Fungal Analysis Laboratory Report

Prepared For

Stephanie Cook
Job No. 101
5555 Main Street

Air Care Laboratories is Atlanta's local Indoor Air Quality, AIHA LAP accredited laboratory.

About Us

Air Care Laboratories is dedicated in providing optimal, reliable results and information assured by their qualified, trained, and experienced personnel and team of analysts. Our team here at Air Care Laboratories, is committed in being a dependable, trusted resource for the indoor air quality industry. High quality certified laboratory equipment, state-of-the-art methods and procedures are used and practiced by our laboratory personnel. The Quality Assurance and Quality Control program at Air Care Laboratory is ISO/IEC 17025:2017 compliant, AIHA LAP Accredited, and ensures that you will receive scientifically sound and defendable data. It is Air Care Laboratories objective to support and aid the investigation of our professionals and experts in the field.

About Sampling

Air Sampling using Spore Traps

Spore traps are manufactured enclosed cassettes, that are developed for quantitative analysis for the sampling of air in both indoor and outdoor environments. The amount of fungal spores, pollen and other airborne particulates captured are enumerated and measured per meter cubed in both inside and outside environments. A device with a vacuum pump is used that draws in the air and collects the potential present spores, background debris and other airborne particulates. The cassettes are either entire slides or have a cover slip inside with an adhesive medium which is used to hold and secure the spores in place. Identification and enumeration of the viable, nonviable spores and airborne particulate is performed by the use of a compound microscope.

Surface Sampling using Surface Tape Slides/ Tape

Surface tape slides are manufactured or are clear pieces of tape placed on visible mold. The tape is then mounted onto a glass slide for preparation and analysis performed by the laboratory. The analysis for this method is strictly semi quantitative. It is expected and intended to be used to identify present fungi to the genus level and to determine if the fungi is viable in its current state. Also, certain particles and background debris of interest may also be identified by this method.

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1320 Ellsworth Industrial Blvd NW, B2200
Atlanta, GA 30318
404 990-4770 | AirCareLab.com

Customer Name: Stephanie Cook
Customer Email: scook@remgroupinc.com
Customer Order Number: 101
Property Name: 5555 Main Street
Property Email: scook@remgroupinc.com
Property Address: 5555 Main Street, Atlanta, GA, 30318

Legend

Elevated	High water activity or water damage indicator
Slightly Elevated	Potential airborne mycotoxins
Normal	May cause disease in some people
	May cause allergies in some people
	Not common indoors (primarily found outdoors)

Lab Order Number: 17090
Date Collected: Sep 09, 2024
Date Received: Sep 23, 2024
Date Analyzed: Sep 23, 2024
Date Reported: Sep 23, 2024
Lab Analyst: Soujanya Gattu

Linear Spore Trap / Surface Sample Analysis - Air cassettes analyzed according to SOP LAB-SOP-SPT-001 for the quantification of fungi spores from spore traps, and ASTM standard D7391-17. Tape slides analyzed according to SOP LAB-OP-SUR-001 and ASTM standard D7658-17 for the semi quantification and identification of fungi spores from surface tape slides.

Sample Location		Outdoor				Bedroom				Living Room			
Lab Sample No.		17090-2				17090-1				17090-3			
Overall Result		-				Elevated				Slightly Elevated			
Volume | Serial | Sample Type | Microscope		75 | T112233 | AllergencoD |				75 | T112244 | AllergencoD |				75 | T112255 | AllergencoD |			
SPORE IDENTIFICATION	NOTATIONS	RAW CT	SPR/M3	% Total	IN/OUT	RAW CT	SPR/M3	% Total	IN/OUT	RAW CT	SPR/M3	% Total	IN/OUT
Chaetomium		-	-	-	-	1	43	0.8	1:0	-	-	-	-
Stachybotrys		-	-	-	-	2	87	1.6	2:0	-	-	-	-
Trichoderma		-	-	-	-	-	-	-	-	-	-	-	-
Ulocladium		-	-	-	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium group		12	520	11.5	1:1	49	2,123	40.2	4.08:1	20	867	28.6	1.67:1
Cladosporium		17	737	16.3	1:1	36	1,560	29.5	2.12:1	12	520	17.1	0.71:1
Alternaria		6	260	5.8	1:1	-	-	-	-	15	650	21.4	2.5:1
Arthrinium		-	-	-	-	-	-	-	-	-	-	-	-
ascospores		10	433	9.6	1:1	4	173	3.3	0.4:1	-	-	-	-
Curvularia		-	-	-	-	-	-	-	-	-	-	-	-
Epicoccum		1	43	1	1:1	3	130	2.5	3:1	1	43	1.4	1:1
Fusarium		-	-	-	-	-	-	-	-	-	-	-	-
Nigrospora		-	-	-	-	-	-	-	-	-	-	-	-
Pestalotia		-	-	-	-	-	-	-	-	-	-	-	-
Pithomyces		-	-	-	-	-	-	-	-	-	-	-	-
Torula		-	-	-	-	-	-	-	-	-	-	-	-
basidiospores		56	2,427	53.8	1:1	27	1,170	22.1	0.48:1	22	953	31.4	0.39:1
Urediniospore(rusts)		2	87	1.9	1:1	-	-	-	-	-	-	-	-
Total		**104**	**4,507**	**99.9**	**-**	**122**	**5,287**	**100**	**-**	**70**	**3,033**	**99.9**	**-**
Expanded Analytical Uncertainty @95% Confidence Level (K=2)		-	+/- 861 spr/m3	-	-	-	+/- 1,010 spr/m3	-	-	-	+/- 579 spr/m3	-	-
Debris Rating		3				3				2			
Analytical Sensitivity		43				43				43			
Comments													

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Sample Location 2		Hallway Vent			
Lab Sample No.		17090-4			
Overall Result		Elevated			
Serial | Sample Type | Microscope		T11223366 | Tape Lift |		| |	| |
SPORE IDENTIFICATION	**NOTATIONS**	**Metric**	**Fungal/Mold Growth Present**		
Chaetomium		rare	Yes		
Stachybotrys		-	No		
Trichoderma		-	No		
Ulocladium		-	No		
Penicillium/Aspergillus group		Moderate	No		
Cladosporium		low	No		
Alternaria		-	No		
Arthrinium		-	No		
ascospores		-	No		
Curvularia		-	No		
Epicoccum		-	No		
Fusarium		-	No		
Nigrospora		-	No		
Pestalotia		-	No		
Pithomyces		-	No		
Torula		-	No		
basidiospores		-	No		
Urediniospore(rusts)		-	No		
Comments					

gbr1.jpg

outside.jpg

Living.jpg

Hallway Vent2.jpg

ANALYST & MANAGEMENT SIGNATURES

Analyzed By: Soujanya Gattu

Lab Manager: Marissa Gorecki

Air Care Laboratories is an AIHA LAP accredited laboratory.

ANALYSIS NOTATIONS

1. Analytical Sensitivity = number of spores in one m/3 per 1 raw count
2. Samples are analyzed at a minimum of 600X for 30% of the trace and a minimum of 300X for 100% of the trace.
3. An asterisk (*) next to a spore type denotes that spore type was counted at a minimum of 300X during a 100% analysis of the trace
4. Trace: area on the medium where spores and debris have been deposited during collection.
5. Measurement Uncertainty also known as the amount of error calculated for an analysis. It is expressed as a quantitative amount +/- from the number reported.
6. In the case of spore trap analysis it is the +/- % of the total spores / m3. The Expanded Measurement of Uncertainty based upon accumulated analyses from the year 2023 is +/- 30.2% spores/m3 @95% confidence (K=2).
7. Physical samples are kept for a maximum of 60 days.
8. The following data has been supplied by the customer: sampling dates and locations, sample location photos (if any), sample volumes and areas sampled, serial numbers and location names associated with serial numbers, and customer name and contact information.
9. The notations by spore type on this report are not opinions or interpretations, but rather are for informational purposes only.

ADDITIONAL INFORMATION FOR SPORE TRAPS

1. **Overloaded trace:**
   May obscure fungi spores and provide questionable results. This type of trace is only scanned for spores that may be laying on top of the debris or to the side of the trace. The air should be scrubbed and retested for more reliable results. This amount of particulate background is a respiratory risk.
2. **Trace too Overloaded for Analysis:**
   When debris is piled on top of other debris, the trace can not be analyzed. The sample must be rejected as there is no way for the laboratory to provide any sort of reliable analysis. The air should be scrubbed before another sample is submitted for analysis. This amount of debris is considered a dangerous respiratory risk.
3. **No Trace:**
   There is no visible deposit of particles on the microscope slide media. This occurs most often with outside samples in cold weather, snow on the ground or during heavy rain. If any of these conditions are present, the outside sample can be gathered by standing in the open doorway to the building or home.
4. **Negative Bias**
   Spores may be hidden by debris and therefore produce smaller counts than actually present.
5. Some spores have similar morphologies. ACC uses current and accepted references to classify spores and particles.
6. Due to rounding, totals may not equal 100%.
7. See ACC Fungal Glossary for each specific category, genus or spore type.
8. The results in this report are related to this order and samples only.
9. The results of this analysis pertain only to sample location(s) listed, collected on the stated date and should not be used in the interpretation of any other sample location(s).
10. This report may not be duplicated except in full, without the written consent of Air Care Companies, Inc. (ACC)

DEBRIS RATING AND SEMI-QUANTITATION TABLES

Debris Rating		
Rating	**Metric**	**Description**
1	< 5% Minimal	Reported values may be affected by particulate load.
2	5-25 % low	same as above
3	26-75% Moderate	same as above
4	76-90% High	Negative Bias is likely. The degree of bias increases with the present of thetrace that is occluded.
5	> 90% Overloaded	Quantification not possible due to large negative bias. New samples should be collected at shorter time interval, or other measuresto reduce the particulate load.

Surface Samples	
Rating	**Description**
None	None Detected
Rare	spores cover < 10% of area analyzed or are scattered on the slide
Low	spores cover 20%-40% of area analyzed
Moderate	spores cover 40% - 50% of area analyzed
High	spores cover > 50% of area analyzed
Fungal/Mold Growth Present	Indicates that sporulating fungal structures and/ or hyphae were present in the sample(s). Fungal structures include: hyphae, basal cells, fragments associated with fungal fruiting structures.

Epicoccum

Grows well on general fungal media, although sporulation may be strain dependent. Colonies typically have orange reverse pigment. Intact spores are distinctive. Young spores or spore fragments may be confused with Ulocladium, Stemphylium or possibly Alternaria. Commonly found in outdoor air. Growth indoors can occur on many different substrates including paper, textiles, and insects.

Allergenic Potential: Type I allergies (hay fever, asthma).

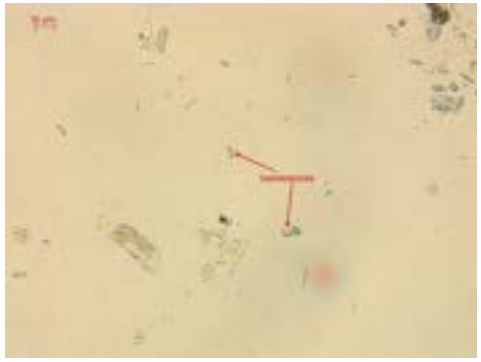
Potential Toxins Produced: Flavipin, epicorazine A & B, indole-3-acetonitrile.

ascospores

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.

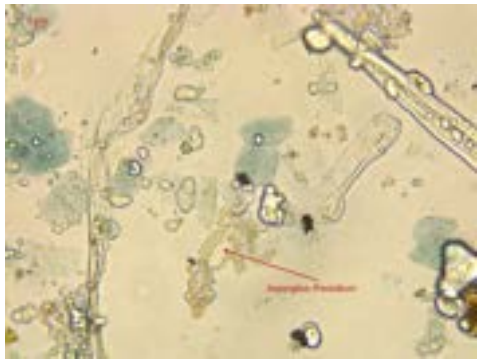
Allergenic Potential: Depends on genus and species

basidiospores



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.
Allergenic Potential: Type I allergies (hay fever, asthma) & Type III (hypersensitivity pneumonitis)
Potential Toxins Produced: Amanitins, monomethyl-hydrazine, muscarine, ibotenic acid, psilocybin.

Penicillium/Aspergillus group



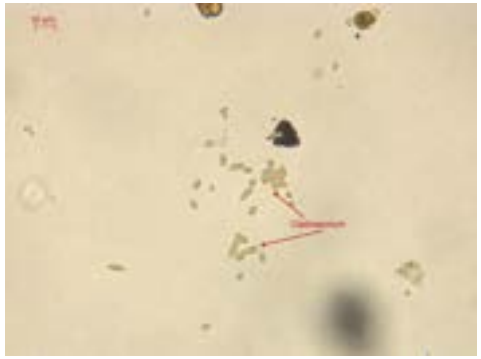
Aspergillus is the second most common opportunistic pathogen following Candida. Penicillium is one of the most common genera of fungi. Free spores of Penicillium are indistinguishable from Aspergillus and other genera with small round to oval colorless or slightly pigmented spores. Widespread. Commonly found in house dust. Grows in water damaged buildings on wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint. Colonies are usually shades of blue, green, and white.

Allergenic Potential: Allergic bronchopulmonary aspergillosis (ABPA) which is common in asthmatic and cystic fibrosis patients, Aspergillus sinusitis, Invasive aspergillosis in immunocompromised patients Type I (hay fever, asthma), Type III (hypersensitivity)

Potential Toxins Produced: Aspergillus: 3-Nitropropionic acid, 5-metoxystermatocystin, Aflatoxin B1, B2, Aflatoxin G1, G2, Aflatoxin M1, M2, Aflatoxin P1, Aflatoxin Q1, Aflatoxins, Aflatrem (alkaloid), Aflatrem (indole alkaloid), Aflavinin, Ascalidol, Aspergillic acid, Aspergillomarasmin, Aspertoxin, Asteltoxin, Austamid, Austdiol, Austins, Austocystins, Avenaciolide, Brevianamide A, Candidulin, Citreoviridin,, Citrinin, Clavatol, Cyclopiazonic acid, Cyclopiazonic acid, Cytochalasin E, Emodin, Fumagillin, Fumigaclavine A, Fumigatin, Fumitremorgens, Fumitremorgin A, Gliotoxin, Griseofulvin, Helvolic acid, Kojic acid, Kotanin, Malformins, Naphtopyrones, Neoaspergillic acid, Nidulin, Nidulotoxin, Nigragillin, Ochratoxin A, Ochratoxin B, Ochratoxin C, Ochratoxins ß, Ochratoxins a, Ochratoxins (A,B,C.a, ß.), Orlandin, Oryzacidin, Paspaline, Patulin, Penicillic acid, Phthioic acid, Secalonic acid A, B, D and F, Sphingofungins, Spinulosin, Sterigmatocystin, Terphenyllin, Terredional, Terreic acid, Terrein, Terretonin, Terretonin, Territrem A, Tryptoquivalines, Verruculogen, Versicolorin A, Viomellein, Viriditoxin, Xanthocillin, Xanthomegnin, ß-nitropropionic acid

Penicillium: Citrinin, Citreoviridin, Cyclopiazonic acid, Fumitremorgen B, Grisiofulvin, Janthitrems, Mycophenolic acid, Paxilline, Penitrem A, Penicillic acid, Ochratoxins, Roquefortine C, Secalonic acid D, Verruculogen, Verrucosidin, Viomellein, Viridicatumtoxin, Xanthomegnin,

Cladosporium



Distinctive, with wide variation in size and shape. Spores with dark attachment scars and some olive to brown pigmentation are identified as Cladosporium. Widespread, on many substrates, including textiles, wood, moist window sills. Grows at 0°C, and so is associated with refrigerated foods.

Allergenic Potential: Type I allergies (hay fever, asthma). Type III hypersensitivity pneumonitis: Hot tub lung, Moldy wall hypersensitivity.

Potential Toxins Produced: Cladosporin, Emodin

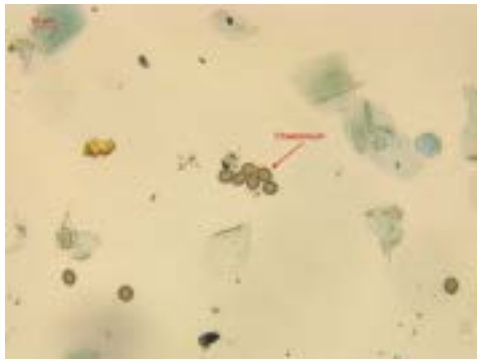
Alternaria

Alternaria spores are one of the most common and potent indoor and outdoor airborne allergens. Additionally, Alternaria sensitization has been determined to be one of the most important factors in the onset of childhood asthma. Synergy with Cladosporium or Ulocladium may increase the severity of symptoms.

Allergenic Potential: Type I allergies (hay fever, asthma) & Type III (hypersensitivity pneumonitis)

Potential Toxins Produced: Alternariol, Alternariol monomethylether, Tenuazonic acid, Altenuene, Altertoxins

Chaetomium

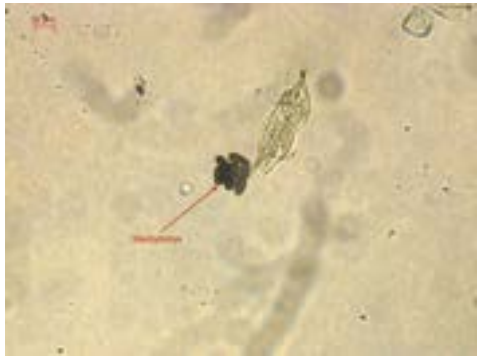


Distinctive. Chaetomium globosum has small brown "lemon" or "football-shaped" ascospores. Grows and sporulates on general fungal media, may need 8-20 days for fruiting body production and sporulation. Widespread, cellulolytic, very commonly found on damp sheetrock paper.

Allergenic Potential: Type I allergies (hay fever, asthma)

Potential Toxins Produced: Chaetomin, Chaetoglobosins A,B,D and F are produced by Chaetomium globosum, Sterigmatocystin is produced by rare species.

Stachybotrys



Commonly known as “Black Mold” and found indoors on wet materials containing cellulose, such as wallboard, jute, wicker, straw baskets, and other paper materials. Stachybotrys is slow growing as compared to Penicillium and other common mold genera, and may not compete well in the presence of other fungi. However, when water availability is high for prolonged periods on environmental material, Stachybotrys may gradually become the predominating mold, especially on cellulose containing materials.

Allergenic Potential: Type I allergies (hay fever, asthma). Type III hypersensitivity pneumonitis: Hot tub lung, Moldy wall hypersensitivity.

Potential Toxins Produced: Macrocyclic trichothecenes: verrucarin J, roridin E, satratoxin F, G & H, sporidesmin G, trichoverrol; cyclosporins, stachybotryolactone.

Stachybotrys mycotoxicosis is currently the subject of toxin research.

Stachybotrys mycotoxicosis: human toxicosis has been described; may be characterized by dermatitis, cough, rhinitis, itching or burning sensation in mouth, throat, nasal passages and eyes. The best described toxicoses are from domestic animals that have eaten contaminated hay and straw or inhaled infected material from contaminated bedding.

Stachybotrys may play a role in the development of sick building syndrome. The presence of this fungus can be significant due to its ability to produce mycotoxins. Exposure to the toxins can occur through inhalation, ingestion, or skin exposure

Thank You

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We appreciate your business! Please do not hesitate to reach out to our team with any questions, feedback or concerns you may have about our service or reports. We're here to help!

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