



LRC Indoor Testing and Research
 140 Iowa Lane, Suite 102
 Cary, NC 27511
 (919) 342-4936

Certificate of Laboratory Analysis
Non-Viable Spore Trap Analysis

Granville Co. Schools
 Bil Graham
 101 Delacroix Street
 P.O. Box 927
 Oxford, NC 27565

Project #: 22-2145
 Project Location: Hawley Middle School
 2173 Brassfield Road
 Creedmoor, NC
 Project Type: IEQ
 PO/Claim #: -

Table 1: Non-Viable Air Samples

Date Collected:	11/1/22	11/1/22	11/1/22
	1	2	3
Spore Identification	Room 124	Room 123	Outdoor Air
<i>Cladosporium</i>	187	120	1333
Ascospores	53	67	4960
Basidiospores ²	67	27	9973
Smuts, <i>Periconia</i> , <i>Myxomycetes</i> ⁴	107	147	320
<i>Penicillium/Aspergillus</i> Group ¹	40	27	693
Hyphal Elements ³	13	13	53
<i>Alternaria</i>	-	-	-
<i>Curvularia</i>	-	27	107
<i>Epicoccum</i>	13	-	-
<i>Cercospora</i>	-	-	53
<i>Arthrimum</i>	-	-	53
Clear Brown	-	-	-
Colorless	-	-	-
Trichocladium	-	-	-
Unidentified	13	-	-
<i>Ulocladium</i>	13	-	-
Torula	-	-	-
Pithomyces	-	-	-
Rust ⁵	-	-	-
<i>Drechslera/Bipolaris</i>	13	-	-
<i>Tetraploa</i>	-	-	-
<i>Chaetomium</i>	-	-	-
<i>Stachybotrys</i>	13	-	-
	-	-	-
Total Spores/m³	533	427	17547
Particulate Level	moderate	low-moderate	low-moderate
Date Analyzed:	11/2/22	11/2/22	11/2/22

Analyzed by: Cathy A. Richmond, B.S.

The results reported by LRC are a record of the microbes identified by our laboratory staff. We assume responsibility over analysis conducted in the laboratory, but cannot assume responsibility for activities completed in the field by the client, other personnel associated with the samples submitted, or other activities beyond the laboratory. Any information given other than microbial information, is provided as general reference information from published sources and is not an extension of liability to LRC.



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Project Type: IEQ
PO/Claim #: -

Sample Number: 1
Sample Location: Room 124
Date Collected: 11/1/22
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/2/22

Volume (L): 75
Percentage of Slide Read: 100.0%
Detection Limit: 13.33
Particulate Level: moderate
Notes:

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	14	187	spores/m ³	35%
Ascospores	4	53	spores/m ³	10%
Basidiospores	5	67	spores/m ³	13%
Smuts, <i>Periconia</i> , Myxomycetes	8	107	spores/m ³	20%
<i>Penicillium/Aspergillus</i> Group	3	40	spores/m ³	8%
Hyphal Elements	1	13	spores/m ³	3%
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>		-	spores/m ³	-
<i>Epicoccum</i>	1	13	spores/m ³	3%
<i>Cercospora</i>		-	spores/m ³	-
<i>Arthrinium</i>		-	spores/m ³	-
Clear Brown		-	spores/m ³	-
Colorless		-	spores/m ³	-
<i>Trichocladium</i>		-	spores/m ³	-
Unidentified	1	13	spores/m ³	3%
<i>Ulocladium</i>	1	13	spores/m ³	3%
Torula		-	spores/m ³	-
<i>Pithomyces</i>		-	spores/m ³	-
Rust		-	spores/m ³	-
<i>Drechslera/Bipolaris</i>	1	13	spores/m ³	3%
<i>Tetraploa</i>		-	spores/m ³	-
<i>Chaetomium</i>		-	spores/m ³	-
<i>Stachybotrys</i>	1	13	spores/m ³	3%
		-	spores/m ³	-
Total Spores	40	533	spores/m³	

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Project Type: IEQ
PO/Claim #: -

Sample Number:	3	Volume (L):	75
Sample Location:	Outdoor Air	Percentage of Slide Read:	25.0%
Date Collected:	11/1/22	Detection Limit:	53.33
Test Requested:	Non-viable spore trap analysis	Particulate Level:	low-moderate
Date Analyzed:	11/2/22	Notes:	

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	25	1333	spores/m ³	8%
Ascospores	93	4960	spores/m ³	28%
Basidiospores	187	9973	spores/m ³	57%
Smuts, <i>Periconia</i> , Myxomycetes	6	320	spores/m ³	2%
<i>Penicillium/Aspergillus</i> Group	13	693	spores/m ³	4%
Hyphal Elements	1	53	spores/m ³	0%
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>	2	107	spores/m ³	1%
<i>Epicoccum</i>		-	spores/m ³	-
<i>Cercospora</i>	1	53	spores/m ³	0%
<i>Arthrimum</i>	1	53	spores/m ³	0%
Clear Brown		-	spores/m ³	-
Colorless		-	spores/m ³	-
<i>Trichocladium</i>		-	spores/m ³	-
Unidentified		-	spores/m ³	-
<i>Ulocladium</i>		-	spores/m ³	-
Torula		-	spores/m ³	-
<i>Pithomyces</i>		-	spores/m ³	-
Rust		-	spores/m ³	-
<i>Drechslera/Bipolaris</i>		-	spores/m ³	-
<i>Tetraploa</i>		-	spores/m ³	-
<i>Chaetomium</i>		-	spores/m ³	-
<i>Stachybotrys</i>		-	spores/m ³	-
		-	spores/m ³	-
Total Spores	329	17547	spores/m³	

Analyzed by: Cathy A. Richmond, B.S.



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Direct Microscopic Examination

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Table 2: Non-Viable Surface Samples

Sample Number: 4 Sample Location: T-1 Room 123 - AHU Grill Area: 1 in ² Test Requested: Direct Microscopic Examination Results: Numerous: Cladosporium Occasional: Smuts, Periconia, Myxomycetes Numerous: Hyphal Elements Analyzed by: Cathy A. Richmond, B.S.	Date Collected: 11/1/22 Date Analyzed: 11/2/22
Sample Number: 2 Sample Location: T-2 Room 123 - chair bottom Area: 1 in ² Test Requested: Direct Microscopic Examination Results: Occasional: Basidiospores Occasional: Smuts, Periconia, Myxomycetes Occasional: Hyphal Elements Analyzed by: Cathy A. Richmond, B.S.	Date Collected: 11/1/22 Date Analyzed: 11/2/22
Sample Number: 3 Sample Location: T-3 Room 123 - Ceiling tile Area: 1 in ² Test Requested: Direct Microscopic Examination Results: Numerous: Stachybotrys Occasional: Smuts, Periconia, Myxomycetes Numerous: Hyphal Elements Analyzed by: Cathy A. Richmond, B.S.	Date Collected: 11/1/22 Date Analyzed: 11/2/22
Sample Number: 4 Sample Location: T-4 Room 124 - AHU Return Area: 1 in ² Test Requested: Direct Microscopic Examination Results: Numerous: Penicillium/Aspergillus Group Few: Cladosporium Occasional: Drechslera/Bipolaris Occasional: Hyphal Elements Analyzed by: Cathy A. Richmond, B.S.	Date Collected: 11/1/22 Date Analyzed: 11/2/22



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Report Information:

DETECTION LIMITS (DL) for samples are the minimum number of spores or colonies forming units that can be satisfactorily identified for each sample type.

SPORE TRAP SAMPLES: Calculations based on volume of air sampled & percentage of slide counted, i.e. DL = 1000 L / 75 L if 100% of the slide is counted.

CODE 11: Fungal content and/or particulate level on slide too heavy to identify and enumerate fungal content.

Footnotes:

1. *Penicillium/Aspergillus* group spores are characterized by their small size, round to ovoid shape, being unicellular and usually colorless to lightly pigmented. There are numerous genera of fungi whose spore morphology is similar to that of the *Penicillium/Aspergillus* type. Several common examples would be *Acremonium*, *Paecilomyces*, and *Trichoderma*. Although the majority of spores placed in this group are *Penicillium*, *Aspergillus*, or a combination of both, these are not the only two possibilities.
2. Basidiospores are primarily transported indoors from outdoor sources and rarely grow indoors. A high basidiospore count indoors can be indicative of a wood decay problem or wet soil, and should be verified if and an outdoor source of the spores is not present.
3. Hyphae are the tubular filaments of fungi. Hyphae can fragment and become airborne much like spores and are potentially allergenic.
4. The Smut, *Periconia*, Myxomycete group is a group composed of three different types of organisms whose spores have similar morphologies. Smuts are plant pathogens, *Periconia* is a relatively uncommon mold indoors, and Myxomycetes are not fungi, but slime molds. Although these organisms do not typically proliferate indoors, their spores are potentially allergenic.
5. Rusts are plant pathogens. These fungi do not typically grow indoors unless an infected plant is present. Rust spores are potentially allergenic.

Chain of Custody available on request

Direct Microscopic Exam Reporting:

We use a 400x-600x magnification microscope.

Reporting Quantification Levels are as follows:

Reporting Level	Quantitative Description
Occasional	1-10 per square inch
Few	11-100 per square inch
Moderate	101-1000 per square inch
Numerous	More than 1,000 per square inch

Submitted By Analyst:

Cathy A. Richmond, BS

11/2/2022