



# CAMPLIN

Environmental Services, Inc.

September 12, 2018

Highland Middle School - Libertyville School District 70  
310 W. Rockland Road  
Libertyville, IL 60048

Attention: Elizabeth Davis, Assistant Principal

Subject: Mold Evaluation and Testing  
Highland Middle School

Dear Ms. Davis,

On Wednesday, September 5, 2018, Jeffery Camplin, Senior Consultant for Camplin Environmental Services, Inc. (CESI) was contracted to evaluate potential mold concerns in a few classrooms at Highland Middle School. The evaluation involved both air testing in the building and surface tape lift samples on suspected mold growth. The tape samples were obtained on the ceiling tile grid in room 137 and a fabric cover text book in room 138. Air testing was performed using "spore trap" air monitoring. This method collects non-viable airborne fungal spores. A total of 3 air samples were collected. One sample was obtained from room 236 and one sample was obtained in the corridor between rooms 137 and 138. A final sample was obtained from outdoor air for statistical comparison purposes.

## Findings

Apparent visible mold was identified and confirmed with a tape lift sample on a fabric covered book in room 138. Fabric books in room 136 also had similar apparent mold growth. The mold found on the text book was not found in the classroom air. The mold spores found on fabric covered textbooks in rooms 136 and 138 was most likely dormant.

No mold was detected on the ceiling tile grid in room 137. The dark, lint-like substance on gridwork above the classroom unit ventilator in several rooms appears to be typical classroom dust. This dust was also noted on ceiling tile gridwork in other classrooms along with cloth light lens covers like those observed in room 03.

No mold spores were detected in the room 136 air sample. Very low mold spores (similar to outdoor air) were detected in the corridor between 137 and 138.

## Recommendations

1. Testing confirmed the lint-like debris on ceiling tile grids and cloth light lens covers above unit ventilators is common room dust. It is recommended that the ceiling grids in classrooms be cleaned as needed to remove the visible dust. The cloth light lens covers should also be laundered or replaced as necessary to remove the build-up of dust.
2. A visual walkthrough of classrooms 136 and 138 revealed minor mold growth on a few books with fabric covers. The mold appeared to be dormant and was not found in the classroom air. These types of fabric covered books have previously had visible mold growth. The USEPA finds that small areas visible mold (<10 square feet) on the book covers can be cleaned or disposed of by in-house staff without the need for a

containment. The maintenance staff has done an effective job in the past of implementing recommendations to address small areas of apparent minor visible mold growth in classrooms. It is recommended that the District continue to utilize special cleaning of washable surfaces with the "green" cleaning product Triade III. Although the book covers can be cleaned with Triade III, it is recommended that the District consider disposing of that specific type of fabric covered book.

3. The mold growth on the fabric books was most likely from excessive humidity in the classrooms. Although the older classroom unit ventilators are limited in their ability to reduce humidity in the classrooms, they are currently being retrofitted to help lower humidity levels. Eventually the room unit ventilators should be upgraded to provide more effective control of humidity.
4. There is currently no humidity control in the corridor areas in the west section of the building. This will also impact humidity levels in the classrooms. Steps should be taken to limit the time outside doors and corridor windows are left open to control humidity inside of the building. Condensation was noted on the flooring in corridor areas due to the high outside humidity condensing on the colder interior floor surfaces. The better solution to high humidity levels in corridors/classrooms would be to provide air conditioning throughout the entire building including improved air conditioning control in the classrooms.
5. The air testing found no mold spores in the air of classroom 136 and total mold spores counts in the adjacent corridor well below the "action level" of 1,300 colony forming units per cubic meter of air (cfu/m<sup>3</sup>) established by the National Association for Moisture Management (NAMM). Although the minor amounts of mold spores found in the corridor were similar to spores found in the outdoor air, any air samples containing mold spores above the "action level" would have warranted further investigation. No additional actions than those listed above are required at this time.

The laboratory results are attached for your information. Please contact my office with any questions.

Cordially,



Jeffery Camplin, CSP, CPEA, CET  
President



## Laboratory Results



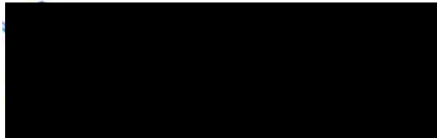
Report for:

**Mr. Jeffrey Camplin**  
**Camplin Environmental**  
9575 W. Higgins Rd.  
Suite 450  
Rosemont, IL 60018

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Regarding: Project: Libertyville; Highland  
EML ID: 1994836

Approved by:



Facility Manager  
Francina Thadigiri

Dates of Analysis:

Direct microscopic exam (Qualitative): 09-05-2018

Service SOPs: Direct microscopic exam (Qualitative) (EM-MY-S-1039)  
AIHA-LAP, LLC accredited service, Lab ID #176641

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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.

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Client: Camplin Environmental  
C/O: Mr. Jeffrey Camplin  
Re: Libertyville; Highland

Date of Sampling: 09-05-2018  
Date of Receipt: 09-05-2018  
Date of Report: 09-06-2018

**DIRECT MICROSCOPIC EXAMINATION REPORT**

Location:	137: Tape lift from ceiling grid in room 137	138: Tape lift from red/black book
Sample type:	Tape sample	Tape sample
Lab ID-Version‡:	9404285-1	9404286-1
Analysis Date:	09/05/2018	09/05/2018
<b>MOLD/FUNGAL GROWTH*</b> : Molds seen growing with underlying mycelial and/or sporulating structures		
Acremonium		
Alternaria		
Aspergillus		4+
Aureobasidium		
Basidiospores		
Chaetomium		
Cladosporium		
Colorless spores typical of Penicillium / Aspergillus		
Fusarium		
Other colorless, ID unknown		
Stachybotrys		
Torula		
Ulocladium		
Miscellaneous spores**	Variety	None
Other comments†	None	None
Background debris or Description††	Moderate	Scant
General impression	Normal trapping	Mold growth

\* See Mold/Fungal Growth Details table on the last page.

\*\* See Miscellaneous Spores table on the last page.

† Some comments may refer to the following: Most surfaces collect a mix of spores which are normally present in the outdoor environment. At times it is possible to note a skewing of the distribution of spore types, and also to note "marker" genera which may indicate indoor mold growth. Marker genera are those spore types which are present normally in very small numbers, but which multiply indoors when conditions are favorable for growth.

†† Background debris is an indication of the amounts of non biological particulate matter present. This background amorphous material is graded and described as scant, light, moderate, heavy, or very heavy. (Very heavy background debris may obscure visibility.)

Fungal types listed without a growth rating or data entry were not detected during the course of the analysis for the respective sample.

Interpretation is left to the company and/or persons who conducted the field work.

‡ 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".

The limit of detection is < 1+ when mold growth is detected.

Client: Camplin Environmental  
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Re: Libertyville; Highland

Date of Sampling: 09-05-2018  
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**Mold/Fungal Growth Rating Details**

Growth Rating	Quantities of molds indicating growth are listed in the MOLD/FUNGAL GROWTH section. Judgement is used in determining the amount of growth present in the sample. For example, if only one portion of the sample has evidence of heavy growth, then it will receive a rating of heavy growth even though, strictly speaking, on a percentage basis of the entire sample, the amount of growth is low.	
	Swab/Tape/Dust/Wipe sample	Bulk Sample
< 1+ (Very Light Growth)	Evidence of very light growth observed on the sample as indicated by spores of one type seen with underlying mycelial and/or with their sporulating structures found in less than 10% of the microscopic fields examined.	Areas of very light growth detected by the presence of spores of one type seen with underlying mycelial and/or with their sporulating structures in the bulk sample.
1+ (Light Growth)	Evidence of light growth observed on the sample as indicated by spores of one type seen with underlying mycelial and/or with their sporulating structures found in 10 to 25% of the microscopic fields examined.	Areas of light growth detected by the presence of spores of one type seen with underlying mycelial and/or with their sporulating structures in the bulk sample.
2+ (Moderate Growth)	Evidence of moderate growth observed on the sample as indicated by spores of one type seen with underlying mycelial and/or with their sporulating structures found in 26 to 50% of the microscopic fields examined.	Areas of moderate growth detected by the presence of spores of one type seen with underlying mycelial and/or with their sporulating structures in the bulk sample.
3+ (Heavy Growth)	Evidence of heavy growth observed on the sample as indicated by spores of one type seen with underlying mycelial and/or with their sporulating structures found in 51 to 75% of the microscopic fields examined.	Areas of heavy growth detected by the presence of spores of one type seen with underlying mycelial and/or with their sporulating structures in the bulk sample.
4+ (Very Heavy Growth)	Evidence of very heavy growth observed on the sample as indicated by spores of one type seen with underlying mycelial and/or with their sporulating structures found to be nearly confluent in the majority of the microscopic fields examined.	Areas of very heavy growth detected by the presence of spores of one type seen with underlying mycelial and/or with their sporulating structures in the bulk sample.

**Miscellaneous Spores**

Slides/specimens are examined for the presence of mold spores and pollen, noting the quantities and distribution of spore types found. A designation of 'normal trapping' is made when a mix of spore types is present with the same general distribution as is usually found outdoors. In other words, the biological component of the sample surface is like that found everywhere. Types of spores present would include basidiospores (mushroom spores), myxomycetes (slime molds), plant pathogens such as ascospores, rusts and smuts, and a mix of saprophytic genera with no particular spore type predominating. Many of these spore types would not be found growing indoors on building materials since many plant pathogens require living plants for growth, and mushrooms require compost, leaf duff of various types, or associations with roots of certain trees, etc. Due to these factors, when a mix of spores seen include these types as well as pollen, the rational source is the outside air, rather than indoor mold growth. The numbers of miscellaneous spores seen are graded and described as shown below as none, very few, few, variety, and wide variety.

None	Very Few	Few	Variety	Wide Variety
No spores detected	Very few spores detected	A few spores detected	Many spores containing a variety of different genera detected	Many spores containing a wide variety of different genera detected



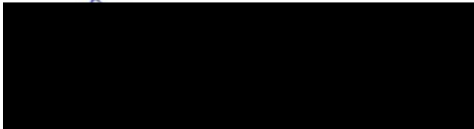
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Regarding: Project: Libertyville; Highland  
EML ID: 1994836

Approved by:



Facility Manager  
Francina Thadigiri

Dates of Analysis:

Direct microscopic exam (Qualitative): 09-05-2018

Service SOPs: Direct microscopic exam (Qualitative) (EM-MY-S-1039)  
AIHA-LAP, LLC accredited service, Lab ID #176641

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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: Camplin Environmental  
 C/O: Mr. Jeffrey Camplin  
 Re: Libertyville; Highland

Date of Sampling: 09-05-2018  
 Date of Receipt: 09-05-2018  
 Date of Report: 09-06-2018

**DIRECT MICROSCOPIC EXAMINATION REPORT**

Background Debris and/or Description	Miscellaneous Spores Present*	MOLD GROWTH: Molds seen with underlying mycelial and/or sporulating structures†	Other Comments††	General Impression
Lab ID-Version‡: 9404285-1, Analysis Date: 09/05/2018: Tape sample 137: Tape lift from ceiling grid in room 137				
Moderate	Variety	None	None	Normal trapping
Lab ID-Version: 9404286-1, Analysis Date: 09/05/2018: Tape sample 138: Tape lift from red/black book				
Scant	None	4+ <i>Aspergillus</i> species	None	Mold growth

\* Indicative of normal conditions, i.e. seen on surfaces everywhere. Includes basidiospores (mushroom spores), myxomycetes, plant pathogens such as ascospores, rusts and smuts, and a mix of saprophytic genera with no particular spore type predominating. Distribution of spore types seen mirrors that usually seen outdoors.

† Quantities of molds seen growing are listed in the MOLD GROWTH column and are graded <1+ to 4+, with 4+ denoting the highest numbers.

†† Some comments may refer to the following: Most surfaces collect a mix of spores which are normally present in the outdoor environment. At times it is possible to note a skewing of the distribution of spore types, and also to note "marker" genera which may indicate indoor mold growth. Marker genera are those spore types which are present normally in very small numbers, but which multiply indoors when conditions are favorable for growth.

‡ 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".  
 The limit of detection is < 1+ when mold growth is detected.





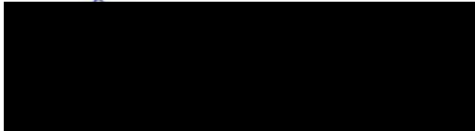
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Regarding: Project: Libertyville; Highland  
EML ID: 1994836

Approved by:



Facility Manager  
Francina Thadigiri

Dates of Analysis:  
Spore trap analysis: 09-05-2018

Service SOPs: Spore trap analysis (EM-MY-S-1038)  
AIHA-LAP, LLC accredited service, Lab ID #176641

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C/O: Mr. Jeffrey Camplin  
Re: Libertyville; Highland

Date of Sampling: 09-05-2018  
Date of Receipt: 09-05-2018  
Date of Report: 09-06-2018

**SPORE TRAP REPORT: NON-VIABLE METHODOLOGY**

Location:	26309401: Room 236		26309415: Corridor between 237 and 238		26309416: Outside	
Comments (see below)	None		None		None	
Lab ID-Version‡:	9404294-1		9404295-1		9404296-1	
Analysis Date:	09/05/2018		09/05/2018		09/05/2018	
	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3
Ascospores					6	320
Basidiospores					11	590
Cercospora					13	170
Chaetomium						
Cladosporium			2	110	8	430
Curvularia					2	27
Epicoccum						
Fusarium						
Myrothecium						
Nigrospora						
Other colorless						
Penicillium/Aspergillus types†					1	53
Pithomyces						
Rusts					4	53
Smuts, Periconia, Myxomycetes						
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Zygomycetes						
Background debris (1-4+)††	< 1+		2+		2+	
Hyphal fragments/m3	< 13		< 13		40	
Pollen/m3	< 13		< 13		53	
Skin cells (1-4+)	None		< 1+		< 1+	
Sample volume (liters)	75		75		75	
<b>§ TOTAL SPORES/m3</b>		< 13		110		1,600

**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.

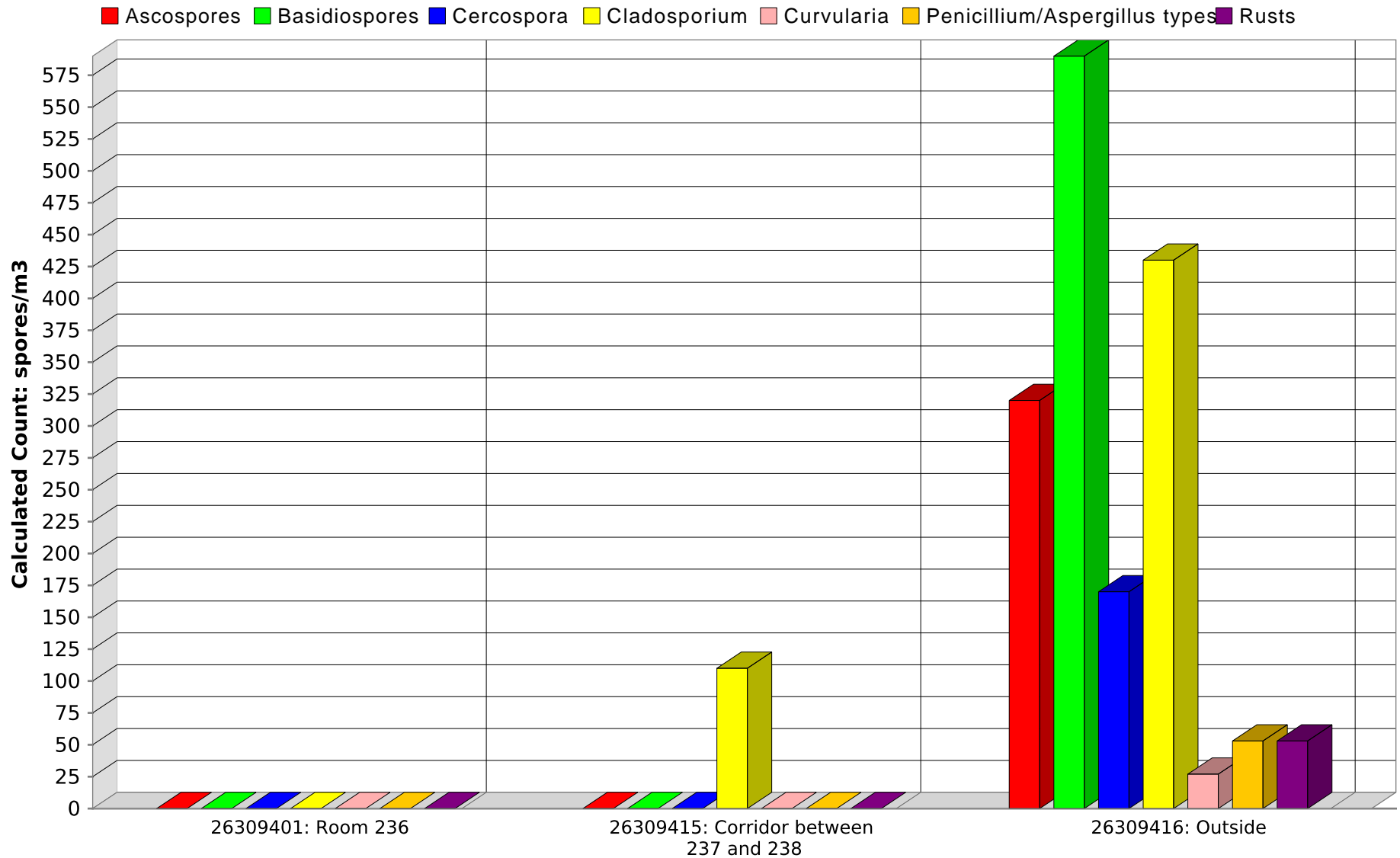
The analytical sensitivity is the spores/m<sup>3</sup> divided by the raw count, expressed in spores/m<sup>3</sup>. The limit of detection is the analytical sensitivity (in spores/m<sup>3</sup>) multiplied by the sample volume (in liters) divided by 1000 liters.

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".

§ Total Spores/m<sup>3</sup> has been rounded to two significant figures to reflect analytical precision.

**SPORE TRAP REPORT: NON-VIABLE METHODOLOGY**



**Comments:**

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

Client: Camplin Environmental  
C/O: Mr. Jeffrey Camplin  
Re: Libertyville; Highland

Date of Sampling: 09-05-2018  
Date of Receipt: 09-05-2018  
Date of Report: 09-06-2018

**MoldSTAT™: Supplementary Statistical Spore Trap Report**

**Outdoor Summary: 26309416: Outside**

Species detected	Outdoor sample spores/m3				Typical outdoor ranges (North America)	Freq. %
	<100	1K	10K	>100K		
Ascospores				320	13 - 240 - 6,400	77
Basidiospores				590	13 - 480 - 23,000	91
Cercospora				170	7 - 40 - 560	14
Cladosporium				430	27 - 530 - 9,300	90
Curvularia				27	7 - 27 - 650	19
Penicillium/Aspergillus types				53	13 - 190 - 2,600	66
Rusts				53	7 - 27 - 380	20
Smuts, Periconia, Myxomycetes				< 13	7 - 53 - 1,100	66
<b>Total</b>				<b>1,600</b>		

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: 26309401: Room 236**

% of outdoor total spores/m3	Friedman chi-square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)
Result: < 1%	dF: 1 Result: 1.0000 Critical value: 3.8415 Inside Similar: Yes	Result: 0.0000	dF: N/A Result: N/A Critical value: N/A Outside Similar: N/A	Score: 100 Result: Low
<b>Species Detected</b>		<b>Spores/m3</b>		
<b>None Detected</b>		<100	1K	10K
				>100K
				< 13

**Location: 26309415: Corridor between 237 and 238**

% of outdoor total spores/m3	Friedman chi-square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)
Result: 6%	dF: 1 Result: 1.0000 Critical value: 3.8415 Inside Similar: Yes	Result: 0.2500	dF: 7 Result: 0.5714 Critical value: 0.6786 Outside Similar: No	Score: 105 Result: Low
<b>Species Detected</b>		<b>Spores/m3</b>		
<b>Cladosporium</b>		<100	1K	10K
				>100K
<b>Total</b>				110
				110

Client: Camplin Environmental  
C/O: Mr. Jeffrey Camplin  
Re: Libertyville; Highland

Date of Sampling: 09-05-2018  
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### **MoldSTAT™: Supplementary Statistical Spore Trap Report**

\* 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.

\*\*\*\* MoldSCORE™ 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&K reserves 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.