DETAIL ASSOCIATES, INC.

ENVIRONMENTAL ENGINEERING CONSULTANTS

November 15, 2021

Dr. Joseph Cirillo Palisades Park Board of Education 1 Veterans Plaza Palisades Park, New Jersey 07650

Re:

Indoor Air Quality Mold Assessment, Basement Hallway - Project #NJ21-0410 Lindbergh School, 401 Glen Ave, Palisades Park, New Jersey 07650

Dear Dr. Cirillo:

Thank you for using the services of Detail Associates, Inc. Enclosed are the findings along with analytical results, for the Indoor Air Quality (IAQ) Mold Assessment performed at the above referenced location on November 14, 2021. The IAQ mold assessment focused on the basement hallway, where air samples were collected from outside rooms #101, #104 and #107.

In total, I collected four (4) air samples to establish airborne mold spore levels within the subject areas. The microbiological air testing protocol involved the use of an Air-O-Cell cassette with a high-volume pump. These were analyzed by EMSL Analytical, Inc. for colony structures per cubic meter of air (CTS/m3). The samples were analyzed following the analysis for determination of fungal spores & particulates (Methods MICRO-SOP-201, ASTM D7391).

Laboratory results show acceptable levels of airborne mold spores in all collected samples. The Certificate of Analysis is enclosed and a laboratory report.

Thank you. We appreciate the opportunity to provide environmental consulting services. Should you have any additional questions or require further information, please contact our office at your convenience.

Sincerely yours,

DETAIL ASSOCIATES, INC. (Mold Assessor Cert# 01296)

Stephen A. Jaraczewski, NYS CMA #MA01552

macale

President, BSChE, IH, MS Sustainability Management, Columbia University

SAJ/mw Enclosures

E MAIL: stephenj@dalenviro.com

EUROPE NORTH AMERICA

ASIA

Detail Associates, Inc. 560 Sylvan Avenue / Suite 3065 Englewood Cliffs, NJ 07632 (201) 569-6708

Client: Palisades Park of Education Date Sampled: November 14, 2021

Project No. NJ21-0410

Samples Submitted By: Stephen A Jaraczewski

Date Characterization Completed: November 15, 2021

CERTIFICATE OF ANALYSIS Lindbergh School, 401 Glen Ave, Palisades Park, New Jersey

Air-O-Cell (Air Sample):

Sample #: PAL-1114-1A

Total Count Airborne Spores:

Airborne Spore ID:

Hallway By Room 101

587 CTS/m3

(20 CTS/m3) Ascospores

(100 CTS/m³) Aspergillus/Penicillium

(210 CTS/m³) Basidiospores (250 CTS/m³) Cladosporium (7 CTS/m³) Myxomycetes

Other Airborne ID:

None Detected

Sample #: PAL-1114-2A

Total Count Airborne Spores:

Airborne Spore ID:

Hallway By Room 107

630 CTS/m3

(100 CTS/m3) Aspergillus/Penicillium

(510 CTS/m³) Basidiospores (20 CTS/m³) Ganoderma

Other Airborne ID:

None Detected

Sample #: PAL-1114-3A

Total Count Airborne Spores:

Airborne Spore ID:

Hallway By Room 104

1,160 CTS/m3

(40 CTS/m³) Ascospores

(70 CTS/m³) Aspergillus/Penicillium

(770 CTS/m³) Basidiospores (70 CTS/m³) Cladosporium

(10 CTS/m3) Unidentifiable Spores

(200 CTS/m3) Trichoderma

Other Airborne ID:

(7 CTS/m3) Pollen

Sample #: PAL-1114-4A

Total Count Airborne Spores:

Airborne Spore ID:

Background Outdoors

12,310 CTS/m3

(200 CTS/m³) Ascospores (11,800 CTS/m³) Basidiospores (200 CTS/m³) Cladosporium (10 CTS/m³) Epicoccum (70 CTS/m³) Fusarium (20 CTS/m³) Ganoderma Other Airborne ID: (7 CTS/m³) Pollen

Category: Count/Per Area Analyzed:

 Low/Normal:
 <250 Cfu/m3</td>

 Moderate/Borderline:
 250 - 1,000 Cfu/m3

 Active Growth:
 > 1,000 Cfu/m3

 Very Active Growth:
 > 5,000 Cfu/m3

Analysis by

EMSL Analytical, Inc.

Methods MICRO-SOP-201, ASTM D7391





EXPANDED FUNGAL REPORT

TM

Prepared Exclusively For

Detail Associates, Inc. 560 Sylvan Avenue Suite 3065 Englewood Cliffs, NJ 07632 Phone:201-569-6708

Report Date:

11/15/2021

Project:

NJ21-0410

EMSL Order:

032121012

AIHA LAP, LLC.

EMLAP #102581



This report has been prepared by EMSL Analytical, Inc. at the request of and for the exclusive use of the client named in this report. Completely read the important terms, conditions, and limitations that apply to this report.

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307 West 38th Street New York, NY 10018

Email:manhattanlab@emsl.com Phone: (212) 290-0051 Fax: (212) 290-0058 Web: http://www.EMSL.com

Stephen Jaraczewski Attn:

Detail Associates, Inc. 560 Sylvan Avenue **Suite 3065**

Englewood Cliffs, NJ 07632

NJ21-0410

032121012 EMSL Order: Customer ID: DETA50 Collected: 11/14/2021 11/14/2021 Received: Analyzed:

11/15/2021

1. Description of Analysis

Analytical Laboratory

EMSL Analytical, Inc. (EMSL) is a nationwide, full service, analytical testing laboratory network providing Asbestos, Mold, Indoor Air Quality, Microbiological, Environmental, Chemical, Forensic, Materials, Industrial Hygiene and Mechanical Testing services since 1981. Ranked as the premier independently owned environmental testing laboratory in the nation, EMSL puts analytical quality as its top priority. This quality is recognized by many well-respected federal, state and private accrediting agencies, and assured by our high quality personnel, including many Ph.D. microbiologists and mycologists.

EMSL is an independent laboratory that performed the analysis of these samples. EMSL did not conduct the sampling or site investigation for this report. The samples referenced herein were analyzed under strict quality control procedures using state-of-the-art microbiological methods. The analytical methods used and the data presented are scientifically and legally defensible.

The laboratory data is provided in compliance with ISO-IEC 17025 guidelines for the particular test(s) requested, including any associated limitations for the methods employed. These data are intended for use by professionals having knowledge of the testing methods necessary to interpret them accurately.

Test Report EXMold-2.1.0.0 Printed: 11/15/2021 09:34:57AM



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EMSL Order: Customer ID: 032121012 DETA50

Collected:

11/14/2021 11/14/2021

Received: Analyzed:

11/15/2021

NJ21-0410 Proj:

Air Samples - Spore traps:

Spore traps are commercially available sampling devices that capture airborne particles on an adhesive slide. Air is pulled through the device using a vacuum pump. Spores, as well as other airborne particles, are impacted on the collection adhesive. Using spore trap collection methods has inherent limitations. These collection methods are biased towards larger spore sizes.

The analysis for total spore counts is a direct microscopic examination and does not include culturing or growing the fungi. Therefore, the results include both viable and non-viable spores. Some fungal groups produce similar spore types that cannot be distinguished by direct microscopic examination alone (i.e., Aspergillus/Penicillium, and others). Other spore types may lack distinguishing features that aid in their identification. These types are grouped into larger categories such as Ascospores or Basidiospores.

Fungal spores are identified and grouped by morphological characteristics including color, shape, septation, ornamentation, and fruiting structures (if present) which are compared to published mycological identification keys and texts. EMSL reports provide spore counts per cubic meter of air to three significant figures. Please note that each spore category is reported to three significant figures. Due to rounding and the application of three significant figures the sum of the individual spore numbers may not equal the total spore count on the report. EMSL does not maintain responsibility for final volume concentrations (counts/m3) since this volume is provided by the field collector and can not be verified by EMSL.

EMSL analyzes spore traps using phase contrast microscopy. There is a wide choice of collection devices (Air-O-Cell, Micro-5, Burkhard, etc.) on the market. Differences in analytical method may exist between spore trap devices.

Spore trap results are reported in spores per cubic meter of air. Due to the other airborne particles collected with the spores, EMSL reports a background particle density. Background density is an indication of overall particulate matter present on the sample (i.e. dust in the air). High background concentrations may obscure spores such as the Penicillium/Aspergillus group. The rating system is from 1-5 with 1 = 1 - 25% of the background obscured by material, 2 = 26 - 50%, 3 = 51 - 75%, 4 = 76% - 99%, 5 = 100% or overloaded. A background rating of 4 or higher should be regarded as a minimum count since the actual concentrations may be higher than those reported. EMSL will not be held responsible for overloading of samples. Sample volumes are left to the discretion of the company or persons conducting the fieldwork.

Skin fragment density is the percentage of skin cells making up the total background material, 1 = 1 - 25%, 2 = 26 - 50%, 3 = 51 - 75%, 4 = 76-100%. Skin fragment density is considered an indication of the general cleanliness in the area sampled. It has been estimated that up to 90% of household dust consists of dead skin cells.



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Collected: 11/14/2021

11/14/2021

Received: Analyzed:

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2. Analytical Results

See attached data reports and charts.

Test Report EXMold-2.1.0.0 Printed: 11/15/2021 09:34:57AM



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EMSL Order:

032121012 Customer ID: DETA50

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Analyzed:

11/15/2021

Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

	Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation Guideline
032121012-0001	Alternaria (Ulocladium)		E) Track and Track		
	Ascospores	1	20	3.4	Acceptable
Client Sample ID	Aspergillus/Penicillium	5	100	17	Slightly Elevated
PAL-1114-1A	Basidiospores	10	210	35.8	Acceptable 🔺 🐡
	Bipolaris++	The state of the s			
	Chaetomium++	-	-		
Location	Cladosporium	12	250	42.6	Slightly Elevated
HALLWAY BY ROOM 101	Curvularia	-	.53	3	The substitute of the substitu
	Epicoccum	The state of the state of	Winds with a second		AT THE PERSON NAMED IN COLUMN
Sample Volume (L)	Fusarium++	-	-	-	
والمنطقة والمستحدث والمراب	Ganoderma				
150	Myxomycetes++	1*	7*	1,2	Slightly Elevated 🙏 💮
	Pithomyces++				The state of the s
Sample Type	Rust	-			
	Scopulariopsis/Microascus		allowing the second		
Inside	Stachybotrys/Memnoniella				
Comments	Unidentifiable Spores	I Second			
	Zygomycetes	7	-	-	
	Trichoderma			to the	
	Total Fungi	29	587	100	Acceptable
	Hyphal Fragment	A A A C & COURT	Service In the later In	Shirt Hall	CONTRACTOR OF THE PROPERTY OF
	Insect Fragment	-	+	2	
	Pollen				

Background: 1

1 to 4 (low to high); 5 (overloaded)

Acceptable Concentration at or below background

Slightly Elevated Concentration above background

ELEVATED Concentration 10X or more above background

Not commonly found growing indoors, spores likely come from outside.

Spores reported to be able to cause allergies in individuals.

Potential for mycotoxin production exists with these fungi.

These fungi are considered water damage indicators.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Initial report from: 11/15/2021 09:34:57

Aaron Patak, Microbiology Laboratory Director or Other Approved Signatory

Ann Ett

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Samples analyzed by EMSL Analytical, Inc. New York, NY AIHA-LAP, LLC-EMLAP Accredited #102581

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Stephen Jaraczewski Attn:

NJ21-0410

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Suite 3065 Englewood Cliffs, NJ 07632

Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

EMSL Order:

Customer ID:

Collected:

Received:

Analyzed:

032121012

11/14/2021

11/14/2021

11/15/2021

DETA50

	Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation	n Guideline
032121012-0002	Alternaria (Ulocladium)					
	Ascospores					
Client Sample ID	Aspergillus/Penicillium	6	100	15.9	Slightly Elevated	
PAL-1114-2A	Basidiospores	25	510	81	Acceptable	A
1 AVE 4 AV 3 TV 1	Bipolaris++	-		-		
	Chaetomium++	7-3-11-13			THE RESERVOIS	
Location	Cladosporium		-			
HALLWAY BY ROOM 107	Curvularia	PARTY BEING		The second		
	Epicoccum	7				
Sample Volume (L)	Fusarium++	THE RESIDENCE OF THE PERSON NAMED IN COLUMN TWO IN COLUMN		The same of	Supremental States	
	Ganoderma	1	20	3.2	Acceptable	* *
150	Myxomycetes++	Terms made				
	Pithomyces++	-	-) <u>T</u> (
Sample Type	Rust					
Total Andrea	Scopulariopsis/Microascus	-	-	-		
Inside	Stachybotrys/Memnoniella					
Comments	Unidentifiable Spores	-	-	-		
	Zygomycetes					
	Trichoderma	= # =		<u>- 12</u>		
	Total Fungi	32	630	100	Acceptable	
	Hyphal Fragment	· ·	<u>-</u>			
	Insect Fragment					
	Pollen	2	- 4	2		

Background: 1 1 to 4 (low to high); 5 (overloaded)

Slightly Elevated Concentration above background

Acceptable Concentration at or below background

ELEVATED Concentration 10X or more above background

Not commonly found growing indoors, spores likely come from outside.

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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NJ21-0410 Proj:

032121012 EMSL Order: Customer ID: DETA50

Collected: 11/14/2021 Received: 11/14/2021

11/15/2021 Analyzed:

Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

	Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation Guideline
032121012-0003	Alternaria (Ulocladium)		Similar e W	Ten zenia	
PARTECULAR LAND	Ascospores	2	40	3.4	Acceptable **
Client Sample ID	Aspergillus/Penicillium	3	70	6	Slightly Elevated
PAL-1114-3A	Basidiospores	35	770	66.4	Acceptable 🔺 🗰
	Bipolaris++	Contract Contract		The state of the s	
	Chaetomium++		-	-	
Location	Cladosporium	3	70	6	Acceptable *
HALLWAY BY ROOM 104	Curvularia	(8)	-	-	
	Epicoccum				
Sample Volume (L)	Fusarium++	-	-	5.	
	Ganoderma		A THE RESERVE OF THE PARTY OF T		
150	Myxomycetes++		5	2	
	Pithomyces++				
Sample Type	Rust	-	-	70	
The model assessed with the	Scopulariopsis/Microascus		and the second		
Inside	Stachybotrys/Memnoniella	7.	- ÷	\$	
Comments	Unidentifiable Spores	2*	10*	0.9	Slightly Elevated
	Zygomycetes		-	9	
	Trichoderma	7	200	17.2	Slightly Elevated
	Total Fungi	52	1160	100	Acceptable
	Hyphal Fragment				
	Insect Fragment			2	
	Pollen	1*	7*	¥	Slightly Elevated 🙏 💮

Analytical Sensitivity 300x *: 7*

counts/cubic meter

Fibrous Particulate: 1

1 to 4 (low to high)

Background: 1

1 to 4 (low to high); 5 (overloaded)

Acceptable Concentration at or below background Slightly Elevated Concentration above background

Concentration 10X or more above background

Not commonly found growing indoors, spores likely come from outside.

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Initial report from: 11/15/2021 09:34:57

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EMSL Order:

032121012

Customer ID: Collected:

DETA50 11/14/2021

Received:

11/14/2021

Analyzed:

11/15/2021

NJ21-0410 Proi:

Spore Trap ASSESSMENTReport™ Air-O-Cell(™) Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

	Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation Guideline
032121012-0004	Alternaria (Ulocladium)	- 1	-		100
	Ascospores	9	200	1.6	
Client Sample ID	Aspergillus/Penicillium		*		
PAL-1114-4A	Basidiospores	532	11800	95.9	A
	Bipolaris++		-	.5	
	Chaetomium++			war je jin da	
Location	Cladosporium	9	200	1.6	
BACKGROUND	Curvularia				
OUTDOORS	Epicoccum	1	20	0.2	A
Sample Volume (L)	Fusarium++	3	70	0.6	受し
	Ganoderma	1	20	0.2	* **
150	Myxomycetes++	The latest terminal to the latest terminal termi		Market Land	
	Pithomyces++			-	
Sample Type	Rust			Variable Control	
	Scopulariopsis/Microascus	77	-	-	
Background	Stachybotrys/Memnoniella				
Comments	Unidentifiable Spores	-	-	G	
Comments	Zygomycetes				
	Trichoderma	-	2	2	
	Total Fungi	555	12310	100	
	Hyphal Fragment	-	2	-	
	Insect Fragment			2 2 2	
	Pollen	2	/=		

Analytical Sensitivity 300x *: 7*

counts/cubic meter

Fibrous Particulate: 1

to 4 (low to nigh)

Background: 2

1 to 4 (low to high); 5 (overloaded)

Not commonly found growing indoors, spores likely come from outside.

. Spores reported to be able to cause allergies in individuals.

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Suite 3065

PAL-1114-1A

Englewood Cliffs, NJ 07632

NJ21-0410 Proj:

EMSL Order:

032121012 DETA50

Customer ID: Collected:

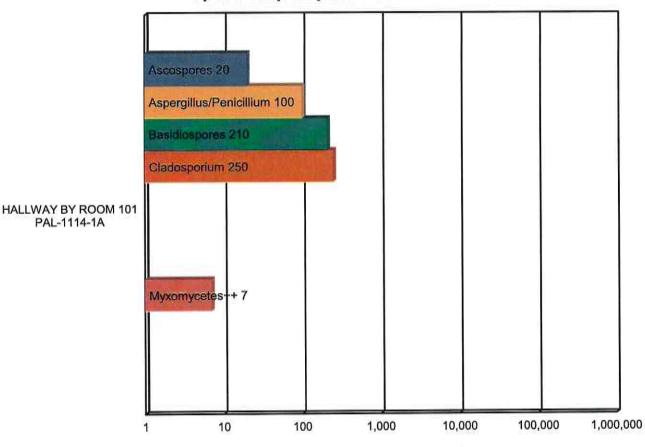
11/14/2021

Received:

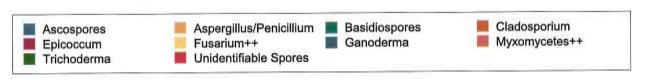
11/14/2021

11/15/2021 Analyzed:

Spore Trap Report: Total Counts



Spore Counts per m3



^{*} The chart is displayed using a logarithmic scale. Bar size is not directly proportional to the number of spores.



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NJ21-0410 Proj:

EMSL Order:

032121012 DETA50

Customer ID: Collected:

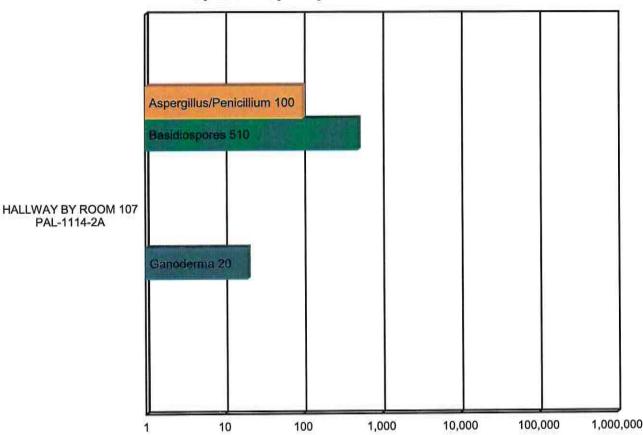
11/14/2021

Received:

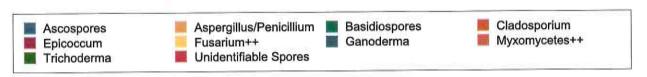
11/14/2021 11/15/2021

Analyzed:

Spore Trap Report: Total Counts



Spore Counts per m3



^{*} The chart is displayed using a logarithmic scale. Bar size is not directly proportional to the number of spores.



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NJ21-0410 Proi:

EMSL Order:

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Customer ID: Collected:

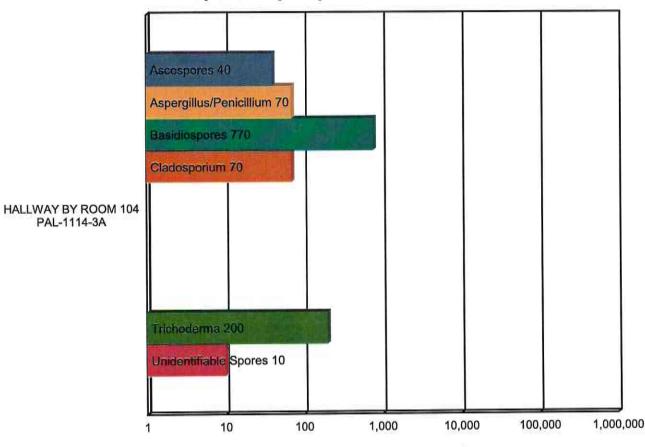
DETA50 11/14/2021

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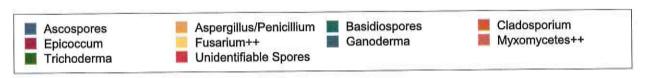
11/14/2021

11/15/2021 Analyzed:

Spore Trap Report: Total Counts



Spore Counts per m3



^{*} The chart is displayed using a logarithmic scale. Bar size is not directly proportional to the number of spores.



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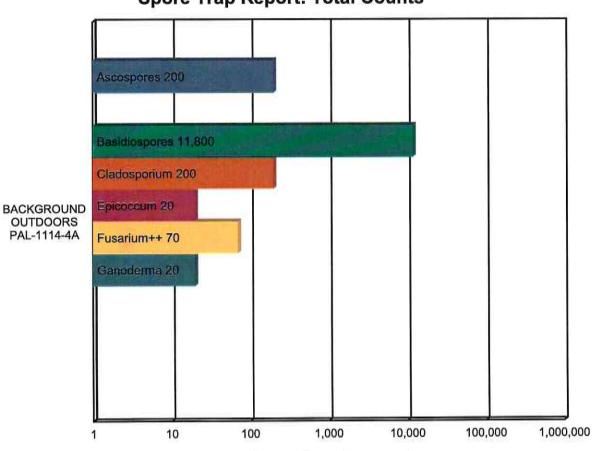
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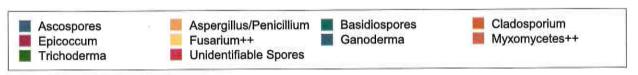
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Spore Trap Report: Total Counts



Spore Counts per m3



^{*} The chart is displayed using a logarithmic scale. Bar size is not directly proportional to the number of spores.



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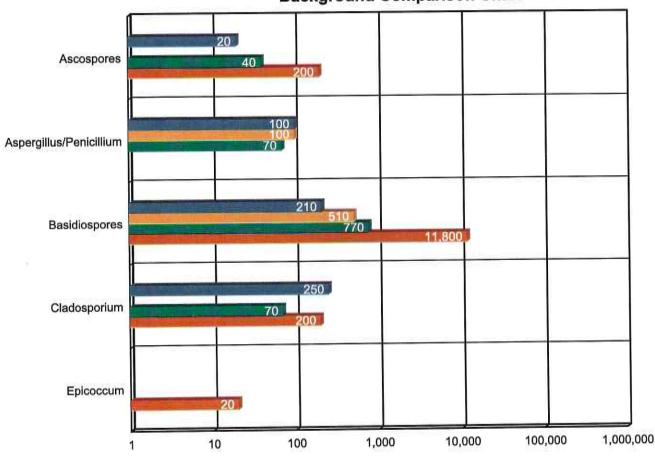
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Background Comparison Chart



Spore Counts per m3



^{*} The chart is displayed using a logarithmic scale. The bar size is not directly proportional to the number of spores.



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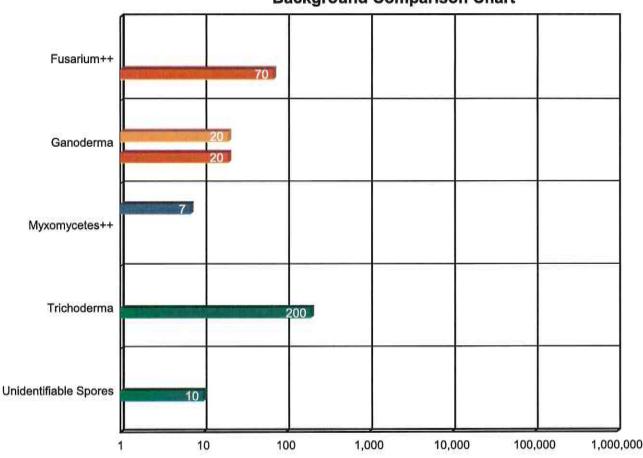
Received:

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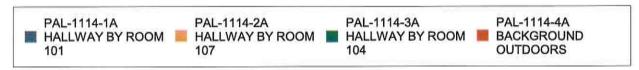
Analyzed:

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Background Comparison Chart



Spore Counts per m3



^{*} The chart is displayed using a logarithmic scale. The bar size is not directly proportional to the number of spores.



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3. Understanding the Results

EMSL Analytical, Inc. is an independent laboratory, providing unbiased and scientifically valid results. These data represent only a portion of an overall IAQ investigation. Visual information and environmental conditions measured during the site assessment (humidity, moisture readings, etc.) are crucial to any final interpretation of the results. Many factors impact the final results; therefore, result interpretation should only be conducted by qualified individuals. The American Conference of Governmental Industrial Hygienists (ACGIH) has published a good reference book covering sampling and data interpretation. It is entitled, Bioaerosols: Assessment and Control, 1999.

Fungal spores are found everywhere. Whether or not symptoms develop in people exposed to fungi depends on the nature of the fungal material (e.g., allergenic, toxic, or infectious), the exposure level, and the susceptibility of exposed persons. Susceptibility varies with the genetic predisposition (e.g., allergic reactions do not always occur in all individuals), age, pre-existing medical conditions (e.g., diabetes, cancer, or chronic lung conditions), use of immunosuppressive drugs, and concurrent exposures. These reasons make it difficult to identify dose/response relationships that are required to establish "safe" or "unsafe" levels (i.e., permissible exposure limits).

It is generally accepted in the industry that indoor fungal growth is undesirable and inappropriate, necessitating removal or other appropriate remedial actions. The New York City guidelines and EPA guidelines for mold remediation in schools and commercial buildings define the conditions warranting mold remediation. Always remember that water is the key. Preventing water damage or water condensation will prevent mold growth.

This report is not intended to provide medical advice or advice concerning the relative safety of an occupied space. Always consult an occupational or environmental health physician who has experience addressing indoor air contaminants if you have any questions.



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4. Glossary of Fungi

ASCOSPORES	
Natural Habitat	Everywhere in nature.
Suitable Substrates in the Indoor Environment	Depends on genus and species.
Water Activity	Depends on genus and species.
Mode of Dissemination	Forcible ejection or passive release and dissemination by wind or insects.
Allergic Potential	Depends on genus and species.
Potential or Opportunistic Pathogens	Depends on genus and species.
Industrial Uses	Depends on genus and species.
Potential Toxins Produced	Depends on genus and species.
Other Comments	Ascospores are the result of sexual reproduction and produced in a saclike structure called an ascus. All ascospores belong to members of the Phylum Ascomycota, which encompasses a plethora of genera worldwide.

Natural Habitat	Plant debris ·Seed ·Cereal crops
Suitable Substrates in the Indoor Environment	Grows on a wide range of substrates indoors ·Prevalent in water damaged buildings ·Foods (blue mold on cereals, fruits, vegetables, dried foods) ·House dust ·Fabrics ·Leather ·Wallpaper ·Wallpaper glue
Water Activity	Aw=0.75-0.94
Mode of Dissemination	Wind ·Insects
Allergic Potential	Type I (hay fever, asthma) ·Type III (hypersensitivity)
Potential or Opportunistic Pathogens	Possible depending on the species.
Industrial Uses	Many depending on the species
Potential Toxins Produced	Possible depending on the species.
Other Comments	Spores of Aspergillus and Penicillium (including others such as Acremonium, Talaromyces, and Paecilomyces) are small and spherical with few distinguishing characteristics. They cannot be differentiated or speciated by non-viable impaction sampling methods. Some species with very small spores may be undercounted in samples with high background debris.



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BASIDIOSPORES	
Natural Habitat	Forest floors. Lawns .Plants (saprobes or pathogens depending on genus)
Suitable Substrates in the Indoor Environment	Depends on genus. Wood products
Water Activity	Unknown.
Mode of Dissemination	Forcible ejection. Wind currents.
Allergic Potential	Type I allergies (hay fever, asthma) . Type III (hypersensitivity pneumonitis)
Potential or Opportunistic Pathogens	Depends on genus.
Industrial Uses	Edible mushrooms are used in the food industry.
Potential Toxins Produced	Amanitins. monomethyl-hydrazine. muscarine. Ibotenic acid. psilocybin.
Other Comments	Basidiospores are the result of sexual reproduction and formed on a structure called the basidium. Basidiospores belong to the members of the Phylum Basidiomycota, which includes mushrooms, shelf fungi, rusts, and smuts.

CLADOSPORIUM	
Natural Habitat	Dead plant matter. Straw. Soil. Woody plants
Suitable Substrates in the Indoor Environment	Fiberglass duct liner. Paint. Textiles. Found in high concentration in water-damaged building materials.
Water Activity	Aw 0.84-0.88
Mode of Dissemination	Air
Allergic Potential	Type I (asthma and hay fever).
Potential or Opportunistic Pathogens	Edema. keratitis. onychomycosis. pulmonary infections. Sinusitis.
Industrial Uses	Produces 10 antigens.
Potential Toxins Produced	Cladosporin and Emodin.

EPICOCCUM		
Natural Habitat	A worldwide saprophytic fungi, being isolated from dead plant material and soil.	
Suitable Substrates in the Indoor Environment	Paper, textiles	
Water Activity	0.86-0.90	
Mode of Dissemination	Wind	
Allergic Potential	Hay fever, asthma	
Potential or Opportunistic Pathogens	Unknown	



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FUSARIUM++			
Natural Habitat	Soil. Plant pathogen causing root rot, stem rot, and wilt of many ornamental and crop plants. Genera with like spores include Fusarium, Albonectria, Atractium, Bisifusarium, Corinectria, Cosmospora, Cosmosporella, Cyanonectria, Dialonectria, Fusicolla, Geejayessia, Ilyonectria, Luteonectria, Macroconia, Mariannaea, Microcera, Neocosmospora, Neonectria, Nothofusarium, Pseudofusicolla Rectifusarium, Rugonectria, Scolecofusarium, Setofusarium, Stylonectria, Thelonectria, and Tumenectria.		
Suitable Substrates in the Indoor Environment	Often found in humidifiers. Wet, cellulose-based building materials		
Water Activity	Aw=0.86-0.91		
Mode of Dissemination	Insects. Water droplets, rain. Wind when spores become dry.		
Allergic Potential	Type I allergies (hay fever, asthma).		
Potential or Opportunistic Pathogens	Esophageal cancer is believed to happen after consumption of F. moniliforme infected corn. Keratitis. Endophthalmitis. Onychomycosis. Cutaneous infections. Mycetoma. Sinusitis. Pulmonary infections. Endocarditis. Peritonitis. Central venous catheter infections. Septic arthritis. Neurological disease in horses after consumption of F. moniliforme infected corn. Respiratory disease in pigs after consumption of F. moniliforme infected corn.		
Industrial Uses	Biological Weapon.		
Potential Toxins Produced	Trichothecenes. Zearalenone. Fumonisins.		
Other Comments	Major plant pathogen.		
Reference	Atlas of Moulds in Europe causing respiratory Allergy, Foundation for Allergy Research in Europe, Edited by Knud Wilken-Jensen and Suzanne Gravesen, ASK Publishing, Denmark, 1984.		

GANODERMA	
Natural Habitat	Grows on conifers and hardwoods worldwide, causing white rot, root rot, and stem rot.
Suitable Substrates in the Indoor Environment	Unknown.
Water Activity	Unknown.
Mode of Dissemination	Wind.
Allergic Potential	Ganoderma species are known to cause allergies in people on a worldwide scale.
Potential or Opportunistic Pathogens	Unknown.
Industrial Uses	Biopulping of wood for the paper industry. Potential medicinal use due to: 1. Inhibition of Ras dependent cell transformation, 2. Antifibrotic activity, 3. Immunomodulating activity, 4. Free-radicle scavenging
Potential Toxins Produced	Unknown.
Other Comments	Used in traditional Chinese medicine as an herbal supplement. It is also known as a "shelf fungus" because the fruiting body forms a stalk-less shelf on the sides of trees and logs. It is sometimes called "artists conk" because when you scratch the white pores of the fruiting body, the white rubs away and exposes the brown hyphae underneath. Thus, pictures can be produced on the fruiting body.
Reference	References: Craig, R.L., Levetin, E. 2000. Multi-year study of Ganoderma aerobiology. Aerobiologia 16: 75-81. http://www.pfc.forestry.ca/diseases/CTD/Group/Heart/heart6_e.html



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MYXOMYCETES++		
Natural Habitat	Decaying logs, Dead leaves , Dung , Lawns , Mulched flower beds, Lawns	
Suitable Substrates in the Indoor Environment	Rotting lumber	
Free moisture required for mold growth	Unknown	
Mode of Dissemination	Insects, Water, Wind	
Allergic Potential	Type I	
Potential or Opportunistic Pathogens	Unknown	
Industrial Uses		
Other Comments	Includes Myxomycetes, Smut, Rust, and Periconia.	

TRICHODERMA		
Natural Habitat	A worldwide saprophytic fungi, being isolated from dead plant material and soil.	
Suitable Substrates in the Indoor Environment	Paper, textiles, wet wood	
Water Activity	Unknown	
Mode of Dissemination	Insects, water splash, wind	
Allergic Potential	Hay fever, asthma, hypersensitivities	
Potential or Opportunistic Pathogens	Occasionally associated with disease in immunocompromised people.	



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5. References and Informational Links

Books

- Bioaerosols: Assessment and Control. Janet Macher, Ed., American Conference of Governmental Industrial Hygienists, Cincinnati, OH 1999.
- Exposure Guidelines for Residential Indoor Air Quality. Environmental Health Directorate, Health Protection Branch, Health Canada, Ottawa, Ontario, 1989.
- Fungal Contamination in Public Buildings: Health Effects and Investigation Methods. Health Canada, Ottawa, Ontario, 2004.
- IICRC: S500 Standard and Reference Guide for Professional Water Damage Restoration. 3rd Edition, Institute of Inspection, Cleaning, and Restoration Certification, Vancouver, WA, 2006

IICRC: S520 Standard and Reference Guide for Professional Mold Remediation. 1st Edition, Institute of Inspection, Cleaning, and Restoration Certification, Vancouver, WA, 2004

 Field Guide for the Determination of Biological Contaminants in Environmental Samples. 2nd Edition, American Industrial Hygiene Association, 2005.

Consumer Links

Read the full text of AIHA's "The Facts About Mold" consumer brochure. http://www.aiha.org/get-involved/VolunteerGroups/Documents/BiosafetyVG-FactsAbout%2 0MoldDecember2011.pdf>

The Occupational Safety and Health Administration (OSHA) http://www.osha.gov/SLTC/molds/index.html

CDC Mold Facts

http://www.cdc.gov/mold/faqs.htm

CDC Stachybotrys - Questions and answers on Stachybotrys chartarum and other molds http://www.cdc.gov/mold/stachy.htm

IOM, NAS: Clearing the Air: Asthma and Indoor Air Exposures https://www.epa.gov/indoor-air-quality-iag/should-you-have-air-ducts-your-home-cleaned



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National Library of Medicine-Mold website

http://www.nlm.nih.gov/medlineplus/molds.html

California Department of Health Services (CADOHS)

https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Mold.aspx

Minnesota Department of Health

http://www.health.state.mn.us/divs/eh/indoorair/mold/index.html

New York City Department of Health and Mental Hygiene

https://www1.nyc.gov/site/doh/health/health-topics/mold.page

H.R.: The United States Toxic Mold Safety and Protection Act

EPA

"Should You Have the Air Ducts in Your Home Cleaned?"

http://www.epa.gov/iag/pubs/airduct.html

General information about molds and actions that can be taken to clean up or prevent a mold problem.

http://www.epa.gov/asthma/molds.html

"A Brief Guide to Mold, Moisture, and Your Home" - Includes basic information on mold, cleanup guidelines, and moisture and mold prevention http://www.epa.gov/mold/moldguide.html

"Mold Remediation in Schools and Commercial Buildings" - Information on remediation in schools and commercial property, references for potential mold and moisture remediators. https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide

FEMA

"Homes That Were Flooded May Harbor Mold Problems" - Information and tips for cleaning

http://www.fema.gov/news-release/homes-were-flooded-may-harbor-mold-problems

"Dealing With Mold & Mildew in Your Flood Damaged Home.

http://www.fema.gov/pdf/rebuild/recover/fema_mold_brochure_english.pdf



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6. Important Terms, Conditions, and Limitations

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Samples analyzed by EMSL will be retained for 60 days after analysis date Storage beyond this period is available for a fee with written request prior to the initial 30 day period. Samples containing hazardous/toxic substances which require special handling will be returned to the client immediately. EMSLreserves the right to charge a sample disposal fee or return samples to the client.

B. Change Orders and Cancellation

All changes in the scope of work or turnaround time requested by the client after sample acceptance must be made in writing and confirmed in writing by EMSL. If requested changes result in a change in cost the client must accept payment responsibility. In the event work is cancelled by a client, EMSL will complete work in progress and invoice for work completed to the point of cancellation notice. EMSL is not responsible for. holding times that are exceeded due to such changes.

C. Warranty

EMSL warrants to its clients that all services provided hereunder shall be performed in accordance with established and recognized analytical testing procedures and with reasonable care in accordance with applicable federal, state and local laws. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied. EMSL disclaims any other warranties, express or implied, including a warranty of fitness for particular purpose and warranty of merchantability.

D. Limits of Liability

In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. EMSL will not be held responsible for the improper selection of sampling devices even if we supply the device to the user. The user of the sampling device has the sole responsibility to select the proper sampler and sampling conditions to insure that a valid sample is taken for analysis. Any resampling performed will be at the sole discretion of EMSL, the cost of which shall be limited to the reasonable value of the original sample delivery group (SDG) samples. In no event shall EMSL be liable to a client or any third party, whether based upon theories



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of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder.

E. Indemnification

Client shall indemnify EMSL and its officers, directors and employees and hold each of them harmless for any liability, expense or cost, including reasonable attorney's fees, incurred by reason of any third party claim in connection with EMSL services, the test result data or its use by client