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Green
Environmental
Consulting

Report for:

Mr. Adam Lesko
Green Environmental Consulting, Inc
180 Pleasant Street
2nd Floor, Suite 213
Easthampton, MA 01027

Regarding: Project: 03260; Northampton H.S - Black Box Theatre
EML ID: 2774183

Approved by:

Technical Manager
Ariunaa Jalsrai

Dates of Analysis:
Spore trap analysis: 11-03-2021

Service SOPs: Spore trap analysis (EM-MY-S-1038)
AIHA-LAP, LLC accredited service, Lab ID #103005

Eurofins EPK Built Environment Testing, LLC

Eurofins EMLab P&K

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Client: Green Environmental Consulting, Inc   Date of Sampling: 10-29-2021
C/O: Mr. Adam Lesko   Date of Receipt: 11-01-2021
Re: 03260; Northampton H.S - Black Box Theatre   Date of Report: 11-03-2021

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Lab ID-Version‡ Location	Air vol. (L)	Background Debris	Counts of Fungal Structures	Fungal Structures/m3	Presumptive Fungal ID (raw counts*)	Percentage
13276416-1 11/03/2021	75	1+	20	270	Basidiospores (5)	65
3336 6330			1	13	Chaetomium (1)	3
Theatre (T)			10	130	Penicillium/Aspergillus types (10)	32
				§ Total: 410		
Comments: 10 of the raw count *Penicillium/Aspergillus* type spores were present as a single clump.						
13276417-1 11/03/2021	75	1+	1	13	Alternaria (1)	1
3336 6318			16	210	Basidiospores (4)	14
Hall @ Locker Rm's			1	13	Epicoccum (1)	1
(C)			92	1,200	Penicillium/Aspergillus types (23)	80
			1	13	Rusts (1)	1
			4	53	Smuts, Periconia, Myxomycetes (4)	3
				§ Total: 1,500		
Comments:						
13276418-1 11/03/2021	75	1+	12	160	Ascospores (3)	5
3336 6323			144	1,900	Basidiospores (36)	62
Exterior (C)			36	480	Cladosporium (9)	15
			36	480	Penicillium/Aspergillus types (9)	15
			1	13	Pestalotiopsis (1)	< 1
			1	13	Pithomyces (1)	< 1
			1	13	Polythrincium (1)	< 1
			3	40	Smuts, Periconia, Myxomycetes (3)	1
				§ Total: 3,100		
			2	27	Pollen (2)	N/A
Comments:						

Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The analytical sensitivity is the spores/m^3 divided by the raw count, expressed in spores/m^3. The limit of detection is the analytical sensitivity (in spores/m^3) multiplied by the sample volume (in liters) divided by 1000 liters.

*All AIHA accredited laboratories are required to provide raw counts of fungal structures in spore trap reports. These counts are defined by AIHA as "Actual count without extrapolation or calculation". The number in parentheses next to the fungal type represents the exact number (or raw count) of fungal structures observed.

‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total has been rounded to two significant figures to reflect analytical precision.

Eurofins EPK Built Environment Testing, LLC   EMLab ID: 2774183, Page 2 of 2

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MoldRANGE™, Local Climate; Extended Outdoor Comparison
Outdoor Location: 3336 6323, Exterior (C)

Fungi Identified	Outdoor data	Typical Outdoor Data for: October in Northeast† EMLab Regional Climate code[1] B Annual Temp, B Elev., A Rain, A Temp. Range (n‡=107)						Typical Outdoor Data for: The entire year in Northeast† EMLab Regional Climate code[1] B Annual Temp, B Elev., A Rain, A Temp. Range (n‡=1068)					
Project zip code 01060	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	13	14	31	67	83	50	10	13	27	67	93	34
Bipolaris/Drechslera group	-	-	-	-	-	-	7	7	11	13	13	27	4
Chaetomium	-	-	-	-	-	-	3	7	7	13	13	13	2
Cladosporium	480	110	210	750	1,800	3,400	91	53	80	370	1,300	2,600	78
Curvularia	-	11	13	13	53	79	32	7	13	22	53	120	14
Epicoccum	-	7	13	27	53	140	47	7	13	21	53	78	31
Nigrospora	-	7	8	13	26	34	19	7	7	13	27	34	8
Penicillium/Aspergillus types	480	36	53	160	670	1,700	50	38	53	110	370	830	43
Pestalotiopsis	13	-	-	-	-	-	7	-	-	-	-	-	2
Pithomyces	13	8	13	27	110	220	35	7	13	27	80	270	22
Polythrincium	13	-	-	-	-	-	6	10	13	13	27	53	6
Stachybotrys	-	-	-	-	-	-	< 1	-	-	-	-	-	< 1
Torula	-	-	-	-	-	-	4	7	11	17	75	92	4
Seldom found growing indoors**													
Ascospores	160	55	110	370	990	1,800	92	53	110	430	1,400	2,800	75
Basidiospores	1,900	690	1,400	4,000	9,100	14,000	> 99	53	160	1,500	6,700	12,000	96
Rusts	-	13	13	27	67	110	38	7	13	27	67	110	17
Smuts, Periconia, Myxomycetes	40	13	27	53	200	610	81	8	13	38	110	210	56
§ TOTAL SPORES/m3	3,100												

[1]EMLab Regional Climate codes are a climate classification scheme for regional geographic areas containing multiple states. The MoldRANGE™ Local Climate report uses the sampling location zip code to identify the EMLab Regional Climate code in that area. Using information available from the NOAA weather database, the EMLab Regional Climate code sharpens the precision of the MoldRANGE™reporting system, providing more reliable estimates of the range and average concentrations of the different airborne fungal spore types for each region. Additional information on the EMLab Regional Climate code system can be found on the last page of this report.

†The Typical Outdoor Data represents the typical outdoor spore levels across the region's group of states for the time period and EMLab Regional Climate code indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically and if not enough data is available to make a statistically meaningful assessment, it is indicated with a dash.

‡ n is the sample size used to calculate the MoldRANGE™ Local Climate data summarized in the table.

* The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

** These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

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Understanding EMLab Regional Climate Codes

Outdoor airborne spore concentrations are strongly influenced by climate and weather patterns, often resulting in pronounced seasonal and diurnal cycles (Burge 1995). The seasonal climatic changes directly affect the growth cycle of plants, thereby influencing fungal growth, spore maturation, and release cycles. By evaluating outdoor spore concentrations across similar climatic zones rather than for the state as a whole, it is possible to provide a more representative estimate of typical outdoor spore levels and frequency of occurrence for different airborne fungal spore types in a given area.

The EMLab Regional Climate code system is a novel classification system that uses data from the NOAA - National Oceanic and Atmospheric Administration database to define unique climate zones. The following climate variables, for each regional zip code, are obtained from NOAA and assigned a letter code of A (above the regional average for that variable) or B (below the regional average for that variable):

1. Annual High Temperature
2. Elevation
3. Rainfall/Precipitation
4. Monthly Temperature Range

The result is a 4-character code assigned to each statewide zip code, referred to as the Regional Climate Code. Below are some examples of decoded Regional Climate Codes:

AAAA = Above avg. Annual High Temperature, Above avg. Elevation, Above avg. Rainfall/Precipitation, Above avg. Monthly Temperature Range
AABB = Above avg. Annual High Temperature, Above avg. Elevation, Below avg. Rainfall/Precipitation, Below avg. Monthly Temperature Range
BBAA = Below avg. Annual High Temperature, Below avg. Elevation, Above avg. Rainfall/Precipitation, Above avg. Monthly Temperature Range

The actual outdoor air sample data from matching regional climate codes in each group of states are then compiled in a manner relating typical spore concentrations and frequency of occurrence.

The data presented in this report is from the Northeast Region which includes the states of: CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, and VT

The NOAA regional climate variables were selected by mapping data points from a subset of approximately 145,000 weather and geographic database entries to over 80,000 outdoor spore trap samples with known zip codes and assessing them using orthogonal array experimental design techniques. The results were then compared to the typical ranges of spore types found when grouping zip codes using the Koppen-Geiger climatic classification system; a commonly used climatic system that provides an objective numerical definition in terms of climatic elements such as temperature, rainfall, and other seasonal characteristics . The EMLab Regional Climate codes showed improved granularity and refinement of the zip code groupings, implying a better representation of the expected range of spore types to be found within an individual zip code.

The values on this report were calculated by obtaining the four variables listed above from the over 585 million data points of weather and geographic information available in the NOAA database, and determining the frequencies and percentile values of spore types by utilizing over 180,000 Eurofins EMLab P&K outdoor spore trap samples with known zip codes.

This report groups regional zip codes in relation to these EMLab Regional Climate codes and summarizes MoldRANGE™ data by month and year within each EMLab Regional Climate code.

References:
Burge, Harriet, A. Bioaerosols: Boca Raton: Lewis Publishers, pp. 163-171, 1995.

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MoldSCORE™: Spore Trap Report

Outdoor Sample: 3336 6323 Exterior (C)

Fungi Identified	Outdoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3
Generally able to grow indoors*			
Alternaria		ND	< 13
Bipolaris/Drechslera group		ND	< 13
Chaetomium		ND	< 13
Cladosporium	■	9	480
Curvularia		ND	< 13
Nigrospora		ND	< 13
Penicillium/Aspergillus types†	■	9	480
Pestalotiopsis	▪	1	13
Pithomyces	▪	1	13
Polythrincium	▪	1	13
Stachybotrys		ND	< 13
Torula		ND	< 13
Seldom found growing indoors**			
Ascospores	▪	3	160
Basidiospores	■	36	1,900
Rusts		ND	< 13
Smuts, Periconia, Myxomycetes	▪	3	40
Total			**3,120**

Location: 3336 6330 Theatre (T)

Fungi Identified	Indoor sample spores/m3 <100 1K 10K >100K	Raw count	Spores/ m3	MoldSCORE‡ 100 200 300 Score	
Generally able to grow indoors*					
Alternaria		ND	< 13	▮	100
Bipolaris/Drechslera group		ND	< 13	▮	100
Chaetomium	▪	1	13	▮	121
Cladosporium		ND	< 13	▮	100
Curvularia		ND	< 13	▮	100
Nigrospora		ND	< 13	▮	100
Penicillium/Aspergillus types†	▪	10	130	▮	111
Stachybotrys		ND	< 13	▮	100
Torula		ND	< 13	▮	100
Seldom found growing indoors**					
Ascospores		ND	< 13	▮	100
Basidiospores	■	5	270	▮	102
Rusts		ND	< 13	▮	100
Smuts, Periconia, Myxomycetes		ND	< 13	▮	100
Total			**413**	**Final MoldSCORE**	**121**

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MoldSCORE™: Spore Trap Report

Location: 3336 6318 Hall @ Locker Rm's (C)

Fungi Identified	Indoor sample spores/m3	Raw count	Spores/ m3	MoldSCORE‡	Score
Generally able to grow indoors*					
Alternaria		1	13		105
Bipolaris/Drechslera group		ND	< 13		100
Chaetomium		ND	< 13		100
Cladosporium		ND	< 13		100
Curvularia		ND	< 13		100
Epicoccum		1	13		105
Nigrospora		ND	< 13		100
Penicillium/Aspergillus types†		23	1,200		233
Stachybotrys		ND	< 13		100
Torula		ND	< 13		100
Seldom found growing indoors**					
Ascospores		ND	< 13		100
Basidiospores		4	210		100
Rusts		1	13		105
Smuts, Periconia, Myxomycetes		4	53		107
Total			**1,533**	**Final MoldSCORE**	**233**

* The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.
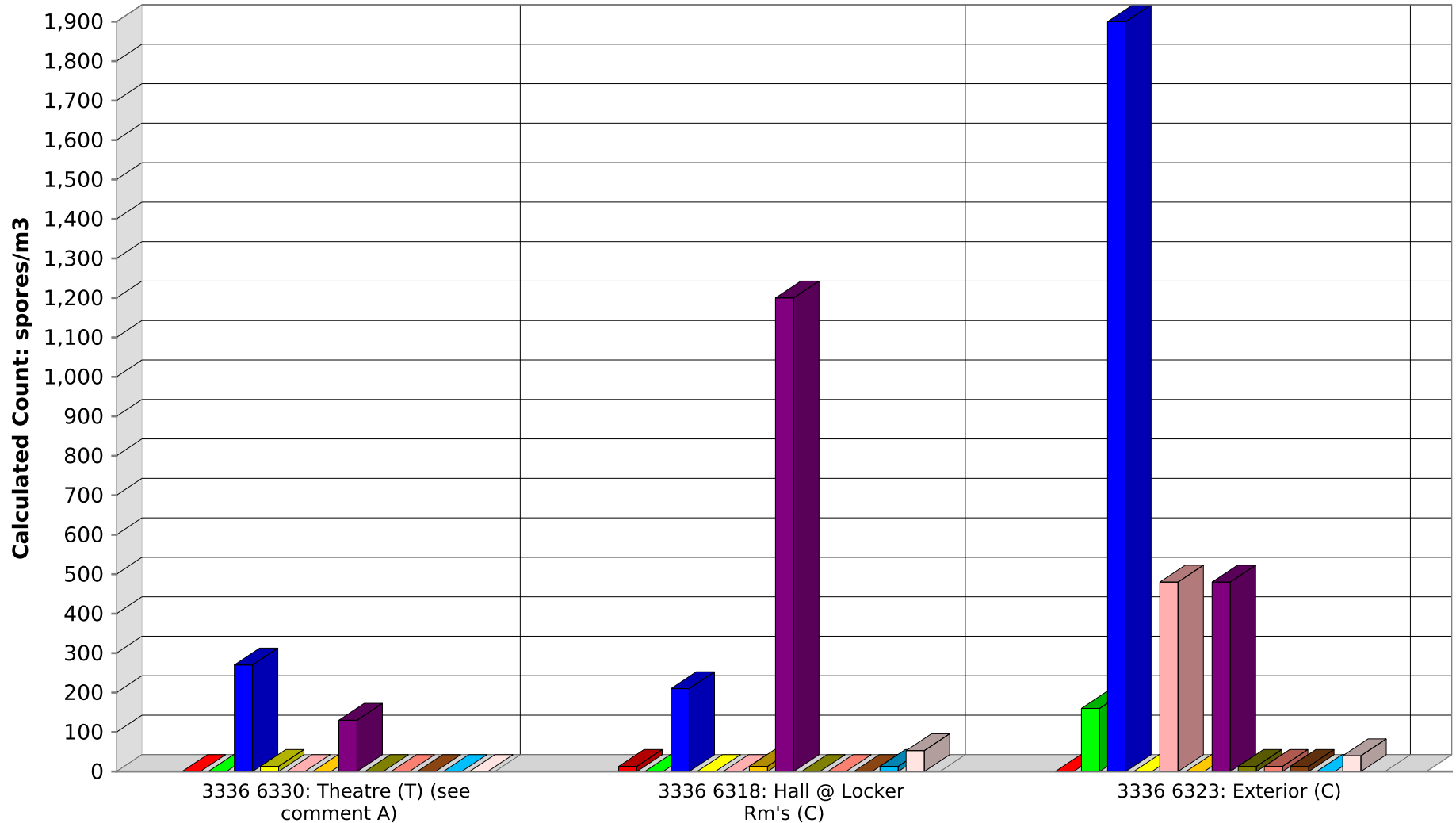
** These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

†The spores of Aspergillus and Penicillium (and others such as Acremonium, Paecilomyces) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods.

‡Rated on a scale from 100 to 300. A rating less than 150 is low and indicates a low probability of spores originating inside. A rating greater than 250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A rating between 150 and 250 indicates a moderate likelihood of indoor fungal growth. MoldSCORE is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the analysis on other samples (like wall cavity samples) will lead to misleading results.

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Legend: ■ Alternaria ■ Ascospores ■ Basidiospores ■ Chaetomium ■ Cladosporium ■ Epicoccum ■ Penicillium/Aspergillus types
■ Pestalotiopsis ■ Pithomyces ■ Polythrincium ■ Rusts □ Smuts, Periconia, Myxomycetes

Comments: A) 10 of the raw count *Penicillium/Aspergillus* type spores were present as a single clump.

Note: Graphical output may understate the importance of certain "marker" genera.
Eurofins EPK Built Environment Testing, LLC