GLOBAL
Environmental Consultants and Engineers

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

Telephone: (443) 691-0455

April 26, 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 – Chesapeake Science Point PCS

Global Job #: 21-010

Dear Mr. Derin,

On March 31st, 2021, Global, Inc. (GLOBAL), performed an indoor air quality (IAQ) inspection at the Chesapeake Science Point Public Charter School located at 7321 Pkwy Dr S, Hanover, MD 21076. The Operations Manager - Mr. Matt Oz 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

The cabinet underneath sink in Nurse showed signs of a previous water leak and suspected mold growth. Some exercise mattresses (beige color) in the gymnasium had suspected mold growth. All other 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 03/31/2021 (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 <1245**	**NAAQS 12**	**NAAQS 150**
Ambient	64	67	0	545	5.3	7.8
025: Teacher's Lounge	68	47	0	647	1.1	1.4
109: Classroom	69	44	0	621	0.9	1.0

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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 <1245**	**NAAQS 12**	**NAAQS 150**
021: Cafeteria	70	44	0	594	3.3	5.0
108: Math Classroom	71	45	0	547	1.2	1.8
104: Language Class	72	48	0	528	1.1	1.7
002: Office (front desk)	73	42	0	520	1.7	2.9
101: Science Room	73	46	0	555	1.1	1.8
113: Science Lab	74	46	0	491	0.9	1.1
201: Science Lab	74	43	0	483	0.5	0.8
203: Social Studies	75	37	0	485	0.8	1.2
205: W.Lang. Class	75	37	0	495	0.7	0.6
207: Com. Lab Shop	75	42	0	467	1.2	1.4
209: Classroom	75	45	0	457	0.7	1.1
019: Library/Media	75	46	0	443	1.7	2.5
019A: Computer Lab	75	46	0	448	1.3	2.1
010: Teacher's Lounge	75	42	0	455	0.6	0.7
114: Art Classroom	75	48	0	470	1.2	2.1
Gymnasium	75	41	0	456	1.3	1.4
014: Nurse Office	75	45	0	477	0.7	0.9
011: Meeting Room	76	44	0	566	1.3	2.1
008: Principal's Office	76	41	0	513	1.1	1.7

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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 545 ppm so indoor concentrations should not exceed approximately 1245 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.

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 3.3 $\mu g/m^3$ in the Cafeteria. 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 5.0 $\mu g/m^3$, in the Cafeteria. 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

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

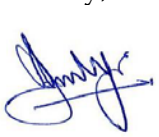
The total mold spore concentrations in all indoor air samples collected from the representative functional spaces were below the outdoor mold spore concentration. The mold population profiles and spore counts in all indoor air samples indicated normal fungal ecology. The swab samples collected from the beige exercise mattress in the Gymnasium confirmed mold growth. Similarly, the swab sample collected from the cabinet underneath sink in Nurse Room also indicated mold growth. 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 in air for all the indoor locations sampled at Chesapeake Science Point Public Charter School on March 31, 2021. The beige exercise mattresses in the Gymnasium that had mold growth were discarded, while the water leak associated mold growth underneath sink cabinet in the Nurse Room had been remediated by a contractor. A verification visit made by PLI's Certified Industrial Hygienist on April 21st, 2021 confirmed that the mold growth underneath sink cabinet in the Nurse Room had been remediated in an efficient manner.

Thank you for the opportunity to provide indoor air quality inspection services for Chesapeake Science Point Public Charter School. 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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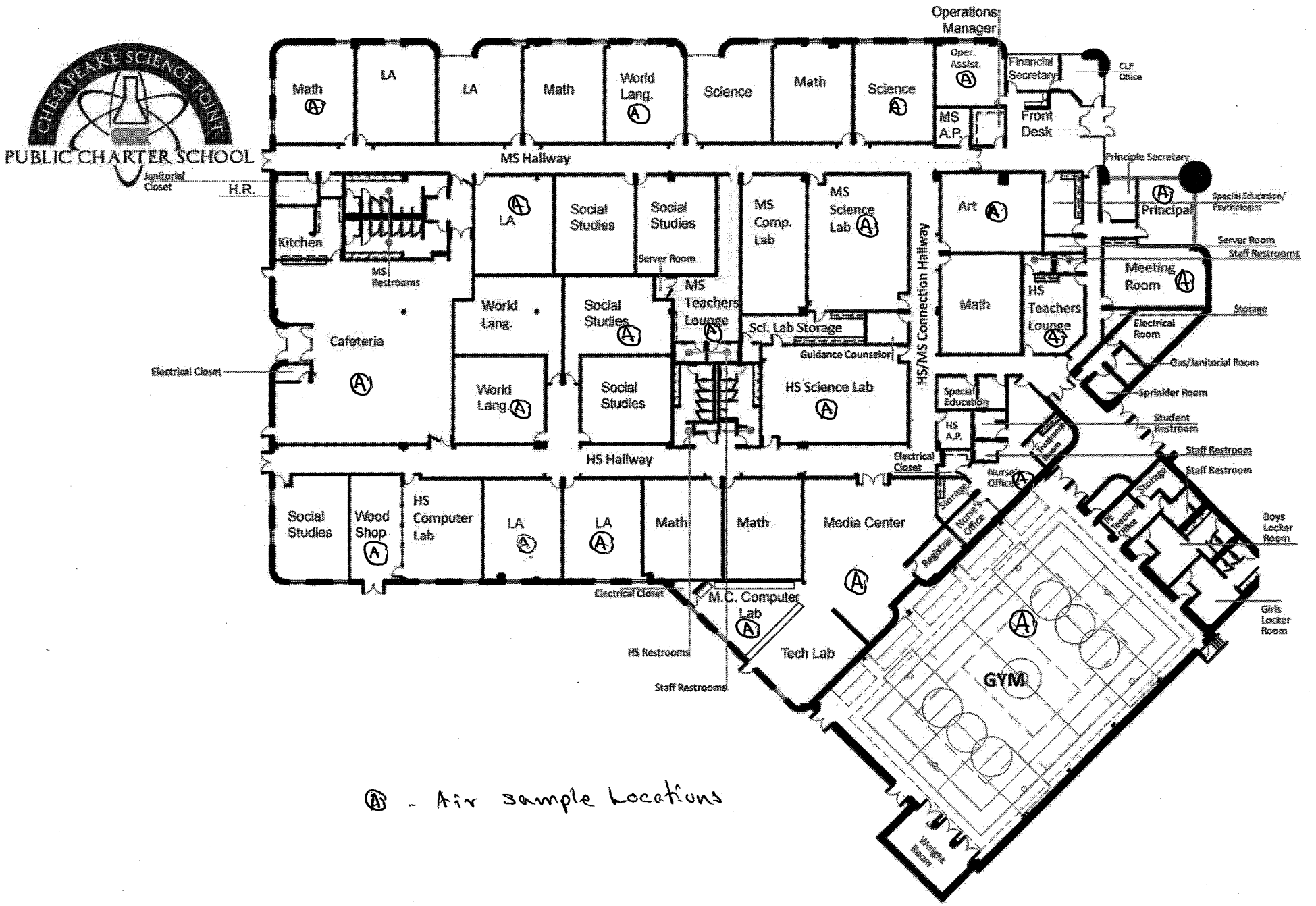
Attachment I:

Floor Plan with Sample Locations



Ⓐ - Air sample Locations

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Attachment II:

Laboratory Analytical Results and Chain-of-custody Forms

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Washington DC 20002

N

SHIP: FEDEX - PAK SO
DATE: 04-01-2021

8160 4909 6903

MOLD
21011024

Job Number: 21-010	Job Name: IAQ Survey - Chesapeake Science Point Charter School (7321 Pkwy Dr S, Hanover, MD 21076)
Collector: Channa Bambaradeniya	
Date Collected: 3/31/2021	

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	7321-01	Ambient	S	75L	
2	7321-02	Teachers Lounge - 025			
3	7321-03	109 - classroom			
4	7321-04	021 - Cafeteria			
5	7321-05	108 - Math classroom			
6	7321-06	104 - World lang. - Classroom			
7	7321-07	002 - Office			
8	7321-08	101 - Science room			
9	7321-09	113 - Science lab			
10	7321-10	201 - Science Lab (HS)			
11	7321-11	203 - Social Studies / classroom			
12	7321-12	205 - Language / classroom			
13	7321-13	207 - Woodshop (Inside Computer lab)			
14	7321-14	209 - classroom			
15	7321-15	019 - Library / Media Centre.			
16	7321-16	019 - Computer lab (Inside Library)			

Released by: Channa Bambaradeniya | Date: 3/31/2021 | Received By: CH | Date: 4/1/21

HAYES MICROBIAL CONSULTING

Company: Global Inc
Address: 1818 New York Ave NE Suite 217
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8160 4909 6903

MOLD
21011024

Job Number: 21-010	Job Name: IAQ Survey - Chesapeake Science Point Charter School (7321 Pkwy Dr S, Hanover, MD 21076)
Collector: Channa Bambaradeniya	Mobile: 443-691-0455 / Email: Channab@globalincusa.net
Date Collected: 3/31/2021	Note: Page 3

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	~~7321-01~~	~~Ambient~~	S	75L	
2	7321-17	010 - Teacher's Lounge.			
3	7321-18	114 - Art / classroom			
4	7321-19	Gymnesium			
5	7321-20	014 - Nurse office			
6	7321-21	011 - Meating room			
7	7321-22	principal's office - 008			
8	7321-FB	Feild blank.			
9					
10	Sw-①	Gymnesium	D	-	
11	Sw-②	Nurse office	D		
12					
13					
14					
15					
16					

Released by: Channa Bambaradeniya | Date: 3/31/2021 | Received By: CRP | Date: 4/1/21

HAYES MICROBIAL CONSULTING

#21011024

Analysis Report prepared for

Global, Inc.

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

21-010
IAQ Survey - Chesapeake Science Point Charter School
7321 Pkwy Dr S, Hanover, MD 21076

Collected: **March 31, 2021**
Received: **April 1, 2021**
Reported: **April 1, 2021**

We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 25 samples by FedEx in good condition for this project on April 1st, 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
IAQ Survey - Chesapeake Science Point Charter School
7321 Pkwy Dr S, Hanover, MD 21076

#21011024
Spore Trap, Spore Trap Blank
SOP - HMC#101

Sample Number	1	7321-01		2	7321-02		3	7321-03		4	7321-04	
Sample Name	**Ambient**			**Teacher Lounge - 025**			**109 - Classroom**			**021 - Cafeteria**		
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			1			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	7	93	63.6%	2	27	66.7%	1	13	100.0%	1	13	50.0%
Aspergillus|Penicillium												
Basidiospores	2	27	18.2%	1	13	33.3%				1	13	50.0%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium	1	13	9.1%									
Curvularia												
Epicoccum	1	13	9.1%									
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	11	146	100%	3	40	100%	1	13	100%	2	26	100%

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

Collected: **Mar 31, 2021** Received: **Apr 1, 2021** Reported: **Apr 1, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **04 - 01 - 2021**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **04 - 01 - 2021**

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21-010
IAQ Survey - Chesapeake Science Point Charter School
7321 Pkwy Dr S, Hanover, MD 21076

#21011024
Spore Trap, Spore Trap Blank
SOP - HMC#101

Sample Number	5	7321-05		6	7321-06		7	7321-07		8	7321-08	
Sample Name	108 - Math Classroom			104 - World Lang - Classroom			002 - Office			101 - Science 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			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	100.0%	2	27	66.7%	1	13	50.0%			
Aspergillus|Penicillium												
Basidiospores				1	13	33.3%				1	13	100.0%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium							1	13	50.0%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	3	40	100%	2	26	100%	1	13	100%

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

Collected: **Mar 31, 2021** Received: **Apr 1, 2021** Reported: **Apr 1, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **04 - 01 - 2021**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **04 - 01 - 2021**

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21-010
IAQ Survey - Chesapeake Science Point Charter School
7321 Pkwy Dr S, Hanover, MD 21076

#21011024
Spore Trap, Spore Trap Blank
SOP - HMC#101

Sample Number	9	7321-09		10	7321-10		11	7321-11		12	7321-12	
Sample Name	**113 - Science Lab**			**201 - Science Lab (HS)**			**203 - Social Studies / Classroom**			**205 - Language / 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	2	27	100.0%	2	27	100.0%	1	13	100.0%	1	13	33.3%
Aspergillus|Penicillium												
Basidiospores										2	27	66.7%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	27	100%	2	27	100%	1	13	100%	3	40	100%

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

Collected: **Mar 31, 2021** Received: **Apr 1, 2021** Reported: **Apr 1, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **04 - 01 - 2021**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **04 - 01 - 2021**

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IAQ Survey - Chesapeake Science Point Charter School
7321 Pkwy Dr S, Hanover, MD 21076

#21011024
Spore Trap, Spore Trap Blank
SOP - HMC#101

Sample Number	13	7321-13		14	7321-14		15	7321-15		16	7321-16	
Sample Name	207 - Woodshop (Inside Labputer Lab)			209 - Classroom			019 - Library / Media Center			019 - Computer Lab (Inside Library)		
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	50.0%	1	13	100.0%				1	13	100.0%
Aspergillus|Penicillium												
Basidiospores							1	13	50.0%			
Bipolaris|Drechslera												
Chaetomium												
Cladosporium	1	13	50.0%				1	13	50.0%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	26	100%	1	13	100%	2	26	100%	1	13	100%

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

Collected: **Mar 31, 2021** Received: **Apr 1, 2021** Reported: **Apr 1, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **04 - 01 - 2021**

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21-010

IAQ Survey - Chesapeake Science Point Charter School
7321 Pkwy Dr S, Hanover, MD 21076

#21011024

Spore Trap, Spore Trap Blank

SOP - HMC#101

Sample Number	17	7321-17		18	7321-18		19	7321-19		20	7321-20	
Sample Name	010 - Teacher's Lounge			114 - Art / Classroom			Gymnasium			014 - Nurse Office		
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%	1	13	100.0%	2	27	66.7%
Aspergillus|Penicillium												
Basidiospores				1	13	50.0%				1	13	33.3%
Bipolaris|Drechslera												
Chaetomium												
Cladosporium	1	13	100.0%									
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	2	26	100%	1	13	100%	3	40	100%

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

Collected: **Mar 31, 2021** Received: **Apr 1, 2021** Reported: **Apr 1, 2021**

Project Analyst: Ramesh Poluri, PhD P. Ramesh Date: **04 - 01 - 2021**

Reviewed By: Steve Hayes, BSMT Stephen N. Hayes Date: **04 - 01 - 2021**

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21-010
IAQ Survey - Chesapeake Science Point Charter School
7321 Pkwy Dr S, Hanover, MD 21076

#21011024
Spore Trap, Spore Trap Blank
SOP - HMC#101

Sample Number	21	7321-21	22	7321-22	23	7321-FB
Sample Name	**011 - Meeting Room**		**Principal's Office - 008**		**Field Blank**	
Sample Volume	75.00 liter		75.00 liter		0.00 liter	
Reporting Limit	13 spores/m³		13 spores/m³		1 spore/m³	
Background	2		2		NBD	
Fragments	ND		13/m³		ND	

Organism	Raw Count	Count / m³	% of Total	Raw Count	Count / m³	% of Total	Raw Count	Count / m³	% of Total
Alternaria									
Ascospores	1	13	100.0%	1	13	50.0%			
Aspergillus|Penicillium									
Basidiospores				1	13	50.0%			
Bipolaris|Drechslera									
Chaetomium									
Cladosporium									
Curvularia									
Epicoccum									
Fusarium									
Memnoniella									
Myxomycetes									
Pithomyces									
Stachybotrys									
Stemphylium									
Torula									
Ulocladium									
Total	1	13	100%	2	26	100%	ND	ND	

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

Collected: **Mar 31, 2021** Received: **Apr 1, 2021** Reported: **Apr 1, 2021**

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#21011024

Direct Analysis
SOP - HMC#102

#24	Swab (1.00 cm2)	Organism	Spore Estimate	Mycelial Estimate
	SW-1 - Gymnasium	Cladosporium	Rare	ND

#25	Swab (1.00 cm2)	Organism	Spore Estimate	Mycelial Estimate
	SW-2 - Nurse Office	Ascospores	Rare	ND
		Aspergillus|Penicillium	Moderate	Trace
		Chaetomium	Moderate	Few

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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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Direct Analysis Information

Spore Estimate		Percentages
ND	None Detected	0%
Rare	Less than 10 spores	< 1%
Light	10 - 99 spores	1-10%
Moderate	100 - 999 spores	11-25%
Heavy	1000 - 9999 spores	26-50%
Very Heavy	10000 or greater spores	51-100%

Mycelial Estimate	
ND	None Detected No active growth at site.
Trace	Very small amount of Mycelium Probably no active growth at site.
Few	Some Mycelium Possible active growth at site.
Many	Large amount of Mycelium Probable active growth at site.

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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.

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.

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.

Effects: It is a common allergen. No cases of infection have been reported in humans.