

Tuesday, May 23, 2017

Ken Studnick

Address: 38875 N 1st Ave, Scio, OR 97374 Projects 17-16079 and 16-14152

Dear Ken:

SUMMARY

The laboratory results do not indicate issues with mold spores in the air of the sampled portion of the subject building, except for a moderately elevated level relative to the outdoors in Room #3 of one type of mold (Penicillium/Aspergillus types). It is not unusual for levels of these spore types to be moderately elevated relative to the outside, even in buildings with no visible mold growth, and especially in basements, which tend to be more humid than the other floors. This mold is not considered to be a black or toxic mold. It is not known if these spores originated from the observed mold growth.

While Alpha Environmental Services cannot give medical advice, spore levels of the magnitudes measured indoors do not always result in discernable health impacts to individuals with healthy immune systems, and since the levels of total indoor spores are significantly less than those from outdoors, potential health impacts from the indoor spores are not believed to exceed those from outdoor air.

If you have any questions concerning this report, please contact me at (503) 292-5346.

INSPECTION

Chris Pinheiro, a certified mold inspector with Alpha, performed a visual inspection of the subject building for mold growth on Thursday, May 18, 2017. The inspection included the Music Room and Rooms #1, 2, 3, and 4. Visual mold growth was identified around the exterior door in the music room. No other mold growth was identified. Please see our mold inspection report for further details.

Alpha also collected samples of airborne mold spores inside and outside the subject residence and shipped them to a laboratory for analysis, as described in the following section.

AIRBORNE MOLD SPORE ANALYSIS

Airborne mold spores exist in even the most pristine residence because spores generated by outdoor mold growth migrate into buildings through the wind, the opening and closing of doors



and windows, and on clothing, pets, and materials brought inside. Spores tend to settle into household dust but can become re-airborne by breezes or other household activities that stir the air or otherwise disturb the dust. The presence of mold spores inside residences thus does not necessarily reflect mold growth inside the residence.

Sample Collection and Laboratory Analysis

Two samples of airborne mold spores were collected: five from indoors (from the Music Room and Rooms #1, 2, 3, and 4) and one from outdoors to evaluate background conditions. Alpha collected the samples with a pump that drew air through Air-O-Cell cassettes at a rate of 15 liters per minute for seven minutes each. Adhesive materials in the cassette trapped particulate matter, including airborne mold spores, from the incoming air. Alpha then shipped the cassettes to EMLab P&K in Bothell, Washington.

Through microscopic analysis, certified laboratory personnel identified and counted the trapped mold spores per type and/or genera. This number is the "raw count" on the laboratory report; it represents the actual number of spores that were counted through the microscope by the laboratory technician. From the raw count, the volume of air drawn through the cassette, and the percentage of the slide observed, the laboratory calculated the average concentration per unit volume of air in units of spores per cubic meter (spores/m3).

Evaluation of Laboratory Results

Copies of the laboratory results and chain of custody form are included in the appendix. The following table summarizes select data from the laboratory report:

Spore Type	Indoor	Outdoor	Units
Penicillium/Aspergillus types	610 (Room #3)	230	spores/m3
TOTAL	750 (Room #3)	7,100	spores/m3
TOTAL	11%	100%	percentage of outdoor

Specific regulatory or standard numeric guidelines for concentrations of mold spores in structures do not exist. Acceptable indoor air concentrations of spores depend on geographic location, regional and seasonal climate, and individual sensitivity to specific types of spores. Alpha evaluated the analytical results in two phases, as described below:

1. Total Spore Levels: This is perhaps the most important evaluation, because barring an allergy to a specific type of mold, which is relatively rare, most people will be affected more or less equally by breathing different types of mold spores. Mold spores range in size from 3 to 40 microns, compared to a typical human hair diameter of 50 to 70 microns. Spores larger than 10 microns in size are generally filtered out in the nose and throat via cilia and mucus. Spores with sizes between 2.5 and 10 microns (the vast majority of



spores) can penetrate into the bronchioles of the lungs but are stopped before reaching the gas-exchange regions of the lungs (the alveoli). As such, their health effects tend to be limited to being allergens and breathing irritants.

Alpha compared the laboratory results for the total concentrations of mold spores from the indoor versus and outdoor samples. The maximum indoor result (750 spores/m3) was 11 percent of the outdoor result (7,100 spores/m3). Total indoor spore levels of this magnitude do not typically cause discernible health impacts to individuals with healthy immune systems. Because the indoor results are less than the outdoor result, the health impacts to building occupants from indoor air are not expected to be more significant than impacts from outdoor air.

2. Specific Spore Types: In this phase, Alpha screened out results for indoor samples for types of mold whose raw count was less than 10, which are believed to be statistically insignificant and only indicate the presence of the mold, not its true level. The remaining results (those with raw counts of 10 or greater, if they existed) were then compared to the corresponding types in the outdoor sample, and results in which the indoor levels exceeded the outdoor levels by more than 100 spore/m3 were flagged for detailed consideration.

One type of mold was flagged in this evaluation phase: Penicillium/Aspergillus types (Pen/Asp) in Room #3, as described below:

Pen/Asp

Pen/Asp comprises two genera, Penicillium and Aspergillus, which are indistinguishable through non-viable analysis and thus are classified together. They are not considered to be black or toxic molds. However, like all molds, its spores can cause respiratory irritation and infection.

Pen/Asp mold can grow in relatively dry conditions and so is commonly encountered, one of the most frequently found molds in the Pacific Northwest. Optimal wood moisture contents for growth of Pen/Asp range from 16 to 20 percent.

Pen/Asp is found on many different materials and often in water damaged carpet. The mold may be woolly or cottony in texture and shades of green, brown or black in color. If elevated levels of Pen/Asp spores are reported in a building, but no visible mold is observed, the source is often in the carpeting.

Aspergillus and Penicillium are the most commonly reported molds found if waterdamaged carpeting is present. These molds feed on the jute backing of carpeting, the glues in the carpet padding, and on the dust that accumulates in carpet. High levels of moisture vapor emitted from slab foundations will frequently cause elevated levels of Penicillium and Aspergillus.



Sometimes the presence of higher levels of spores indoors than outdoors is not due to the presence of mold growth indoors. These spores are dry and get washed out of outdoor air during rain events or periods of high fog, which drastically reduces outdoor levels. There can often be a lag in the change in indoor levels, which can lead to higher levels indoors when compared to outdoor levels. If the level is within the normal range for the mold, elevated indoor levels may not be a problem. Since the spores of these molds are a common part of carpet dust, recent vacuuming without a HEPA filter can also temporarily cause elevated levels indoors.

3. Indicator Spore Evaluation: Alpha examined the laboratory results for the indoor sample for indicator types of mold (Chaetomium, Fusarium, Memnoniella, Stachybotrys, Trichoderma, and Ulocladium), which are defined by three characteristics: (1) they are capable of colonizing indoor building materials; (2) they are not commonly found in outdoor airborne spore samples, and (3) when identified outdoors, they are generally found in low concentrations.

These are commonly considered to be "black" or "toxic" molds. However, these terms are not scientific. In the 1990s, a paper was published that linked exposure to one of these, Stachybotrys, to fatal acute idiopathic pulmonary hemorrhaging in infants in a hospital in Cleveland, Ohio. However, the conclusions of the paper were later found to be erroneous and scientifically invalid. However, the misconception that "black mold kills babies" has remained in the public mind. The health impacts from so-called "black" molds have not been demonstrated to be different than the impacts from any other mold.

Results in which the indoor levels exceeded the outdoor levels by more than 50 spores/m3 were flagged for more detailed consideration. No types of mold were identified in this evaluation phase.

- **4.** Consistency of Indoor/Outdoor Mold Types: The types and relative concentrations of mold spores both inside and outside the residence are relatively consistent. This suggests that the spores found indoors most likely originated from outdoor mold growth.
- **5.** Laboratory's Assessment: Except for Pen/Asp in rooms #1 and 3, the laboratory indicated only a low probability that the indoor mold spores originated from indoor mold growth, or conversely, a high probability that the spores found indoors originated from the outdoors. For Pen/Asp in rooms #1 and 3, the laboratory indicated a moderate probability that the indoor mold growth. However, the result for Room #1 was found to be acceptable in Step 2.

Wayne Bennett

Wayne Bennett, Certified Mold Inspector 503-292-5346

Encl.: Laboratory report and chain of custody form, photographs







Indoor sample location.



11080 SW Allen Blvd, Suite 100, Beaverton, OR 97005 | P: 503.292.5346 | F: 503.203.1516



Indoor sample location.



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Indoor sample location.



Outdoor sample location.



APPENDIX

LABORATORY REPORT AND CHAIN OF CUSTODY FORM



Report for:

Mr. Wayne Bennett Alpha Environmental Services, Inc.: OR 11080 SW Allen Blvd., Ste. 100 Beaverton, OR 97005

Regarding:

Project: 17-16079 EML ID: 1730759

Approved by:

Technical Manager Justin Ford

Dates of Analysis: Spore trap analysis: 05-23-2017

Service SOPs: Spore trap analysis (EM-MY-S-1038) AIHA-LAP, LLC accredited service, Lab ID #178599

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 items tested.

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.

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.

Client: Alpha Environmental Services, Inc.: OR C/O: Mr. Wayne Bennett Re: 17-16079

Date of Receipt: 05-22-2017 Date of Report: 05-23-2017

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	#1: Music room		Oi	#2: utside	#3: Room #2	
Comments (see below)	None		N	Vone	N	Vone
Lab ID-Version [‡] :	807	5525-1	807	5526-1	8075527-1	
Analysis Date:	05/2	23/2017	05/2	23/2017	05/2	23/2017
	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3
Ascospores		•	63	2,400		·
Basidiospores	2	76	117	4,500	2	76
Chaetomium				·		
Cladosporium	1	38	1	38	1	38
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other brown						
Other colorless						
Penicillium/Aspergillus types†	7	270	6	230	3	110
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	1	10			10	95
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+) ^{††}	3+		2+		3+	
Hyphal fragments/m3	19		< 10		67	
Pollen/m3	< 10		10		19	
Skin cells (1-4+)	1+		< 1+		2+	
Sample volume (liters)	105		105		105	
§ TOTAL SPORES/m3		390		7,100		320

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.

[†] 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. Also, some species with very small spores are easily missed, and may be undercounted.

††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/m³) multiplied by the sample volume (in liters) divided by 1000 liters.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory. ‡ 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".

Client: Alpha Environmental Services, Inc.: OR C/O: Mr. Wayne Bennett Re: 17-16079

Date of Receipt: 05-22-2017 Date of Report: 05-23-2017

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	#4: Room #4		Ro	#5: om #3	#6: Room #1	
Comments (see below)	Ν	Vone	Ν	Vone	N	None
Lab ID-Version‡:	807	5528-1	807	5529-1	8075530-1	
Analysis Date:	05/23/2017		05/2	23/2017	05/2	23/2017
	raw ct.	spores/m3	raw ct.	raw ct. spores/m3		spores/m3
Ascospores		-				•
Basidiospores	1	38	2	76		
Chaetomium						
Cladosporium	1	38				
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other brown	2	19				
Other colorless						
Penicillium/Aspergillus types†	7	270	16	610	9	340
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	2	19	7	67	1	10
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	3+		3+		3+	
Hyphal fragments/m3	19		57		19	
Pollen/m3	< 10		< 10		< 10	
Skin cells (1-4+)	< 1+		< 1+		1+	
Sample volume (liters)	105		105		105	
§ TOTAL SPORES/m3		380		750		350

Comments:

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Date of Receipt: 05-22-2017 Date of Report: 05-23-2017

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:		#1:		#2:		
		Music roo	m	Outside		
Comments (see below)		None		None		
Lab ID-Version [‡] :		8075525-1	1	8075526-1		
Analysis Date:	05/23/2017				05/23/2017	7
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Ascospores				63	25	2,400
Basidiospores	2	25	76	117	25	4,500
Chaetomium						
Cladosporium	1	25	38	1	25	38
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other brown						
Other colorless						
Penicillium/Aspergillus types [†]	7	25	270	6	25	230
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	1	100	10			
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	3+			2+		
Hyphal fragments/m3	19			< 10		
Pollen/m3	< 10			10		
Skin cells (1-4+)	1+			< 1+		
Sample volume (liters)	105			105		
§ TOTAL SPORES/m3			390			7,100

Comments:

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Date of Receipt: 05-22-2017 Date of Report: 05-23-2017

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:		#3:		#4:		
		Room #2		Room #4		
Comments (see below)		None		None		
Lab ID-Version [‡] :		8075527-1	1	8075528-1		
Analysis Date:	05/23/2017				05/23/201	7
	raw ct. % read spores/m3		raw ct.	% read	spores/m3	
Ascospores						
Basidiospores	2	25	76	1	25	38
Chaetomium						
Cladosporium	1	25	38	1	25	38
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other brown				2	100	19
Other colorless						
Penicillium/Aspergillus types†	3	25	110	7	25	270
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	10	100	95	2	100	19
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+) ^{††}	3+			3+		
Hyphal fragments/m3	67			19		
Pollen/m3	19			< 10		
Skin cells (1-4+)	2+			< 1+		
Sample volume (liters)	105			105		
§ TOTAL SPORES/m3			320			380

Comments:

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SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:		#5:		#6:		
		Room #3	3	Room #1		
Comments (see below)		None		None		
Lab ID-Version [‡] :		8075529-	1	8075530-1		
Analysis Date:	05/23/2017				05/23/201	7
	raw ct.	% read	spores/m3	raw ct.	% read	spores/m3
Ascospores						
Basidiospores	2	25	76			
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other brown						
Other colorless						
Penicillium/Aspergillus types†	16	25	610	9	25	340
Pithomyces						
Rusts						
Smuts, Periconia, Myxomycetes	7	100	67	1	100	10
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	3+			3+		
Hyphal fragments/m3	57			19		
Pollen/m3	< 10			< 10		
Skin cells (1-4+)	< 1+			1+		
Sample volume (liters)	105			105		
§ TOTAL SPORES/m3			750			350

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.

[†] 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. Also, some species with very small spores are easily missed, and may be undercounted.

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MoldRANGETM: Extended Outdoor Comparison Outdoor Location: #2, Outside

Fungi Identified	Outdoor		Typica	l Outo	loor Da	ata for	:	Typical Outdoor Data for:					
	data		May in	Orego	on† (n‡	=1015)		The er	ntire ye	ear in C	regon	· (n‡=1	1953)
	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	13	20	53	89	18	13	13	27	53	110	21
Bipolaris/Drechslera group	-	7	11	13	13	22	2	13	13	13	38	53	3
Chaetomium	-	10	13	13	27	38	4	7	13	13	27	53	6
Cladosporium	38	53	110	320	850	1,600	86	53	110	370	1,400	2,600	85
Curvularia	-	-	-	-	-	-	1	10	13	13	27	53	2
Nigrospora	-	-	-	-	-	-	< 1	8	13	13	27	40	2
Other brown	-	13	13	13	53	53	21	13	13	25	53	67	25
Penicillium/Aspergillus types	230	53	76	210	430	690	85	53	110	270	670	1,100	87
Stachybotrys	-	-	-	-	-	-	1	13	13	13	53	210	2
Torula	-	13	13	13	40	53	6	13	13	27	53	80	7
Seldom found growing indoors**													
Ascospores	2,400	76	160	550	1,900	3,300	93	53	110	430	1,400	2,500	89
Basidiospores	4,500	160	320	960	2,800	4,900	98	130	290	1,200	4,500	8,600	96
Rusts	-	13	13	26	53	70	16	13	13	27	53	110	18
Smuts, Periconia, Myxomycetes	-	13	13	31	110	240	55	13	13	53	160	370	52
§ TOTAL SPORES/m3	7,100												

†The 'Typical Outdoor Data' represents the typical outdoor spore levels for the location and time frame 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 enough data is not available to make a statistically meaningful assessment, it is indicated with a dash.

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

* 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.

 \ddagger n = number of samples used to calculate data.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor data" are based on the results of the analysis of samples delivered to and analyzed by EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. In addition, EMLab P&K may not have received and tested a representative number of samples for every region or time period. EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

Client: Alpha Environmental Services, Inc.: OR C/O: Mr. Wayne Bennett Re: 17-16079

Date of Receipt: 05-22-2017 Date of Report: 05-23-2017

MoldSTATTM: Supplementary Statistical Spore Trap Report

Outdoor Summary: #2: Outside

Species detected		Outdoo	r sample s	pores/m3	Typical outdoor ranges Fi	req.
	<100	1K	10K	>100K	(North America)	%
Ascospores				2,400	13 - 210 - 6,400	77
Basidiospores				4,500	13 - 440 - 24,000	91
Cladosporium				38	27 - 480 - 9,800	90
Penicillium/Aspergillus types				230	13 - 170 - 2,600	67
Smuts, Periconia, Myxomycetes				< 10	7 - 53 - 910	64
Total				7,100		

The "Typical outdoor ranges" and "Freq. %" columns show the typical low, medium, and high spore counts per cubic meter and the frequency of occurrence for the given spore type. The low, medium, and high values represent the 2.5, 50, and 97.5 percentile values when the spore type is detected. For example, if the low value is 53 and the frequency of occurrence is 63%, it would mean that we typically detect the given spore type on 63 percent of all outdoor samples and, when detected, 2.5% of the time it is present in levels below 53 spores/m3.

Indoor Samples

Location: #1: Music room

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)		Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)	
Result: 5%	dF: 4 Result: 2.3200 Critical value: 9.4877 Inside Similar: Yes	Result: 0.7500		dF: 5 Result: 0.2000 Critical value: 0.8000 Outside Similar: No	Score: 141 Result: Low	
Species Detected		Spores/m3				
		<100	1K	10K	>100K	
	Basidiospores				76	
	Cladosporium				38	
Penicillium/Aspergillus types					270	
Smuts, Periconia, Myxomycetes					10	
	Total				390	

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MoldSTATTM: Supplementary Statistical Spore Trap Report

Location: #3: Room #2

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)		Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)	
Result: 4%	dF: 4 Result: 2.3200 Critical value: 9.4877 Inside Similar: Yes	Result: 0.7500		dF: 5 Result: -0.3000 Critical value: 0.8000 Outside Similar: No	Score: 119 Result: Low	
Species Detected		Spores/m3				
		<100	1K	10K	>100K	
	Basidiospores				76	
	Cladosporium				38	
Penicillium/Aspergillus types					110	
Smuts, Periconia, Myxomycetes					95	
	Total				320	

Location: #4: Room #4

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)		Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)	
Result: 5%	dF: 4 Result: 2.3200 Critical value: 9.4877 Inside Similar: Yes	Result: 0.6667		dF: 6 Result: 0.2429 Critical value: 0.7714 Outside Similar: No	Score: 141 Result: Low	
Species Detected				Spores/m3		
		<100	1K	10K	>100K	
	Basidiospores				38	
	Cladosporium				38	
	Other brown				19	
Penicillium/Aspergillus types					270	
Smuts, Periconia, Myxomycetes					19	
	Total				380	

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MoldSTATTM: Supplementary Statistical Spore Trap Report

Location: #5: Room #3

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreement ratio** (indoor/outdoor)		Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)	
Result: 10%	dF: 4 Result: 2.3200 Critical value: 9.4877 Inside Similar: Yes	Result: 0.5714		dF: 5 Result: 0.2250 Critical value: 0.8000 Outside Similar: No	Score: 188 Result: Medium	
Species 2	Detected			Spores/m3		
		<100	1K	10K	>100K	
	Basidiospores				76	
Penicillium/Aspergillus types					610	
Smuts, Periconia, Myxomycetes					67	
	Total				750	

Location: #6: Room #1

% of outdoor total spores/m3	Friedman chi- square* (indoor variation)	Agreeme (indoor	ent ratio** /outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)
Result: 4%	dF: 4	Result	: 0.3333	dF: 5	Score: 152
	Result: 2.3200			Result: -0.3000	Result: Medium
	Critical value: 9.4877			Critical value: 0.8000	
	Inside Similar: Yes			Outside Similar: No	
Species Detected				Spores/m3	
		<100	1K	10K	>100K
Penicillium/Aspergillus types					340
Smuts, Periconia, Myxomycetes					10
	Total				350

* The Friedman chi-square statistic is a non-parametric test that examines variation in a set of data (in this case, all indoor spore counts). The null hypothesis (H0) being tested is that there is no meaningful difference in the data for all indoor locations. The alternative hypothesis (used if the test disproves the null hypothesis) is that there is a difference between the indoor locations. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

** An agreement ratio is a simple method for assessing the similarity of two samples (in this case the indoor sample and the outdoor summary) based on the spore types present. A score of one indicates that the types detected in one location are the same as that in the other. A score of zero indicates that none of the types detected indoors are present outdoors. Typically, an agreement of 0.8 or higher is considered high.

*** The Spearman rank correlation is a non-parametric test that examines correlation between two sets of data (in this case the indoor location and the outdoor summary). The null hypothesis (H0) being tested is that the indoor and outdoor samples are unrelated. The alternative hypothesis (used if the test disproves the null hypothesis) is that the samples are similar. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

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MoldSTATTM: Supplementary Statistical Spore Trap Report

**** MoldSCORETM is a specialized method for examining air sampling data. It is a score between 100 and 300, with 100 indicating a greater likelihood that the airborne indoor spores originated from the outside, and 300 indicating a greater likelihood that they originated from an inside source. The Result displayed is based on the numeric score given and will be either Low, Medium, or High, indicating a low, medium, or high likelihood that the spores detected originated from an indoor source. EMLab P&Kreserves the right to, and may at anytime, modify or change the MoldScore algorithm without notice.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor ranges" are based on the results of the analysis of samples delivered to and analyzed by EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical analysis provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the data contained in, or any actions taken or omitted in reliance upon, this report.

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Date of Receipt: 05-22-2017 Date of Report: 05-23-2017

MoldSCORETM: Spore Trap Report

Outdoor Sample: #2 Outside

Fungi Identified	Outdoor sample spores/m3							Raw	Spores/
	<100		1K		10K	>10	0K	count	m3
Generally able to grow indoors*									
Alternaria								ND	< 10
Bipolaris/Drechslera group								ND	< 10
Chaetomium								ND	< 10
Cladosporium								1	38
Curvularia								ND	< 10
Nigrospora								ND	< 10
Penicillium/Aspergillus types [†]								6	230
Stachybotrys								ND	< 10
Torula								ND	< 10
Seldom found growing indoors**									
Ascospores								63	2,400
Basidiospores								117	4,500
Rusts								ND	< 10
Smuts, Periconia, Myxomycetes								ND	< 10
Total									7,124

Location: #1 Music room

Fungi Identified	Indo	or sam	ple spore	es/m3	Raw	Spores/	MoldSCORE [‡]			•
	<100	1K	10K	>100K	count	m3	100	200	300	Score
Generally able to grow indoors*										
Alternaria					ND	< 10				100
Bipolaris/Drechslera group					ND	< 10				100
Chaetomium					ND	< 10				100
Cladosporium					1	38				102
Curvularia					ND	< 10				100
Nigrospora					ND	< 10				100
Penicillium/Aspergillus types†					7	270				141
Stachybotrys					ND	< 10				100
Torula					ND	< 10				100
Seldom found growing indoors**										
Ascospores					ND	< 10				100
Basidiospores					2	76				100
Rusts					ND	< 10				100
Smuts, Periconia, Myxomycetes					1	10				102
Total					390	Final MoldSCORE 141			141	

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Date of Receipt: 05-22-2017 Date of Report: 05-23-2017

MoldSCORETM: Spore Trap Report

Location: #3 Room #2

Fungi Identified	Indo	or sam	ple spore	s/m3	Raw	Spores/	MoldSCORE [‡]			
	<100	1K	10K	>100K	count	m3	100	200	300	Score
Generally able to grow indoors*										
Alternaria					ND	< 10				100
Bipolaris/Drechslera group					ND	< 10				100
Chaetomium					ND	< 10				100
Cladosporium					1	38				102
Curvularia					ND	< 10				100
Nigrospora					ND	< 10				100
Penicillium/Aspergillus types†					3	110				116
Stachybotrys					ND	< 10				100
Torula					ND	< 10				100
Seldom found growing indoors**										
Ascospores					ND	< 10				100
Basidiospores					2	76				100
Rusts					ND	< 10				100
Smuts, Periconia, Myxomycetes					10	95				119
Total						324	Fin	al MoldSC	ORE	119

Location: #4 Room #4

Fungi Identified	Indoor sample spores/m3				Raw	Spores/ MoldSC			CORE	ORE‡					
	<100		1K		10K	>10	0K	count	m3	10)0		200	300	Score
Generally able to grow indoors*															
Alternaria								ND	< 10						100
Bipolaris/Drechslera group								ND	< 10						100
Chaetomium								ND	< 10						100
Cladosporium								1	38						102
Curvularia								ND	< 10						100
Nigrospora								ND	< 10						100
Other brown								2	19						108
Penicillium/Aspergillus types†								7	270						141
Stachybotrys								ND	< 10						100
Torula								ND	< 10						100
Seldom found growing indoors**															
Ascospores								ND	< 10						100
Basidiospores								1	38						100
Rusts								ND	< 10						100
Smuts, Periconia, Myxomycetes								2	19						104
Total									381		Tina	ıl Me	oldS	CORE	141

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MoldSCORETM: Spore Trap Report

Location: #5 Room #3

Fungi Identified	Indo	or sam	ple spore	s/m3	Raw	Spores/	MoldSCORE [‡]			
	<100	1K	10K	>100K	count	m3	100	200	300	Score
Generally able to grow indoors*										
Alternaria					ND	< 10				100
Bipolaris/Drechslera group					ND	< 10				100
Chaetomium					ND	< 10				100
Cladosporium					ND	< 10				100
Curvularia					ND	< 10				100
Nigrospora					ND	< 10				100
Penicillium/Aspergillus types†					16	610				188
Stachybotrys					ND	< 10				100
Torula					ND	< 10				100
Seldom found growing indoors**										
Ascospores					ND	< 10				100
Basidiospores					2	76				100
Rusts					ND	< 10				100
Smuts, Periconia, Myxomycetes					7	67				113
Total						752	Fir	nal MoldS(CORE	188

Location: #6 Room #1

Fungi Identified	Indoor sample spores/m3				s/m3	Raw	Spores/	MoldSCORE [‡]				
	<100	1K		10K	>100K	count	m3	10	0	200	300	Score
Generally able to grow indoors*												
Alternaria						ND	< 10					100
Bipolaris/Drechslera group						ND	< 10					100
Chaetomium						ND	< 10					100
Cladosporium						ND	< 10					100
Curvularia						ND	< 10					100
Nigrospora						ND	< 10					100
Penicillium/Aspergillus types [†]						9	340					152
Stachybotrys						ND	< 10					100
Torula						ND	< 10					100
Seldom found growing indoors**												
Ascospores						ND	< 10					100
Basidiospores						ND	< 10					100
Rusts						ND	< 10					100
Smuts, Periconia, Myxomycetes						1	10					102
Total					352	Final MoldSCORE 15			152			

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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.

EMLab P&K

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SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Comments:

Note: Graphical output may understate the importance of certain "marker" genera. EMLab P&K, LLC

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY



Comments:

Note: Graphical output may understate the importance of certain "marker" genera. EMLab P&K, LLC

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