



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:

April 12, 2019

Project Number:

191116

Date of Project:

April 10, 2019



***Training
Services***

PURPOSE

Criterion Laboratories, Inc. (Criterion) was requested by Mr. Gerry Moore of Wissahickon School District to perform a fungal air sampling within various locations of Lower Gwynedd Elementary School located at 571 Houston Road in Ambler, PA. The investigation took place on April 10, 2019.

PERSONNEL

The indoor air quality survey was performed by Mr. Wookun Jeon, Industrial Hygienist of Criterion. The report was written by Mr. Ian Forster, Industrial Hygienist.

CONCLUSIONS/RECOMMENDATIONS

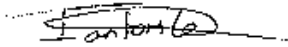
No wet building materials, water intrusions, or visible fungal growth was observed within the areas that were investigated.

Analysis of the indoor airborne spore samples collected from the 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.

We have no 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).

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 Spores

Analysis of the indoor airborne fungal spore sample collected from within Room 111 revealed a concentration of 656 spores per cubic meter (spores/m³).

Analysis of the indoor airborne fungal spore sample collected from the Cafeteria/Gymnasium revealed a concentration of 1593 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within Room 119 revealed a concentration of 950 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within Room 116 revealed a concentration of 950 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within Room 127 revealed a concentration of 1138 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within Room 225 revealed a concentration of 1553 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from the Computer Lab revealed a concentration of 1205 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within the School Psychologist Office revealed a concentration of 5863 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within Room 215 revealed a concentration of 295 spores/m³.

Analysis of the indoor airborne fungal spore sample collected from within Room 210 revealed a concentration of 643 spores/m³.

Analysis of the airborne fungal spore sample collected Outdoors revealed a concentration of 3347 spores/m³.

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.

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 #:
191116

Analyst:
A. Schwab

Date Sampled: April 10, 2019
Date Received: April 11, 2019
Date Analyzed: April 11, 2019

Sample Type:	25mm Cassette			25mm Cassette			25mm Cassette		
Sample Number:	191116-01-192-01-01			191116-01-192-01-02			191116-01-192-01-03		
Sample Location:	Room 111			Cafeteria/Gymnasium			Room 119		
Volume (L):	74.7			74.7			74.7		
Total Spores/m ³ .*	656			1593			950		
	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%
Common Dominant Spores:									
Ascospores	7	94	14.3	10	134	8.4	2	27	2.8
Basidiospores	24	321	49.0	72	964	60.5	35	469	49.3
<i>Cladosporium</i> sp.	3	40	6.1	6	80	5.0	9	120	12.7
<i>Penicillium/Aspergillus</i> Types#	5	67	10.2	8	107	6.7	7	94	9.9
Indoor Hydrophilic Fungi:***									
<i>Chaetomium</i> sp.									
<i>Memnoniella</i> sp.									
<i>Scopulariopsis</i> sp.									
<i>Stachybotrys</i> sp.									
<i>Trichoderma</i> sp.									
<i>Ulocladium</i> sp.									
Others:									
<i>Alternaria</i> sp.									
<i>Bipolaris/Drechslera</i> Group									
<i>Botrytis</i> sp.									
<i>Cercospora</i> sp.									
<i>Curvularia</i> sp.									
<i>Epicoccum</i> sp.				1	13	0.8			
<i>Fusarium</i> sp.									
<i>Ganoderma</i> sp.									
<i>Myxomycetes, Smuts, Periconia</i> sp.	10	134	20.4	22	295	18.5	18	241	25.4
Non-specified									
<i>Pestalotia</i> sp.									
<i>Pithomyces</i> sp.									
<i>Polythrincium</i> sp.									
<i>Nigrospora</i> sp.									
<i>Oidium</i> sp.									
Rusts									
<i>Speggazinia</i> sp.									
<i>Stemphylium</i> sp.									
<i>Torula</i> sp.									
Hyphal Fragments		-	-	4	-	-	1	-	-
Background Debris:#		3			2			3	
Comments:									

Detection Limit = 7 Spores/m³ (Based on ~ 160 L)

100% of trace analyzed by 400X Phase Contrast using Lectophenol 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-IAP, LLC-EMLAP Lab 100424

Reviewed By: Blythe Colsher
Blythe Colsher
EMLAP Quality Manager

4/11/19
Date

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 #:
191116
Analyst:
A. Schwab

Date Sampled: April 10, 2019
Date Received: April 11, 2019
Date Analyzed: April 11, 2019

Sample Type:	25mm Cassette			25mm Cassette			25mm Cassette		
Sample Number:	191116-01-192-01-04			191116-01-192-01-05			191116-01-192-01-06		
Sample Location:	Room 116			Room 127			Room 225		
Volume (L):	74.7			74.7			74.7		
Total Spores/m ³ .*	950			1138			1553		
	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%
Common Dominant Spores:									
Ascospores	1	13	1.4	2	27	2.4	4	54	3.4
Basidiospores	13	174	18.3	59	790	69.4	34	455	29.3
Cladosporium sp.	1	13	1.4	3	40	3.5	11	147	9.5
Penicillium/Aspergillus Types [#]	10	134	14.1	13	174	15.3	7	94	6.0
Indoor Hydrophilic Fungi:***									
Chaetomium sp.									
Memnoniella sp.									
Scopulariopsis sp.									
Stachybotrys sp.									
Trichoderma sp.									
Ulocladium sp.									
Others:									
Alternaria sp.							2	27	1.7
Bipolaris/Drechslera Group									
Botrytis sp.									
Cercospora sp.									
Curvularia sp.									
Epicoccum sp.									
Fusarium sp.									
Ganoderma sp.									
Myxomycetes, Smuts, Periconia sp.	46	616	64.8	8	107	9.4	58	776	50.0
Non-specified									
Pestalotia sp.									
Pithomyces sp.									
Polytrinchium sp.									
Nigrospora sp.									
Oidium sp.									
Rusts									
Spezzazinia sp.									
Stemphylium sp.									
Torula sp.									
Hyphal Fragments	3	-	-	3	-	-	4	-	-
Background Debris: [#]	3			2			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
Blythe Colsher
EMLAP Quality Manager

4/11/19
Date

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 #:
191116

Analyst:
A. Schwab

Date Sampled: April 10, 2019
Date Received: April 11, 2019
Date Analyzed: April 11, 2019

Sample Type:	25mm Cassette			25mm Cassette			25mm Cassette		
Sample Number:	191116-01-192-01-07			191116-01-192-01-08			191116-01-192-01-09		
Sample Location:	Computer Lab			School Psychologist Office			Room 215		
Volume (L):	74.7			74.7			74.7		
Total Spores/m ³ *:	1205			5863			295		
	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%
Common Dominant Spores:									
Ascospores	6	80	6.7	6	80	1.4	1	13	4.5
Basidiospores	69	924	76.7	37	495	8.4	9	120	40.9
<i>Cladosporium</i> sp.				7	94	1.6	1	13	4.5
<i>Penicillium/Aspergillus</i> Types#	8	107	8.9	343	4592	78.3	6	80	27.3
Indoor Hydrophilic Fungi:***									
<i>Chaetomium</i> sp.									
<i>Memnoniella</i> sp.									
<i>Scopulariopsis</i> sp.									
<i>Stachybotrys</i> sp.									
<i>Trichoderma</i> sp.									
<i>Ulocladium</i> sp.									
Others:									
<i>Alternaria</i> sp.									
<i>Bipolaris/Drechslera</i> Group									
<i>Botrytis</i> sp.									
<i>Cercospora</i> sp.									
<i>Curvularia</i> sp.									
<i>Epicoccum</i> sp.									
<i>Fusarium</i> sp.									
<i>Ganoderma</i> sp.									
<i>Myxomycetes, Smuts, Periconia</i> sp.	7	94	7.8	45	602	10.3	5	67	22.7
Non-specified									
<i>Pestalotia</i> sp.									
<i>Pithomyces</i> sp.									
<i>Polythrincium</i> sp.									
<i>Nigrospora</i> sp.									
<i>Odium</i> sp.									
Rusts									
<i>Speggazinia</i> sp.									
<i>Stemphylium</i> sp.									
<i>Torula</i> sp.									
Hyphal Fragments	1	-	-	3	-	-	1	-	-
Background Debris:#		2			3			3	
Comments:									

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

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

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4/11/19
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Client:
Wissahickon School District
571 Houston Road
Ambler, PA 19002

Lower Gwynedd Elementary School

Project #:
191116

Analyst:
A. Schwab

Date Sampled: April 10, 2019
Date Received: April 11, 2019
Date Analyzed: April 11, 2019

Sample Type:	25mm Cassette			25mm Cassette			25mm Cassette		
Sample Number:	191116-01-192-01-010			191116-01-192-01-011					
Sample Location:	Room 210			Outside					
Volume (L):	74.7			74.7					
Total Spores/m ³ .*	643			3347			<		
	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%	Raw Ct.**	Spores/m ³	%
Common Dominant Spores:									
Ascospores	3	40	6.3	14	187	5.6			
Basidiospores	28	375	58.3	221	2959	88.4			
Cladosporium sp.	8	107	16.7	6	80	2.4			
Penicillium/Aspergillus Types [†]	1	13	2.1	9	120	3.6			
Indoor Hydrophilic Fungi:***									
Chaetomium sp.									
Memnoniella sp.									
Scopulariopsis sp.									
Stachybotrys sp.									
Trichoderma sp.									
Ulocladium sp.									
Others:									
Alternaria sp.									
Bipolaris/Drechslera Group									
Botryis sp.									
Cercospora sp.									
Curvularia sp.									
Epicoccum sp.									
Fusarium sp.									
Ganoderma sp.									
Myxomycetes, Smuts, Periconia sp.	8	107	16.7						
Non-specified									
Pestalotia sp.									
Pithomyces sp.									
Polythrincium sp.									
Nigrospora sp.									
Oidium sp.									
Rusts									
Speggazinia sp.									
Stemphylium sp.									
Torula sp.									
Hyphal Fragments		-	-	2	-	-		-	-
Background Debris: [‡]	3			3					
Comments:									

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

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Reviewed By: Blythe Colsher
Blythe Colsher
EMLAP Quality Manager

4/11/19
Date



Combined Samples and Chain of Custody

Samples

Date 4/10/2019
Day Wednesday
Sample Number 191116-01-192-01
Matrix Air
Analyte Air-O-Cell (Fungal)
Analysis Type Brightfield Microscopy
Container Cassette
Project 191116
Client Wissahickon School District
Client Phone 215-828-3099
Site Address Lower Gwynedd Elementary School, 571 Houston Rd, Ambler, PA 19002
Location
Field Tech Wookun Jeon
Notes Client would like results by noon on Friday 4/12/19 if possible.
Status Complete
Created 4/10/2019
Created By wojeon

Additional Analytes

Chain Of Custody

04/10/2019 12:00:00 am EDT Complete

Sample Number	Sample Type	Location	Pump #	Start	Stop	Mins	Pre	Post	Volume
191116-01-192-01-01	Ambient	Room 111	202440	06:36	06:41	5	14.94	14.94	74.70



Criterion

Combined Samples and Chain of Custody

191116-01-192-01-02	Ambient	Cafeteria/Gymnasium	202440	06:45	06:50	5	14.94	14.94	74.70
191116-01-192-01-03	Ambient	Room 119	202440	06:54	06:59	5	14.94	14.94	74.70
191116-01-192-01-04	Ambient	Room 116	202440	07:03	07:08	5	14.94	14.94	74.70
191116-01-192-01-05	Ambient	Room 127	202440	07:13	07:18	5	14.94	14.94	74.70
191116-01-192-01-06	Ambient	Room 225	202440	07:22	07:27	5	14.94	14.94	74.70
191116-01-192-01-07	Ambient	Computer Lab	202440	07:43	07:48	5	14.94	14.94	74.70
191116-01-192-01-08	Ambient	School Psychologist	202440	07:51	07:56	5	14.94	14.94	74.70
191116-01-192-01-09	Ambient	Office							
191116-01-192-01-10	Ambient	Room 215	202440	16:30	16:35	5	14.94	14.94	74.70
191116-01-192-01-11	Ambient	Room 210	202440	16:39	16:44	5	14.94	14.94	74.70
	Ambient	Outside	202440	07:33	07:38	5	14.94	14.94	74.70

Sample Count 11



Chain of Custody

Matrix Air

Analyte Air-O-Cell (Fungal)

Analysis Type Brightfield Microscopy

Container Cassette

Project 191116

Client Wissahickon School District

Client Phone 215-828-3099

Site Address Lower Gwynedd Elementary School, 571 Houston Rd, Ambler, PA 19002

Turnaround 24 Hour

Field Tech Wookun Jeon

Sample Notes Client would like results by noon on Friday 4/12/19 if possible.

Chain of Custody Notes

Additional Analytes

Sample Number	Sample Type	Location	Received Condition	Date	Notes
191116-01-192-01-01	Ambient	Room 111	Good	4/10/2019	
191116-01-192-01-02	Ambient	Cafeteria/Gymnasium	Good	4/10/2019	
191116-01-192-01-03	Ambient	Room 119	Good	4/10/2019	
191116-01-192-01-04	Ambient	Room 116	Good	4/10/2019	
191116-01-192-01-05	Ambient	Room 127	Good	4/10/2019	
191116-01-192-01-06	Ambient	Room 225	Good	4/10/2019	
191116-01-192-01-07	Ambient	Computer Lab	Good	4/10/2019	
191116-01-192-01-08	Ambient	School Psychologist Office	Good	4/10/2019	
191116-01-192-01-09	Ambient	Room 215	Good	4/10/2019	
191116-01-192-01-10	Ambient	Room 210	Good	4/10/2019	



Combined Samples and Chain of Custody

Criterion

191116-01-192-01-11

Ambient

Outside

Good

4/10/2019

Sample Count 11

Handling Chain Type	Handled By	Date	Time	Notes
Report Results To	Ian Forster	4/10/2019	19:59	
Send Reports To	Wissahickon School District	4/10/2019	19:59	
Samples Taken By	Wookun Jeon	4/10/2019	19:59	
Transported By	Wookun Jeon	4/11/2019	19:59	
Relinquished By	Wookun Jeon	4/11/2019	19:59	
Received By	Riya Shah	4/11/2019	08:05	
Analyzed By	Andrew Schwab	4/11/2019	15:51	