



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 County Schools
 Bill Graham
 101 Delacroix Street
 Oxford, NC 27565

Project #: 22-2161
 Project Location: 2173 Brassfield Road
 Creedmoor, NC

Project Type: CLR/IAQ
 PO/Claim #:

Table 1: Non-Viable Air Samples

Date Collected:	11/8/22	11/8/22	11/8/22	11/8/22	11/8/22
	4	5	6	7	8
Spore Identification	Room 124	Room 123	Hall @ Room 121	Hall @ Room 124	Hall @ Room 127
<i>Cladosporium</i>	853	133	480	547	1133
Ascospores	53	13	27	27	67
Basidiospores ²	147	40	40	40	40
Smuts, <i>Periconia</i> , <i>Myxomycetes</i> ⁴	-	13	53	-	67
<i>Penicillium/Aspergillus</i> Group ¹	387	40	787	320	520
Hyphal Elements ³	13	-	13	40	40
<i>Alternaria</i>	-	-	-	-	-
<i>Curvularia</i>	-	-	-	-	-
<i>Epicoccum</i>	-	-	-	-	-
<i>Cercospora</i>	-	-	-	-	-
<i>Arthrimum</i>	-	-	-	-	-
Clear Brown	-	-	-	-	-
Colorless	-	-	-	-	-
<i>Trichocladium</i>	-	-	-	-	-
Unidentified	-	-	-	-	-
<i>Ulocladium</i>	-	-	-	-	-
Torula	-	-	-	-	-
Pithomyces	-	-	-	-	-
Rust ⁵	-	-	-	-	-
<i>Drechslera/Bipolaris</i>	-	-	-	-	-
<i>Tetraploa</i>	-	-	-	-	-
<i>Chaetomium</i>	-	-	-	-	-
<i>Stachybotrys</i>	-	-	-	-	-
	-	-	-	-	-
Total Spores/m³	1453	240	1400	973	1867
Particulate Level	low	low	low-moderate	low-moderate	low-moderate
Date Analyzed:	11/9/22	11/9/22	11/9/22	11/9/22	11/9/22

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

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Table 1: Non-Viable Air Samples

Date Collected:	11/8/22	11/8/22
Spore Identification	9	10
	Hall @ Room !29	Outdoor Air
<i>Cladosporium</i>	1227	8213
Ascospores	107	480
Basidiospores ²	187	1067
Smuts, <i>Periconia</i> , <i>Myxomycetes</i> ⁴	40	640
<i>Penicillium/Aspergillus</i> Group ¹	280	693
Hyphal Elements ³	53	267
<i>Alternaria</i>	-	53
<i>Curvularia</i>	-	-
<i>Epicoccum</i>	-	-
<i>Cercospora</i>	-	53
<i>Arthrinium</i>	-	-
Clear Brown	-	-
Colorless	-	-
Trichocladium	-	-
Unidentified	-	-
<i>Ulocladium</i>	-	-
Torula	-	-
Pithomyces	-	-
Rust ⁵	-	-
<i>Drechslera/Bipolaris</i>	-	-
<i>Tetraploa</i>	-	-
<i>Chaetomium</i>	-	-
<i>Stachybotrys</i>	27	-
	-	-
Total Spores/m³	1920	11467
Particulate Level	low-moderate	moderate
Date Analyzed:	11/9/22	11/9/22

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Project #: 22-2161
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 Creedmoor, NC

Project Type: CLR/IAQ
PO/Claim #:

Sample Number: 4 **Volume (L):** 75
Sample Location: Room 124 **Percentage of Slide Read:** 100.0%
Date Collected: 11/8/22 **Detection Limit:** 13.33
Test Requested: Non-viable spore trap analysis **Particulate Level:** low
Date Analyzed: 11/9/22 **Notes:**

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	64	853	spores/m ³	59%
Ascospores	4	53	spores/m ³	4%
Basidiospores	11	147	spores/m ³	10%
Smuts, <i>Periconia</i> , Myxomycetes		-	spores/m ³	-
<i>Penicillium/Aspergillus</i> Group	29	387	spores/m ³	27%
Hyphal Elements	1	13	spores/m ³	1%
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>		-	spores/m ³	-
<i>Epicoccum</i>		-	spores/m ³	-
<i>Cercospora</i>		-	spores/m ³	-
<i>Arthrini</i>		-	spores/m ³	-
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	109	1453	spores/m³	

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Project Type: CLR/IAQ
PO/Claim #:

Sample Number: 5
Sample Location: Room 123
Date Collected: 11/8/22
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/9/22

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

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	10	133	spores/m ³	56%
Ascospores	1	13	spores/m ³	6%
Basidiospores	3	40	spores/m ³	17%
Smuts, <i>Periconia</i> , Myxomycetes	1	13	spores/m ³	6%
<i>Penicillium/Aspergillus</i> Group	3	40	spores/m ³	17%
Hyphal Elements		-	spores/m ³	-
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>		-	spores/m ³	-
<i>Epicoccum</i>		-	spores/m 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		-	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	18	240	spores/m³	

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Project Type: CLR/IAQ
PO/Claim #:

Sample Number: 6
Sample Location: Hall @ Room 121
Date Collected: 11/8/22
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/9/22

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

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	36	480	spores/m ³	34%
Ascospores	2	27	spores/m ³	2%
Basidiospores	3	40	spores/m ³	3%
Smuts, <i>Periconia</i> , Myxomycetes	4	53	spores/m ³	4%
<i>Penicillium/Aspergillus</i> Group	59	787	spores/m ³	56%
Hyphal Elements	1	13	spores/m ³	1%
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>		-	spores/m ³	-
<i>Epicoccum</i>		-	spores/m 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		-	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	105	1400	spores/m³	

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Project Type: CLR/IAQ
PO/Claim #:

Sample Number: 7
Sample Location: Hall @ Room 124
Date Collected: 11/8/22
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/9/22

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

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	41	547	spores/m ³	56%
Ascospores	2	27	spores/m ³	3%
Basidiospores	3	40	spores/m ³	4%
Smuts, <i>Periconia</i> , Myxomycetes		-	spores/m ³	-
<i>Penicillium/Aspergillus</i> Group	24	320	spores/m ³	33%
Hyphal Elements	3	40	spores/m ³	4%
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>		-	spores/m ³	-
<i>Epicoccum</i>		-	spores/m 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		-	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	73	973	spores/m³	

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Project Type: CLR/IAQ
PO/Claim #:

Sample Number:	8	Volume (L):	75
Sample Location:	Hall @ Room 127	Percentage of Slide Read:	100.0%
Date Collected:	11/8/22	Detection Limit:	13.33
Test Requested:	Non-viable spore trap analysis	Particulate Level:	low-moderate
Date Analyzed:	11/9/22	Notes:	

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	85	1133	spores/m ³	61%
Ascospores	5	67	spores/m ³	4%
Basidiospores	3	40	spores/m ³	2%
Smuts, <i>Periconia</i> , Myxomycetes	5	67	spores/m ³	4%
<i>Penicillium/Aspergillus</i> Group	39	520	spores/m ³	28%
Hyphal Elements	3	40	spores/m ³	2%
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>		-	spores/m ³	-
<i>Epicoccum</i>		-	spores/m 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		-	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	140	1867	spores/m³	

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Project Type: CLR/IAQ
PO/Claim #:

Sample Number: 9
Sample Location: Hall @ Room !29
Date Collected: 11/8/22
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/9/22

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

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	92	1227	spores/m ³	64%
Ascospores	8	107	spores/m ³	6%
Basidiospores	14	187	spores/m ³	10%
Smuts, <i>Periconia</i> , Myxomycetes	3	40	spores/m ³	2%
<i>Penicillium/Aspergillus</i> Group	21	280	spores/m ³	15%
Hyphal Elements	4	53	spores/m ³	3%
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>		-	spores/m ³	-
<i>Epicoccum</i>		-	spores/m 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		-	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>	2	27	spores/m ³	1%
		-	spores/m ³	-
Total Spores	144	1920	spores/m³	

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Sample Number: 10 **Volume (L):** 75
Sample Location: Outdoor Air **Percentage of Slide Read:** 25.0%
Date Collected: 11/8/22 **Detection Limit:** 53.33
Test Requested: Non-viable spore trap analysis **Particulate Level:** moderate
Date Analyzed: 11/9/22 **Notes:**

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	154	8213	spores/m ³	72%
Ascospores	9	480	spores/m ³	4%
Basidiospores	20	1067	spores/m ³	9%
Smuts, <i>Periconia</i> , Myxomycetes	12	640	spores/m ³	6%
<i>Penicillium/Aspergillus</i> Group	13	693	spores/m ³	6%
Hyphal Elements	5	267	spores/m ³	2%
<i>Alternaria</i>	1	53	spores/m ³	0%
<i>Curvularia</i>		-	spores/m ³	-
<i>Epicoccum</i>		-	spores/m ³	-
<i>Cercospora</i>	1	53	spores/m ³	0%
<i>Arthrinium</i>		-	spores/m ³	-
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	215	11467	spores/m³	

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



Certificate of Laboratory Analysis

Project #: **22-2161**

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**