eurofins | EMLab P&K

Green Environmental Consulting

Report for:

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

Regarding: Project: 03268; JFK Middle School
EML ID: 2753399

Approved by:

Technical Manager
Ariunaa Jalsrai

Dates of Analysis:
Spore trap analysis: 10-07-2021

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

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received and tested. Information supplied by the client which can affect the validity of results: sample air volume.

Eurofins EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Eurofins EMLab P&K's LabServe® reporting system includes automated fail-safes to ensure that all AIHA-LAP, LLC quality requirements are met and notifications are added to reports when any quality steps remain pending.

Eurofins EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 03268; JFK Middle School

Date of Sampling: 10-06-2021
Date of Receipt: 10-07-2021
Date of Report: 10-07-2021

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
13174332-1 10/07/2021	75	2+	48	640	Ascospores (12)	8
3289 3158			536	7,100	Basidiospores (134)	87
Rm 123			16	210	Cladosporium (4)	3
			1	13	Other brown (1)	< 1
			12	160	Penicillium/Aspergillus types (3)	2
				§ Total: 8,200		
Comments:						
13174333-1 10/07/2021	75	2+	56	750	Ascospores (14)	6
3289 3206			848	11,000	Basidiospores (212)	86
Rm 124			20	270	Cladosporium (20)	2
			61	810	Penicillium/Aspergillus types (28)	6
			1	13	Smuts, Periconia, Myxomycetes (1)	< 1
				§ Total: 13,000		
Comments: 20 of the raw count *Cladosporium* spores were present as a single clump. 17 of the raw count *Penicillium/Aspergillus* type spores were present as a single clump.						
13174334-1 10/07/2021	75	2+	1	13	Alternaria (1)	< 1
3316 8201			48	640	Ascospores (12)	5
Cafeteria			840	11,000	Basidiospores (210)	92
			4	53	Cladosporium (1)	< 1
			4	53	Ganoderma (1)	< 1
			12	160	Penicillium/Aspergillus types (3)	1
			1	13	Pithomyces (1)	< 1
			2	27	Smuts, Periconia, Myxomycetes (2)	< 1
				§ Total: 12,000		
			1	13	Pollen (1)	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 EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 03268; JFK Middle School

Date of Sampling: 10-06-2021
Date of Receipt: 10-07-2021
Date of Report: 10-07-2021

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
13174335-1 10/07/2021	75	2+	264	3,500	Ascospores (66)	3
3316 8245			9,300	120,000	Basidiospores (93)	94
Exterior			1	13	Bipolaris/Drechslera group (1)	< 1
			1	13	Cercospora (1)	< 1
			340	4,500	Cladosporium (85)	3
			4	53	Curvularia (4)	< 1
			16	210	Ganoderma (4)	< 1
			4	53	Penicillium/Aspergillus types (1)	< 1
			4	53	Pithomyces (4)	< 1
			1	13	Polythrincium (1)	< 1
			1	13	Rusts (1)	< 1
			7	93	Smuts, Periconia, Myxomycetes (7)	< 1
				§ Total: 130,000		

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 EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 03268; JFK Middle School

Date of Sampling: 10-06-2021
Date of Receipt: 10-07-2021
Date of Report: 10-07-2021

MoldRANGE™, Local Climate; Extended Outdoor Comparison

Outdoor Location: 3316 8245, Exterior

Fungi Identified	Outdoor data	Typical Outdoor Data for: October in Northeast† EMLab Regional Climate code¹ B Annual Temp, A Elev., A Rain, A Temp. Range (n‡=182)						Typical Outdoor Data for: The entire year in Northeast† EMLab Regional Climate code¹ B Annual Temp, A Elev., A Rain, A Temp. Range (n‡=1679)					
Project zip code 01062	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	11	13	32	93	120	48	10	13	27	67	110	33
Bipolaris/Drechslera group	13	-	-	-	-	-	5	7	7	13	27	53	4
Chaetomium	-	-	-	-	-	-	3	7	7	13	28	70	3
Cladosporium	4,500	110	210	690	1,500	2,300	95	53	80	430	1,400	2,500	78
Curvularia	53	7	10	20	61	120	16	7	9	13	53	110	14
Ganoderma	210	53	92	200	580	740	15	53	53	160	400	640	11
Nigrospora	-	7	7	13	48	83	19	7	7	13	27	53	9
Other brown	-	7	7	13	27	82	12	7	7	13	27	53	12
Penicillium/Aspergillus types	53	35	53	160	410	730	48	53	53	160	440	840	45
Pithomyces	53	7	11	27	140	230	26	7	13	27	110	200	22
Polythrincium	13	-	-	-	-	-	10	7	10	15	53	63	9
Stachybotrys	-	-	-	-	-	-	< 1	-	-	-	-	-	1
Torula	-	-	-	-	-	-	3	7	7	13	27	53	4
Seldom found growing indoors**													
Ascospores	3,500	98	160	530	1,400	2,100	97	53	110	490	1,800	3,300	77
Basidiospores	120,000	1,100	1,700	4,300	13,000	22,000	> 99	80	160	1,800	7,700	15,000	96
Cercospora	13	11	13	27	54	130	24	7	13	27	64	110	10
Rusts	13	7	13	27	60	88	40	7	11	22	53	100	20
Smuts, Periconia, Myxomycetes	93	13	27	67	270	690	83	13	13	40	110	240	56
§ TOTAL SPORES/m3	130,000												

¹EMLab 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.

Eurofins EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 03268; JFK Middle School

Date of Sampling: 10-06-2021
Date of Receipt: 10-07-2021
Date of Report: 10-07-2021

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.

Eurofins EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 03268; JFK Middle School

Date of Sampling: 10-06-2021
Date of Receipt: 10-07-2021
Date of Report: 10-07-2021

MoldSCORE™: Spore Trap Report

Outdoor Sample: 3316 8245 Exterior

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		1	13
Chaetomium		ND	< 13
Cladosporium		85	4,500
Curvularia		4	53
Ganoderma		4	210
Nigrospora		ND	< 13
Penicillium/Aspergillus types†		1	53
Pithomyces		4	53
Polythrincium		1	13
Stachybotrys		ND	< 13
Torula		ND	< 13
Seldom found growing indoors**			
Ascospores		66	3,500
Basidiospores		93	120,000
Cercospora		1	13
Rusts		1	13
Smuts, Periconia, Myxomycetes		7	93
Total			**132,573**

Location: 3289 3158 Rm 123

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		ND	< 13		100
Cladosporium		4	210		100
Curvularia		ND	< 13		100
Nigrospora		ND	< 13		100
Other brown		1	13		105
Penicillium/Aspergillus types†		3	160		125
Stachybotrys		ND	< 13		100
Torula		ND	< 13		100
Seldom found growing indoors**					
Ascospores		12	640		234
Basidiospores		134	7,100		100
Rusts		ND	< 13		100
Smuts, Periconia, Myxomycetes		ND	< 13		100
Total			**8,173**	**Final MoldSCORE**	**125**

Eurofins EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 03268; JFK Middle School

Date of Sampling: 10-06-2021
Date of Receipt: 10-07-2021
Date of Report: 10-07-2021

MoldSCORE™: Spore Trap Report

Location: 3289 3206 Rm 124

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		ND	< 13		100
Cladosporium		20	270		100
Curvularia		ND	< 13		100
Nigrospora		ND	< 13		100
Penicillium/Aspergillus types†		28	810		216
Stachybotrys		ND	< 13		100
Torula		ND	< 13		100
Seldom found growing indoors**					
Ascospores		14	750		229
Basidiospores		212	11,000		100
Rusts		ND	< 13		100
Smuts, Periconia, Myxomycetes		1	13		101
Total			**13,147**	**Final MoldSCORE**	**216**

Location: 3316 8201 Cafeteria

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		1	13		105
Bipolaris/Drechslera group		ND	< 13		100
Chaetomium		ND	< 13		100
Cladosporium		1	53		100
Curvularia		ND	< 13		100
Ganoderma		1	53		114
Nigrospora		ND	< 13		100
Penicillium/Aspergillus types†		3	160		125
Pithomyces		1	13		103
Stachybotrys		ND	< 13		100
Torula		ND	< 13		100
Seldom found growing indoors**					
Ascospores		12	640		207
Basidiospores		210	11,000		100
Rusts		ND	< 13		100
Smuts, Periconia, Myxomycetes		2	27		104
Total			**12,160**	**Final MoldSCORE**	**125**

Eurofins EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

Client: Green Environmental Consulting, Inc
C/O: Mr. Adam Lesko
Re: 03268; JFK Middle School

Date of Sampling: 10-06-2021
Date of Receipt: 10-07-2021
Date of Report: 10-07-2021

MoldSCORE™: Spore Trap Report

* 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.

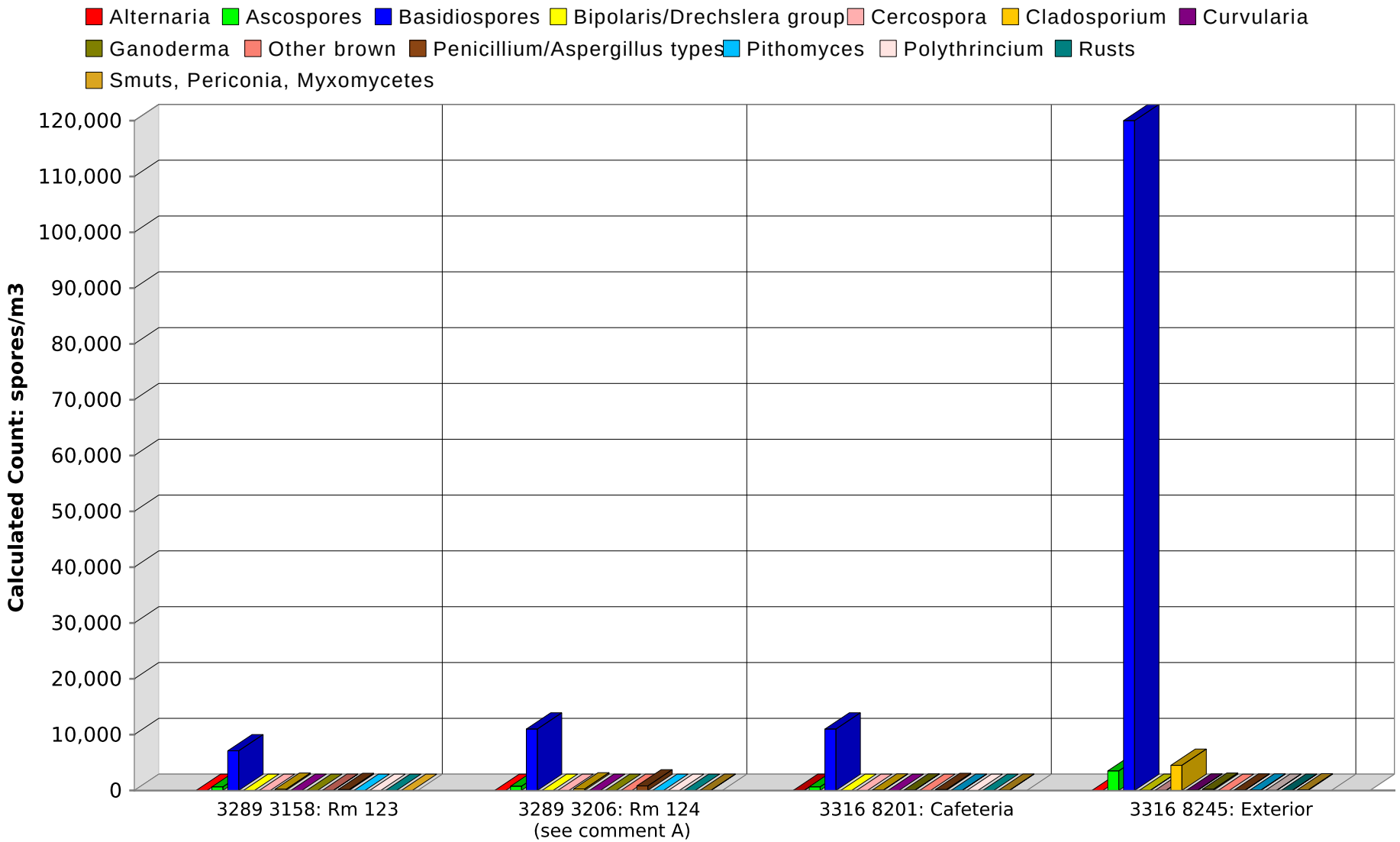
** These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type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

Eurofins EMLab P&K
3000 Lincoln Drive East, Suite A, Marlton, NJ 08053
(866) 871-1984 Fax (856) 334-1040 www.emlab.com

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY



Comments: A) 20 of the raw count *Cladosporium* spores were present as a single clump. 17 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.