



FUNGAL INVESTIGATION



***Field
Services***

At:

**Lower Gwynedd Elementary School
571 Houston Road
Ambler, PA 19002**



***Lab
Services***

For:

**Mr. Gerry Moore
Wissahickon School District
601 King Road
Ambler, PA 19002**

Prepared By:

**Mr. Ian Forster
Project Manager**

Report Date:

October 2, 2019

Project Number:

192458

Date of Project:

September 27, 2019



***Training
Services***

PURPOSE

Criterion Laboratories, Inc. (Criterion) was requested by Mr. Gerry Moore of Wissahickon School District to perform fungal air sampling within various locations around the Library at the Lower Gwynedd Elementary School located at 571 Houston Road in Ambler, PA. The investigation took place on September 27, 2019.

PERSONNEL

The indoor air quality survey was performed by Ms. Melissa Billingsley, Industrial Hygienist of Criterion. The report was written by Mr. Ian Forster, Industrial Hygienist.

CONCLUSIONS/RECOMMENDATIONS

No wet building materials, water intrusions, or visible fungal growth was observed within the areas that were investigated. There were three (3) stained ceiling tiles in the library that we recommend removing and replacing.

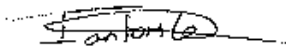
Analysis of the indoor airborne spore samples collected from the library, various offices and rooms revealed airborne fungal spores to be lower than those found outdoors on the day of the site visit; therefore, the room is not considered to be a fungal amplification site.

A tape lift surface sample collected from a wood chair in the Library revealed the presence of a very low concentration of *Pithomyces* type spores.

The low concentration of surface fungal spores on the wood chair can be cleaned with a bleach solution or similar fungicide or the chair should be disposed of. We have no other recommendations at this time.

Please do not hesitate to contact me at (215) 244-1300, extension 1033 if you should have any questions or concerns.

Written By:



Ian Forster
Project Manager

PROCEDURES

A thorough visual inspection of the area of concern, for visible fungal growth and water damage, was conducted prior to sampling for fungal spores.

Airborne fungal spore samples were collected using Air-O-Cell® spore cassettes attached to a high-volume sampling pump calibrated at approximately 15 liters per minute (lpm).

A surface sample for fungi was collected using the Bioslide Tape Lift System.

All samples were quantitatively analyzed for fungal spores at Criterion's in-house, AIHA-accredited laboratory located in Bensalem, PA. All sampling equipment was calibrated in the field prior to the air sampling.

RESULTS

Airborne Fungal Sampling

Analysis of the indoor airborne fungal spore sample collected from within the School Psychologist Office revealed a concentration of 653 spores per cubic meter (spores/m³).

Analysis of the indoor airborne fungal spore sample collected from within the STEAM Room revealed a concentration of 773 spores per cubic meter spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within the Book Stacks next to STEAM Room revealed a concentration of 640 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within the Main Library near Stored Books and Chairs revealed a concentration of 1067 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within the Main Library revealed a concentration of 1707 spores/m³.

Analysis of the airborne fungal spore sample collected Outdoors revealed a concentration of 27,413 spores/m³.

Surface Fungal Sampling

Analysis of a surface tape lift sample collected from a wooden chair in the Library revealed a very low concentration of *Pithomyces* type spores.

DISCUSSION

Airborne fungal spore samples were collected both indoors and outdoors to establish an Indoor/Outdoor (I/O) ratio that was compared to the indoor site of concern. The ratio is determined by dividing the total number of spores found in the indoor sample by the total number of spores in the outdoor sample. If the I/O ratio is greater than 2.0, the indoor site is considered to be an amplification site, i.e., the spores are believed to be originating from inside the building.

By this parameter, the areas inspected are not considered to be fungal amplification sites, meaning the spores found are thought to be coming from the outdoor air. A small amount of fungal spores were identified on a wooden chair in the Library. This chair should be cleaned to prevent fungal spores from becoming airborne or disposed of.

CRITERION LABORATORIES, INC.
400 Street Road, Suite 100, Bensalem, PA 19020

Total Spore Count / ID Test Results (Method CLI 345)

Client:
Wissahickon School District
571 Houston Road
Ambler, PA 19002
Lower Gwynedd Elementary School

Project #:
192458

Analyst:
A. Schwab

Date Sampled: September 27, 2019
Date Received: September 27, 2019
Date Analyzed: October 1, 2019

Sample Type:	25mm Cassette			25mm Cassette			25mm Cassette		
Sample Number:	192458-01-192-01-01			192458-01-192-01-02			192458-01-192-01-03		
Sample Location:	School Psychologist Office			STEAM Room			Book Stacks Next to STEAM Room		
Volume (L):	75			75			75		
Total Spores/m ³ .*	653			773			640		
	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%
Common Dominant Spores:									
Ascospores				5	67	8.6	2	27	4.2
Basidiospores	15	200	30.6	38	507	65.5	31	413	64.6
Cladosporium sp.	11	147	22.4	5	67	8.6	4	53	8.3
Penicillium/Aspergillus Types [#]	16	213	32.7	9	120	15.5	5	67	10.4
Indoor Hydrophilic Fungi:***									
Chaetomium sp.									
Memnoniella sp.									
Scopulariopsis sp.									
Stachybotrys sp.									
Trichoderma sp.									
Ulocladium sp.									
Others:									
Alternaria sp.				1	13	1.7	1	13	2.1
Bipolaris/Drechslera Group									
Botrytis sp.									
Cercospora sp.									
Curvularia sp.	2	27	4.1						
Epicoccum sp.	1	13	2.0						
Fusarium sp.									
Ganoderma sp.									
Myxomycetes, Smuts, Periconia sp.	1	13	2.0				1	13	2.1
Non-specified									
Pestlotia sp.									
Pithomyces sp.	3	40	6.1				3	40	6.3
Polythrincium sp.									
Nigrospora sp.									
Oidium sp.									
Rusts							1	13	2.1
Spezzazinia sp.									
Stemphylium sp.									
Torula sp.									
Hyphal Fragments	2	-	-	-	-	-	1	-	-
Background Debris: [#]	3			3			3		
Comments:									

Detection Limit = 7 Spores/m³ (Based on ~ 150 L)

100% of trace analyzed by 400X Phase Contrast using Lactophenol Cotton Blue

Guidelines for Interpretation:

From the amount of particulate matter present a debris rating on a scale from 0 to 5 is assigned. A rating of 0 indicates no particulate matter detected in impaction area. High levels of background particulate can obscure spores and other particulates leading to underestimation. A rating of 5 indicates an overloading of background particulates, prohibiting the accurate detection and quantification of spores that may be present. A rating of 1-4 indicates low to extremely high. Due to method stopping rules, raw counts in excess of 500 are extrapolated based on the percentage analyzed. Criterion maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by Criterion. Criterion bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. Samples analyzed by Criterion Laboratories, Inc. AIHA-LAP, LLC-EMLAP Lab 100424

Reviewed By: 
Blythe Colsher
EMLAP Quality Manager

10/1/19
Date

CRITERION LABORATORIES, INC.
400 Street Road, Suite 100, Bensalem, PA 19020

Total Spore Count / ID Test Results (Method CLI 345)

Client: <u>Wissahickon School District</u> <u>571 Houston Road</u> <u>Ambler, PA 19002</u> <u>Lower Gwynedd Elementary School</u>	Project #: <u>192458</u> Analyst: <u>A. Schwab</u>	Date Sampled: <u>September 27, 2019</u> Date Received: <u>September 27, 2019</u> Date Analyzed: <u>October 1, 2019</u>
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Sample Type:	25mm Cassette			25mm Cassette			25mm Cassette		
Sample Number:	192458-01-192-01-04			192458-01-192-01-05			192458-01-192-01-06		
Sample Location:	Main Library near Stored Books and Chairs			Main Library			Outdoor		
Volume (L):	75			75			75		
Total Spores/m ³ .*	1067			1707			27413		
	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%
Common Dominant Spores:									
Ascospores	4	53	5.0	10	133	7.8	152	2027	7.4
Basidiospores	32	427	40.0	49	653	38.3	1216	16213	59.1
Cladosporium sp.	14	187	17.5	16	213	12.5	528	7040	25.7
Penicillium/Aspergillus Types#	9	120	11.3	21	280	16.4	96	1280	4.7
Indoor Hydrophilic Fungi:***									
Chaetomium sp.									
Memnoniella sp.									
Scopulariopsis sp.									
Stachybotrys sp.									
Trichoderma sp.									
Ulocladium sp.									
Others:									
Alternaria sp.	1	13	1.3				9	120	0.4
Bipolaris/Drechslera Group				2	27	1.6			
Botrytis sp.									
Cercospora sp.									
Curvularia sp.	2	27	2.5				11	147	0.5
Epicoccum sp.				1	13	0.8	3	40	0.1
Fusarium sp.									
Ganoderma sp.	1	13	1.3				7	93	0.3
Myxomycetes, Smuts, Periconia sp.	11	147	13.8	15	200	11.7	10	133	0.5
Non-specified									
Pestalotia sp.									
Pithomyces sp.	6	80	7.5	12	160	9.4	12	160	0.6
Polythrincium sp.							7	93	0.3
Nigrospora sp.							1	13	0.0
Oidium sp.									
Rusts				1	13	0.8			
Speggazinia sp.				1	13	0.8			
Stemphylium sp.									
Torula sp.							4	53	0.2
Hyphal Fragments	1	-	-	7	-	-	46	-	-
Background Debris:‡	3			4			3		
Comments:									

Detection Limit = 7 Spores/m³ (Based on ~ 150 L)

100% of trace analyzed by 400X Phase Contrast using Lactophenol Cotton Blue

Guidelines for Interpretation:

From the amount of particulate matter present a debris rating on a scale from 0 to 5 is assigned. A rating of 0 indicates no particulate matter detected in impaction area. High levels of background particulate can obscure spores and other particulates leading to underestimation. A rating of 5 indicates an overloading of background particulates, prohibiting the accurate detection and quantification of spores that may be present. A rating of 1-4 indicates low to extremely high. Due to method stopping rules, raw counts in excess of 500 are extrapolated based on the percentage analyzed. Criterion maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by Criterion. Criterion bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. Samples analyzed by Criterion Laboratories, Inc. AIHA-LAP, LLC-EMLAP Lab 100424

Reviewed By:



Blythe Colsher
EMLAP Quality Manager

10/1/19
Date



Chain of Custody

Matrix Air
Analyte Air-O-Cell (Fungal)
Analysis Type Brightfield Microscopy
Container Cassette
Project 192458
Client Wissahickon School District
Site Address Lower Gwynedd Elementary School, 571 Houston Road,
 Ambler, PA 19002
Turnaround 48 Hour
Field Tech Melissa Billingsley
Sample Notes
Chain of Custody
Notes

Additional Analytes

Sample Number	Sample Type	Location	Received Condition	Date	Notes
192458-01-192-01-01	Area Sample	School Psychologist Office	Good	9/27/2019	
192458-01-192-01-02	Area Sample	STEAM Room	Good	9/27/2019	
192458-01-192-01-03	Area Sample	Book Stacks Next to STEAM Room	Good	9/27/2019	
192458-01-192-01-04	Area Sample	Main Library near stored books and chairs	Good	9/27/2019	
192458-01-192-01-05	Area Sample	Main Library	Good	9/27/2019	
192458-01-192-01-06	Area Sample	Outdoor	Good	9/27/2019	

Sample Count 6

Handling Chain Type	Handled By	Date	Time	Notes
Report Results To	Ian Forster	9/27/2019	10:00	
Send Reports To	Wissahickon School District	9/27/2019	10:00	
Samples Taken By	Melissa Billingsley	9/27/2019	10:00	
Transported By	Melissa Billingsley	9/27/2019	10:00	
Relinquished By	Melissa Billingsley	9/27/2019	13:25	
Received By	Anh Nguyen	9/27/2019	14:17	
Analyzed By	Andrew Schwab	10/1/2019	09:52	



Results of Tape Lift Fungal Spore Identification

Client: Wissahickon School District Site Address: Lower Gwynedd Elementary School Sample Date: 9/27/19
 Project #: 192458 571 Houston Road Sample Received Date: 9/30/19
 Analyst: A. Schwab Ambler, PA Sample Analysis Date: 10/2/19

Sample #	Sample Location	Results Spore Type(s)
192458-06-009-01-01	Wood Chair in Library - Stained and Discolored Areas	1 – Pithomyces – No Hyphae

Relative Density Key

- 0 NO FUNGAL SPORES DETECTED
- 1 VERY LITTLE PRESENT
- 2 PRESENT BUT NOT IN LARGE QUANTITY
- 3 PRESENT IN MOST OF SAMPLE
- 4 COVERING ALMOST ENTIRE SAMPLE
- 5 COVERING ENTIRE SAMPLE

James A. Weltz, CIH, President

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If your project number ends with an "R", it is a revised report and replaces the original document in full.

Samples are analyzed by Criterion Laboratories, Inc. using CLI Method: 344 **and** ASTM D7658-17 - Analysis by bright field microscopy @400x with lactophenol **cotton blue**.

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Chain of Custody

Matrix Surface
Analyte Fungi (Mold)
Analysis Type Tape Lift
Container Tape Lift
Project 192458
Client Wissahickon School District
Site Address Lower Gwynedd Elementary School, 571 Houston Road,
 Ambler, PA 19002
Turnaround 48 Hour
Field Tech Melissa Billingsley
Sample Notes
Chain of Custody Notes

Additional Analytes

Sample Number	Location	Description	Received Condition	Date	Notes
192458-06-009-01-01	Wood Chair in Library	stained and discolored areas on chair	Good	9/27/2019	

Sample Count 1

Handling Chain Type	Handled By	Date	Time	Notes
Report Results To	Ian Forster	9/27/2019	10:00	
Send Reports To	Wissahickon School District	9/27/2019	10:00	
Samples Taken By	Melissa Billingsley	9/27/2019	10:00	
Transported By	Melissa Billingsley	9/27/2019	10:00	
Relinquished By	Melissa Billingsley	9/27/2019	13:25	
Received By	Collin Marrs	9/30/2019	09:40	
Analyzed By	Andrew Schwab	10/2/2019	08:20	