3/25/2021	Received By: CH	Date: 3/29/21

HAYES MICROBIAL CONSULTING

#21010515

Analysis Report prepared for

Global, Inc.

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

Phone: **(443) 691-0455**

21-010
CMI Academy MS IAQ Inspection
6100 Frost Place
Laurel, MD 20707

Collected: **March 25, 2021**
Received: **March 29, 2021**
Reported: **March 29, 2021**

We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 26 samples by FedEx in good condition for this project on March 29th, 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

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21-010
CMI Academy MS IAQ Inspection
6100 Frost Place
Laurel, MD 20707

#21010515

Spore Trap, Spore Trap Blank

SOP - HMC#101

Sample Number	1	6100-1		2	6100-2		3	6100-3		4	6100-4	
Sample Name	**Ambient**			**204 Teacher Lounge**			**205 Conf Room**			**207 Office Room**		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m³			13 spores/m³			13 spores/m³			13 spores/m³		
Background	2			2			2			2		
Fragments	ND			ND			13/m³			ND		
Organism	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**
Alternaria	1	13	<1%									
Ascospores	320	4267	70.2%	2	27	100.0%	1	13	50.0%	2	27	28.6%
Aspergillus|Penicillium	3	40	<1%									
Basidiospores	128	1707	28.1%				1	13	50.0%			
Bipolaris|Drechslera												
Chaetomium												
Cladosporium	4	53	<1%							5	67	71.4%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	456	6080	100%	2	27	100%	2	26	100%	7	94	100%

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

Collected: **Mar 25, 2021** Received: **Mar 29, 2021** Reported: **Mar 29, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **03 - 29 - 2021**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **03 - 29 - 2021**

HAYES MICROBIAL CONSULTING
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21-010
CMI Academy MS IAQ Inspection
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Laurel, MD 20707

#21010515

Spore Trap, Spore Trap Blank

SOP - HMC#101

Sample Number	5	6100-5		6	6100-6		7	6100-7		8	6100-8	
Sample Name	**153 Classroom**			**156 Computer / Storage Room**			**169 Storage Room**			**158 Classroom**		
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			1			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	4	53	80.0%	1	13	100.0%	2	27	66.7%	3	40	60.0%
Aspergillus|Penicillium	1	13	20.0%									
Basidiospores							1	13	33.3%			
Bipolaris|Drechslera												
Chaetomium												
Cladosporium										2	27	40.0%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	5	66	100%	1	13	100%	3	40	100%	5	67	100%

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

Collected: **Mar 25, 2021** Received: **Mar 29, 2021** Reported: **Mar 29, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **03 - 29 - 2021**

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Spore Trap, Spore Trap Blank

SOP - HMC#101

Sample Number	9	6100-9		10	6100-10		11	6100-11		12	6100-12	
Sample Name	160 Storage Room			161 Office Room			Gymnasium			166 Science Lab		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m³			13 spores/m³			13 spores/m³			13 spores/m³		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**
Alternaria												
Ascospores	1	13	33.3%	2	27	66.7%	1	13	50.0%	2	27	100.0%
Aspergillus|Penicillium	2	27	66.7%				1	13	50.0%			
Basidiospores												
Bipolaris|Drechslera												
Chaetomium												
Cladosporium				1	13	33.3%						
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	3	40	100%	3	40	100%	2	26	100%	2	27	100%

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

Collected: **Mar 25, 2021** Received: **Mar 29, 2021** Reported: **Mar 29, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **03 - 29 - 2021**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **03 - 29 - 2021**

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Laurel, MD 20707

#21010515

Spore Trap, Spore Trap Blank

SOP - HMC#101

Sample Number	13	6100-13		14	6100-14		15	6100-15		16	6100-16	
Sample Name	**127 Ant Room**			**129 Classroom**			**Cafeteria**			**118 Classroom**		
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	1	13	100.0%	3	40	75.0%	1	13	100.0%	1	13	50.0%
Aspergillus|Penicillium												
Basidiospores				1	13	25.0%				1	13	50.0%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	4	53	100%	1	13	100%	2	26	100%

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

Collected: **Mar 25, 2021** Received: **Mar 29, 2021** Reported: **Mar 29, 2021**

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#21010515

Spore Trap, Spore Trap Blank

SOP - HMC#101

Sample Number	17	6100-17		18	6100-18		19	6100-19		20	6100-20	
Sample Name	Science Lab 145			Classroom 115			Classroom 113			Classroom 108		
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	1	13	100.0%	1	13	50.0%	2	27	66.7%	3	40	75.0%
Aspergillus|Penicillium												
Basidiospores							1	13	33.3%	1	13	25.0%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium				1	13	50.0%						
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	2	26	100%	3	40	100%	4	53	100%

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

Collected: **Mar 25, 2021** Received: **Mar 29, 2021** Reported: **Mar 29, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **03 - 29 - 2021**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **03 - 29 - 2021**

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#21010515

Spore Trap, Spore Trap Blank

SOP - HMC#101

Sample Number	21	6100-21		22	6100-22		23	6100-23		24	6100-24	
Sample Name	Classroom 161			Conf Room 104			Nurse 130			Principal's Office 103B		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m³			13 spores/m³			13 spores/m³			13 spores/m³		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**	**Raw Count**	**Count / m³**	**% of Total**
Alternaria												
Ascospores	1	13	50.0%	4	53	80.0%	7	93	77.8%	2	27	100.0%
Aspergillus|Penicillium												
Basidiospores	1	13	50.0%	1	13	20.0%	2	27	22.2%			
Bipolaris|Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	26	100%	5	66	100%	9	120	100%	2	27	100%

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

Collected: **Mar 25, 2021** Received: **Mar 29, 2021** Reported: **Mar 29, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **03 - 29 - 2021**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **03 - 29 - 2021**

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Spore Trap, Spore Trap Blank
SOP - HMC#101

Sample Number	25	6100-25	26	FB
Sample Name	**Classroom 106**		**Field Blank**	
Sample Volume	75.00 liter		0.00 liter	
Reporting Limit	13 spores/m³		1 spore/m³	
Background	2		NBD	
Fragments	ND		ND	

Organism	Raw Count	Count / m³	% of Total	Raw Count	Count / m³	% of Total
Alternaria						
Ascospores	9	120	90.0%			
Aspergillus|Penicillium						
Basidiospores	1	13	10.0%			
Bipolaris|Drechslera						
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Memnoniella						
Myxomycetes						
Pithomyces						
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Total	10	133	100%	ND	ND	

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

Collected: **Mar 25, 2021** Received: **Mar 29, 2021** Reported: **Mar 29, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **03 - 29 - 2021**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **03 - 29 - 2021**

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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: **NBD:** No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD) **1 :** <5% of field occluded. No spores will be uncountable. **2 :** 5-25% of field occluded. **3 :** 25-75% of field occluded. **4 :** 75-90% of field occluded. **5 :** >90% of field occluded. Suggested recollection of sample.
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 Common Allergen Slightly Higher than Baseline Significantly Higher than Baseline Ratio Abnormality	**Blue:** These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem. **Green:** Although all molds are potential allergens, these are the most common allergens that may be found indoors. **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. **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 damage indicators.

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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.