816 Burr Oak Drive Westmont, Illinois 60559
Phone: (630) 655-8500 Fax: (630) 655-8724
jmsenviro.com

ENVIRONMENTAL PROJECT DOCUMENTS

2023 Indoor Air Quality Survey

Twin Grove School
Room 41
2600 N. Buffalo Grove Road
Buffalo Grove, IL 60089

For

Kildeer Countryside School District #96
1072 Ivy Hall Lane
Buffalo Grove, IL 60089

Submitted By:
JMS Environmental Associates, Ltd.
816 Burr Oak Drive
Westmont, Illinois 60559
630/655-8500

February 5, 2024

February 5, 2024

816 Burr Oak Drive Westmont, Illinois 60559
Phone: (630) 655-8500 Fax: (630) 655-8724
jmsenviro.com

Kildeer Countryside School District # 96
1072 Ivy Hall Lane
Buffalo Grove, IL 60089

Attn: Mr. Sam Miranda
Director of Facilities and Transportation

Re: Indoor Mold Screening Report
Twin Grove School
2600 N. Buffalo Grove Road
Buffalo Grove, IL

JMS Project: J-25903

Dear Mr. Miranda:

The following report covers the results of the Indoor Mold Screening that JMS Environmental Associates, Ltd. (JMS) performed at the Twin Grove School Room 41 – Art Room on February 1, 2024.

Inspection:

JMS Environmental Associates, Ltd. (JMS) was retained by Mr. Sam Miranda of Kildeer Countryside School District 96 to perform monitoring for airborne mold spores as part of a limited Indoor Air Quality assessment at the site known as Twin Grove School, 2600 N. Buffalo Grove Road located in Buffalo Grove, Illinois. Requested sampling locations was Room 41 within the school.

On February 1, 2024, JMS performed a visual inspection and indoor environmental sampling and comparison outdoor background sampling. The collected samples were submitted to an independent laboratory (Eurofin,EMLab P&K, Naperville, Illinois) for microscopic (fungi) identification and quantification.

Sampling

Spore Trap sampling was performed in Room 41, Room 40, adjacent main hallway and outside near doors 6. Note, this report does not constitute any conclusions regarding any medical effects from environmental molds. A trained and experienced medical physician should be consulted regarding the physiological effects of environmental molds. No opinions or recommendations are being stated about possible health effects of mold species. The client should consult a medical doctor/toxologist for the human effects of mold species.

Visual Inspection:

A visual inspection was performed focusing on Room 41 in the school. JMS was requested to come out to the facility to perform IAQ mold testing based on water damage to the sink in room

41. Upon visual inspection of the room, no visible mold was found. The veneer and particle board cabinets beneath the sink were in poor condition and the Back side of the cabinet and the base was damp with no visible mold at the time of the inspection. Swab samples were taken from the staining on the veneer within the cabinet of concern as well as a swab sample where the veneer was damaged and the particle board exposed.

Table 1. Summary of Results of Microscopic Analysis of Samples at Willow Grove School, Buffalo Grove

Room/Area Description	Sample Number	Results	
		Spore Density or Concentration	Predominant Genus
Outside Door 6 Pre-Sample	25903-02-0101	850 per/m^3	Ascospores (53), Basidiospores(110), Cladosporium (690)
Room 41 Art Room	25903-02-0102	53 per/m^3	Cladosporium (53)
Room 40 Home Economics Room	25903-02-0103	<13 per/m^3	N/A
Adjacent Large Hallway	25903-02-0104	<13 per/m^3	N/A
Outside Door 6 Post Sampling	25903-02-0105	1,100 per/m^3	Ascospores (53), Basidiospores(590), Cladosporium (430)
SWAB SAMPLES			
Exposed particle board beneath Veneer Northeast sink	25903-02-0106B	Very Few Spores Detected	N/A
Veneer beneath Northeast sink	25903-02-0107A	Very Few Spores Detected	N/A

Conclusion:

1. No visible mold growth was observed.

2. Excessive water damage was noted in the cabinets in the Art Room. Art room cabinets were wet at the time of the inspection. This is noted in the photo's taken.

3. Sampling the indoor air indicated total mold spores were not elevated when compared to outdoor levels on the day of the inspection.

4. Relative humidity levels **were not elevated** on the day of the assessment.

Refer to **Appendix A** for the Laboratory Report and Chain of Custody.

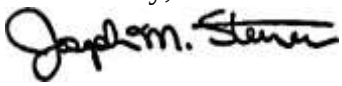
U.S. EPA guidelines available at http://www.epa.gov/iaq/molds/index.html.

If you have any questions regarding this project survey report, please do not hesitate to contact us at JMS.

Respectfully submitted,
JMS ENVIRONMENTAL ASSOCIATES, LTD.

Joyce M. Ciesla
Senior Project Manager

JMS ENVIRONMENTAL ASSOCIATES, LTD.
Reviewed by,



Joseph M. Sterner, MS
Environmental Director/President

APPENDIX 'A'

Laboratory Report and Chain of Custody

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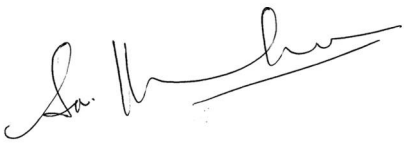
JMS Environmental Associates, Ltd.

Report for:

Ms. Joyce Ciesla
JMS Environmental Associates, Ltd.
816 Burr Oak Drive
Westmont, IL 60559

Regarding: Eurofins EPK Built Environment Testing, LLC
Project: 25903; Twin Grove School
EML ID: 3525126

Approved by:



Cluster Leader
Dr. Kamash Pillai

Dates of Analysis:
Direct microscopic exam (Qualitative): 02-02-2024

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

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.

Eurofins EPK Built Environment Testing, LLC'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 EPK Built Environment Testing, LLC
1815 West Diehl Road, Suite 800, Naperville, IL 60563
(866) 871-1984 www.eurofinsus.com/Built

Client: JMS Environmental Associates, Ltd.
C/O: Ms. Joyce Ciesla
Re: 25903; Twin Grove School

Date of Sampling: 02-01-2024
Date of Receipt: 02-01-2024
Date of Report: 02-02-2024

DIRECT MICROSCOPIC EXAMINATION REPORT

Location:	25903-02-0107A: Veneer beneath Sink NE	25903-02-0106B: Wood under Veneer NE
Sample type:	Swab sample	Swab sample
Lab ID-Version‡:	17219051-1	17219052-1
Analysis Date:	02/02/2024	02/02/2024
MOLD/FUNGAL GROWTH*: Molds seen growing with underlying mycelial and/or sporulating structures		
Acremonium		
Alternaria		
Aureobasidium		
Basidiospores		
Chaetomium		
Cladosporium		
Colorless spores typical of Penicillium / Aspergillus		
Fusarium		
Other colorless, ID unknown		
Stachybotrys		
Torula		
Ulocladium		
Miscellaneous spores**	Very few	Very few
Other comments†	None	None
Background debris or Description††	Scant	Scant
General impression	Normal trapping	Normal trapping

* 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.

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Client: JMS Environmental Associates, Ltd.
C/O: Ms. Joyce Ciesla
Re: 25903; Twin Grove School

Date of Sampling: 02-01-2024
Date of Receipt: 02-01-2024
Date of Report: 02-02-2024

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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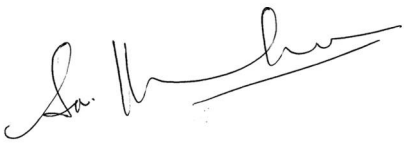
JMS Environmental Associates, Ltd.

Report for:

Ms. Joyce Ciesla
JMS Environmental Associates, Ltd.
816 Burr Oak Drive
Westmont, IL 60559

Regarding: Eurofins EPK Built Environment Testing, LLC
Project: 25903; Twin Grove School
EML ID: 3525126

Approved by:



Cluster Leader
Dr. Kamash Pillai

Dates of Analysis:
Direct microscopic exam (Qualitative): 02-02-2024

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

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.

Eurofins EPK Built Environment Testing, LLC'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 EPK Built Environment Testing, LLC
1815 West Diehl Road, Suite 800, Naperville, IL 60563
(866) 871-1984 www.eurofinsus.com/Built

Client: JMS Environmental Associates, Ltd.
C/O: Ms. Joyce Ciesla
Re: 25903; Twin Grove School

Date of Sampling: 02-01-2024
Date of Receipt: 02-01-2024
Date of Report: 02-02-2024

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‡: 17219051-1, Analysis Date: 02/02/2024: Swab sample 25903-02-0107A: Veneer beneath Sink NE				
Scant	Very few	None	None	Normal trapping
Lab ID-Version: 17219052-1, Analysis Date: 02/02/2024: Swab sample 25903-02-0106B: Wood under Veneer NE				
Scant	Very few	None	None	Normal trapping

* 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.

For additional information necessary for the interpretation of the results, all readers are advised to refer to the document "Direct Exam Details Page" which is available on our website at:
www.emlab.com/services/mold-testing/direct-microscopic-exam-qualitative/

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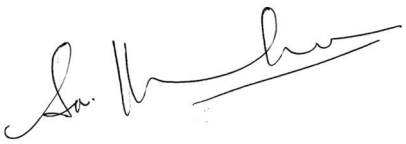
JMS Environmental Associates, Ltd.

Report for:

Ms. Joyce Ciesla
JMS Environmental Associates, Ltd.
816 Burr Oak Drive
Westmont, IL 60559

Regarding: Eurofins EPK Built Environment Testing, LLC
Project: 25903; Twin Grove School
EML ID: 3525126

Approved by:



Cluster Leader
Dr. Kamash Pillai

Dates of Analysis:
Spore trap analysis: 02-02-2024

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

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 EPK Built Environment Testing, LLC ("the Company"), a member of the Eurofins Built Environment Testing group of companies, 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 EPK Built Environment Testing, LLC'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.

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Client: JMS Environmental Associates, Ltd.
C/O: Ms. Joyce Ciesla
Re: 25903; Twin Grove School

Date of Sampling: 02-01-2024
Date of Receipt: 02-01-2024
Date of Report: 02-02-2024

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	25903-02-0101: Pre-Outside south Parking LOt		25903-02-0102: Room 41 Art		25903-02-0103: Room 40 Home Ec		25903-02-0104: Adjacent Hallway Interior		25903-02-0105: Post Outside South Parking Lot	
Comments (see below)	None		None		None		None		None	
Lab ID-Version‡:	17219053-1		17219054-1		17219055-1		17219056-1		17219057-1	
Analysis Date:	02/02/2024		02/02/2024		02/02/2024		02/02/2024		02/02/2024	
	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3
Ascospores	1	53							1	53
Basidiospores	2	110							11	590
Chaetomium										
Cladosporium	13	690	1	53					8	430
Curvularia										
Epicoccum										
Fusarium										
Myrothecium										
Nigrospora										
Other colorless										
Penicillium/Aspergillus types†										
Pithomyces										
Rusts										
Smuts, Periconia, Myxomycetes										
Stachybotrys										
Stemphylium										
Torula										
Ulocladium										
Zygomycetes										
Background debris (1-4+)	2+		1+		1+		1+		2+	
Hyphal fragments/m3	< 13		< 13		< 13		< 13		< 13	
Pollen/m3	< 13		< 13		< 13		< 13		< 13	
Skin cells (1-4+)	< 1+		1+		< 1+		1+		< 1+	
Sample volume (liters)	75		75		75		75		75	
§ TOTAL SPORES/m3		850		53		< 13		< 13		1,100

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, per spore and per sample.

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

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(866) 871-1984 www.eurofinsus.com/Built

Client: JMS Environmental Associates, Ltd.
C/O: Ms. Joyce Ciesla
Re: 25903; Twin Grove School

Date of Sampling: 02-01-2024
Date of Receipt: 02-01-2024
Date of Report: 02-02-2024

MoldRANGE™, Local Climate; Extended Outdoor Comparison

Outdoor Location: 25903-02-0101, Pre-Outside south Parking LOt

Fungi Identified	Outdoor data	Typical Outdoor Data for: February in Central† EMLab Regional Climate code¹ B Annual Temp, A Elev., B Rain, A Temp. Range (n‡=201)						Typical Outdoor Data for: The entire year in Central† EMLab Regional Climate code¹ B Annual Temp, A Elev., B Rain, A Temp. Range (n‡=3810)					
Project zip code 60089	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	-	-	-	-	-	7	13	20	58	190	310	51
Bipolaris/Drechslera group	-	-	-	-	-	-	< 1	7	8	13	27	50	6
Chaetomium	-	-	-	-	-	-	4	7	7	13	29	63	4
Cladosporium	690	27	27	53	160	260	59	53	130	700	3,000	5,800	86
Curvularia	-	-	-	-	-	-	< 1	7	13	13	40	53	7
Nigrospora	-	-	-	-	-	-	2	7	13	22	53	110	18
Penicillium/Aspergillus types	-	27	27	67	160	270	46	41	53	110	360	670	40
Stachybotrys	-	-	-	-	-	-	2	7	13	27	67	110	1
Torula	-	-	-	-	-	-	< 1	7	13	20	53	80	6
Seldom found growing indoors**													
Ascospores	53	16	27	53	150	320	29	53	110	530	1,800	3,200	77
Basidiospores	110	27	53	110	330	990	53	53	190	1,000	4,100	7,600	87
Rusts	-	-	-	-	-	-	< 1	13	13	27	110	180	26
Smuts, Periconia, Myxomycetes	-	7	7	13	40	53	20	13	13	40	120	210	49
§ TOTAL SPORES/m3	850												

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 EPK Built Environment Testing, LLC
1815 West Diehl Road, Suite 800, Naperville, IL 60563
(866) 871-1984 www.eurofinsus.com/Built

Client: JMS Environmental Associates, Ltd.
C/O: Ms. Joyce Ciesla
Re: 25903; Twin Grove School

Date of Sampling: 02-01-2024
Date of Receipt: 02-01-2024
Date of Report: 02-02-2024

MoldRANGE™, Local Climate; Extended Outdoor Comparison

Outdoor Location: 25903-02-0105, Post Outside South Parking Lot

Fungi Identified	Outdoor data	Typical Outdoor Data for: February in Central† EMLab Regional Climate code¹ B Annual Temp, A Elev., B Rain, A Temp. Range (n‡=201)						Typical Outdoor Data for: The entire year in Central† EMLab Regional Climate code¹ B Annual Temp, A Elev., B Rain, A Temp. Range (n‡=3810)					
Project zip code 60089	spores/m3	very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	-	-	-	-	-	7	13	20	58	190	310	51
Bipolaris/Drechslera group	-	-	-	-	-	-	< 1	7	8	13	27	50	6
Chaetomium	-	-	-	-	-	-	4	7	7	13	29	63	4
Cladosporium	430	27	27	53	160	260	59	53	130	700	3,000	5,800	86
Curvularia	-	-	-	-	-	-	< 1	7	13	13	40	53	7
Nigrospora	-	-	-	-	-	-	2	7	13	22	53	110	18
Penicillium/Aspergillus types	-	27	27	67	160	270	46	41	53	110	360	670	40
Stachybotrys	-	-	-	-	-	-	2	7	13	27	67	110	1
Torula	-	-	-	-	-	-	< 1	7	13	20	53	80	6
Seldom found growing indoors**													
Ascospores	53	16	27	53	150	320	29	53	110	530	1,800	3,200	77
Basidiospores	590	27	53	110	330	990	53	53	190	1,000	4,100	7,600	87
Rusts	-	-	-	-	-	-	< 1	13	13	27	110	180	26
Smuts, Periconia, Myxomycetes	-	7	7	13	40	53	20	13	13	40	120	210	49
§ TOTAL SPORES/m3	1,100												

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 EPK Built Environment Testing, LLC
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Client: JMS Environmental Associates, Ltd.
C/O: Ms. Joyce Ciesla
Re: 25903; Twin Grove School

Date of Sampling: 02-01-2024
Date of Receipt: 02-01-2024
Date of Report: 02-02-2024

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 Central Region which includes the states of: IL, IN, KY, MO, OH, TN, and WV

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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MoldSTAT™: Supplementary Statistical Spore Trap Report

Outdoor Summary: 25903-02-0101: Pre-Outside south Parking LOt

Species detected	Outdoor sample spores/m3 (<100 / 1K / 10K / >100K)	Typical outdoor ranges (North America)	Freq. %
Ascospores	53	13 - 210 - 5,500	74
Basidiospores	110	13 - 430 - 22,000	89
Cladosporium	690	27 - 440 - 7,900	88
Penicillium/Aspergillus types	< 13	20 - 190 - 2,700	60
Smuts, Periconia, Myxomycetes	< 13	7 - 53 - 770	63
Total	850		

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 occurence 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: 25903-02-0102: Room 41 Art

% 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: 2 Result: 1.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.5000	dF: 3 Result: 0.8750 Critical value: N/A Outside Similar: N/A	Score: 102 Result: Low

Species Detected	Spores/m3 (<100 / 1K / 10K / >100K)
Cladosporium	53
Total	53

Location: 25903-02-0103: Room 40 Home Ec

% 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: 2 Result: 1.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.0000	dF: N/A Result: N/A Critical value: N/A Outside Similar: N/A	Score: 100 Result: Low

Species Detected	Spores/m3 (<100 / 1K / 10K / >100K)
None Detected	< 13

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Date of Receipt: 02-01-2024
Date of Report: 02-02-2024

MoldSTAT™: Supplementary Statistical Spore Trap Report

Location: 25903-02-0104: Adjacent Hallway Interior

% 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: 2 Result: 1.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.0000	dF: N/A Result: N/A Critical value: N/A Outside Similar: N/A	Score: 100 Result: Low

Species Detected	Spores/m3 <100 1K 10K >100K
None Detected	< 13

* 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. Eurofins 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 Eurofins 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. Eurofins 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: 02-01-2024
Date of Report: 02-02-2024

MoldSTAT™: Supplementary Statistical Spore Trap Report

Outdoor Summary: 25903-02-0105: Post Outside South Parking Lot

Species detected	Outdoor sample spores/m3 (<100 / 1K / 10K / >100K)	Typical outdoor ranges (North America)	Freq. %
Ascospores	53	13 - 210 - 5,500	74
Basidiospores	590	13 - 430 - 22,000	89
Cladosporium	430	27 - 440 - 7,900	88
Penicillium/Aspergillus types	< 13	20 - 190 - 2,700	60
Smuts, Periconia, Myxomycetes	< 13	7 - 53 - 770	63
Total	1,100		

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 occurence 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: 25903-02-0102: Room 41 Art

% 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: 2 Result: 1.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.5000	dF: 3 Result: 0.1250 Critical value: N/A Outside Similar: N/A	Score: 103 Result: Low

Species Detected	Spores/m3 (<100 / 1K / 10K / >100K)
Cladosporium	53
Total	53

Location: 25903-02-0103: Room 40 Home Ec

% 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: 2 Result: 1.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.0000	dF: N/A Result: N/A Critical value: N/A Outside Similar: N/A	Score: 100 Result: Low

Species Detected	Spores/m3 (<100 / 1K / 10K / >100K)
None Detected	< 13

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MoldSTAT™: Supplementary Statistical Spore Trap Report

Location: 25903-02-0104: Adjacent Hallway Interior

% 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: 2 Result: 1.5000 Critical value: 5.9915 Inside Similar: Yes	Result: 0.0000	dF: N/A Result: N/A Critical value: N/A Outside Similar: N/A	Score: 100 Result: Low

Species Detected	Spores/m3 <100 1K 10K >100K
None Detected	< 13

* 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.

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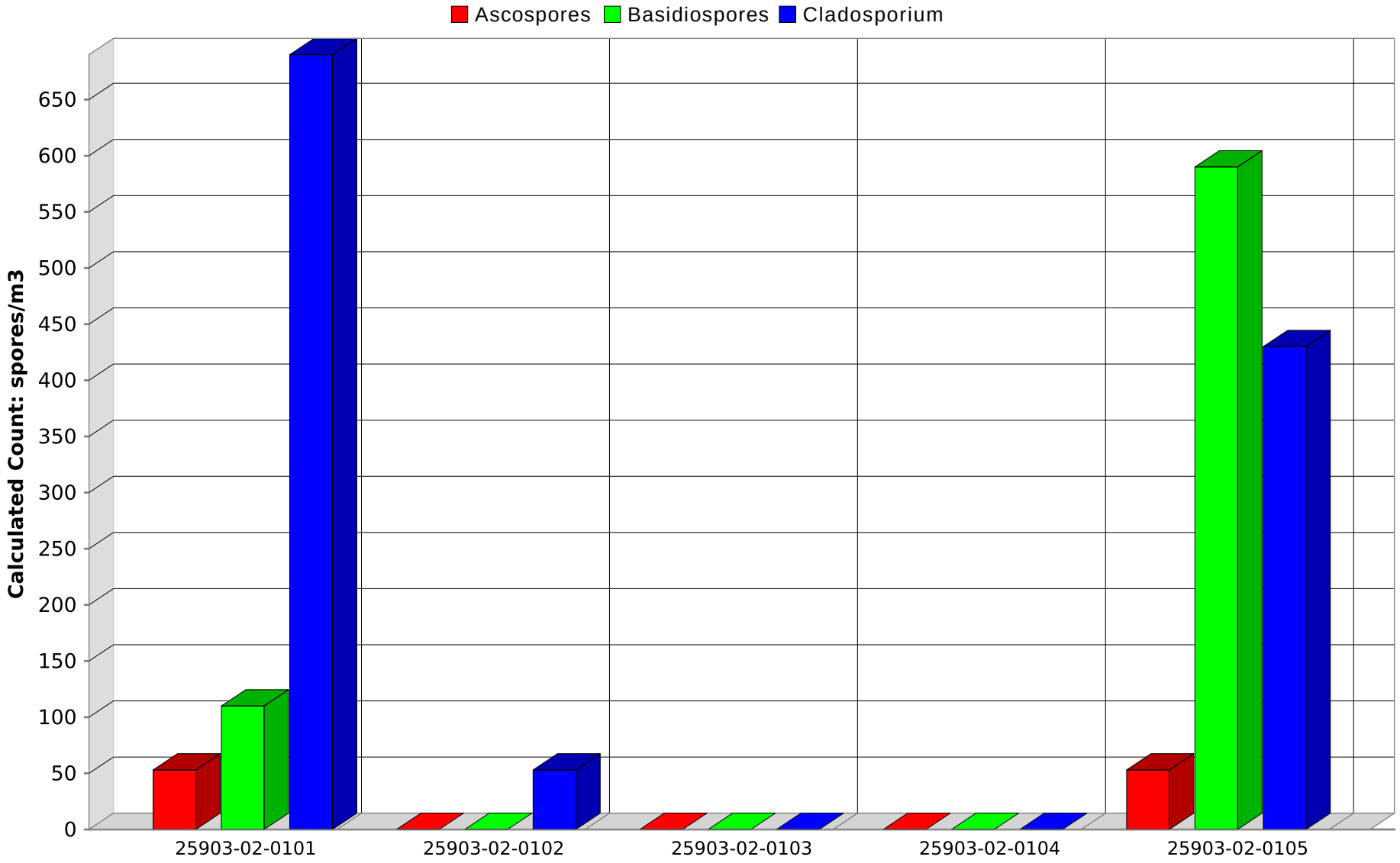
SPORE TRAP REPORT: NON-VIABLE METHODOLOGY



Comments:

Note: Graphical output may understate the importance of certain "marker" genera.

CHAIN OF CUSTODY

EMLab P&K

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Cherry Hill, NJ: 1936 Olney Avenue, Cherry Hill, NJ 08003 * **(866) 871-1984**
Phoenix, AZ: 1501 West Knudsen Drive, Phoenix, AZ 85027 * **(800) 651-4802**
San Bruno, CA: 1150 Bayhill Drive, #100, San Bruno, CA 94066 * **(866) 888-6653**

WEATHER	Fog	Rain	Snow	Wind	Clear
LEVEL None					
Light					
Moderate					
Heavy					X

CONTACT INFORMATION

Company: JMS Environmental Associates, Ltd.	Address: 816 Burr Oak Drive, Westmont, IL 60559
Contact: Joyce Ciesla	Special Instructions:
Phone: 630-204-8580	jciesla@jmsenviro.com

PROJECT INFORMATION

Project ID: 25903
Project Desc.: Twin Grove School
Project Zip Code: 60089 Sampling Date & Time: 2/1/24
PO Number: 25903

TURN AROUND TIME CODES - (TAT)

STD - Standard (DEFAULT)
ND - Next Business Day
SD - Same Business Day Rush
WH - Weekend/Holiday

Rushes received after 2pm or on weekends, will be considered received the next business day. Please alert us in advance of weekend analysis needs.

REQUESTED SERVICES (✓ Boxes)

Non-Culturable: Spore Trap; Tape Swab Bulk
Culturable: BioCassette™ Andersen, SAS, Swab, Water, Bulk, Dust, Soil, Contact Plate
Other Requests

Sample ID	Description	Sample Type (Below)	TAT (Above)	Total Volume/Area (as applicable)	NOTES (Time of day, Temp, RH, etc.)	Fungi - Spore Trap Analysis	Spore Trap Analysis - Other particles	Direct Microscopic Exam (Qualitative)	Quantitative Spore Count Direct Exam	1-Media Surface Fungi (Genus ID + Asp. spp.)	2-Media Surface Fungi (Genus ID + Asp. spp.)	3-Media Surface Fungi (Genus ID + Asp. spp.)	Culturable Air Fungi (Genus ID + Asp. spp.)	Gram Stain and Counts (Culturable Air and Surface Bacteria)	Legionella culture	Total Coliform, E.coli (Presence/Ab	Membrane Filtration (Please specif	MPN Bacteria (Please specify organ	QuantiTray - Sewage Screen	Asbestos Analysis - PCM Airborne f	Asbestos Analysis - PLM (EPA meth	PCR (please specify test)	
25903-02-0101	Pre-Outside South Parking Lot	ST	STD	75	6:23 AM 42° 57%	4																	
25903-02-0102	Room 41 Art			75		1																	
25903-02-0103	Room 40 Home Ec			75		1																	
25903-02-0104	Adjacent Hallway Interior			75		1																	
25903-02-0105	Post Outside South Parking Lot			75	7:00 AM 44° 42%	1																	
25903-02-0106B	Veneer beneath Sink NE	SW	STD	—	" "			X															
" "-02-0107A	Wood under veneer NE	SW	STD	—	" "			X															

003525126

SAMPLE TYPE CODES

BC - BioCassette™	**ST** - Spore Trap: Zefon, Allergenco, Burkard...	**T** - Tape	**D** - Dust
A1S - Andersen		**SW** - Swab	**SO** - Soil
SAS - Surface Air Sampler	**P** - Potable Water	**B** - Bulk	
CP - Contact Plate	**NP** - Non-Potable Water	**O** - Other:	

RELINQUISHED BY	DATE & TIME
	2/1/23

RECEIVED BY	DATE & TIME
RECEIVED FEB 1 2024 By ET 10:45	

APPENDIX 'B'

Photographs of the Site

Photo #1 Northeast sink – Issue with water damage

Photo #2 Beneath Northeast sink – Damaged and deteriorated Veneer. Sample 25903-02-0106B & 25903-02-0107A taken from cabinet on veneer and exposed wood.

25903-02-0107A
Light Staining on Veneer

25903-02-0106B
Exposed Wood

Photo # 3 Sink area configuration

Photo # 4 Behind all sinks by wall. Area shows water staining and damp particle board.

Photo # 5 Access to piping Behind all sinks by wall. Area shows water staining and damp particle board.