



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

Dare County Schools
 Ian Adams
 3020 S Wrightsville Ave
 Nags Head, NC

Project #: 24-2418
Project Location: First Flight Elementary

Project Type: IAQ
PO/Claim #:

Table 1: Non-Viable Air Samples

Date Collected:	5/3/24	5/3/24	5/3/24	5/3/24	5/3/24
	1	2	3	4	5
Spore Identification	Cafeteria	Gym	Hall at D113	CR D123	Media Center
<i>Cladosporium</i>	213	27	40	13	80
Ascospores	40	13	13	-	-
Basidiospores ²	40	13	-	27	13
Smuts, <i>Periconia</i> , <i>Myxomycetes</i> ⁴	13	-	-	-	-
<i>Penicillium/Aspergillus</i> Group ¹	40	13	13	-	-
Hyphal Elements ³	133	-	27	13	40
<i>Alternaria</i>	27	-	-	-	40
<i>Curvularia</i>	13	-	-	-	-
<i>Epicoccum</i>	-	-	-	-	-
<i>Cercospora</i>	-	-	-	-	-
<i>Arthrinium</i>	-	-	-	-	-
Clear Brown	-	-	-	-	-
Colorless	-	-	-	-	-
Trichocladium	13	-	-	-	-
Unidentified	-	-	-	-	-
<i>Ulocladium</i>	-	-	-	-	-
Torula	-	-	-	-	-
Pithomyces	13	-	-	-	-
Rust ⁵	-	-	-	-	-
<i>Drechslera/Bipolaris</i>	-	-	-	-	-
<i>Tetraploa</i>	-	-	-	-	-
<i>Chaetomium</i>	-	-	-	-	-
<i>Stachybotrys</i>	-	-	-	-	-
	-	-	-	-	-
Total Spores/m³	547	67	93	53	173
Particulate Level	moderate	low-moderate	low-moderate	low	moderate
Date Analyzed:	5/8/23	5/8/23	5/8/23	5/8/23	5/8/23

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

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Date Collected:	5/3/24	5/3/24	5/3/24	5/3/24	5/3/24
	6	7	8	9	10
Spore Identification	Hall at B153	CR B157	Hall at C122	CR 117	Hall at A121
<i>Cladosporium</i>	107	27	40	40	120
Ascospores	40	27	-	-	-
Basidiospores ²	27	-	-	13	13
Smuts, <i>Periconia</i> , <i>Myxomycetes</i> ⁴	27	-	-	-	-
<i>Penicillium/Aspergillus</i> Group ¹	27	-	67	-	-
Hyphal Elements ³	40	13	53	13	-
<i>Alternaria</i>	13	-	-	-	-
<i>Curvularia</i>	-	-	-	-	-
<i>Epicoccum</i>	-	-	-	-	-
<i>Cercospora</i>	-	-	-	-	-
<i>Arthrinium</i>	-	-	-	-	-
Clear Brown	-	-	-	-	-
Colorless	-	-	-	-	-
Trichocladium	-	-	-	-	-
Unidentified	-	-	-	-	-
<i>Ulocladium</i>	-	-	-	-	-
Torula	-	-	-	-	-
Pithomyces	-	13	-	-	-
Rust ⁵	-	-	-	-	-
<i>Drechslera/Bipolaris</i>	13	-	-	-	-
<i>Tetraploa</i>	-	-	-	-	-
<i>Chaetomium</i>	-	-	-	-	-
<i>Stachybotrys</i>	-	-	-	-	-
	-	-	-	-	-
Total Spores/m³	293	80	160	67	133
Particulate Level	0	low-moderate	low-moderate	low-moderate	low-moderate
Date Analyzed:	5/8/23	5/8/23	5/8/23	5/8/23	5/8/23

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Table 1: Non-Viable Air Samples

Date Collected:	5/3/24	5/3/24	5/3/24
	11	12	13
Spore Identification	CR A120	Hall at B111	Outdoor Air
<i>Cladosporium</i>	13	147	3467
Ascospores	-	13	2720
Basidiospores ²	13	13	1120
Smuts, <i>Periconia</i> , <i>Myxomycetes</i> ⁴	-	13	373
<i>Penicillium/Aspergillus</i> Group ¹	-	-	107
Hyphal Elements ³	-	27	107
<i>Alternaria</i>	-	27	160
<i>Curvularia</i>	-	13	-
<i>Epicoccum</i>	-	-	107
<i>Cercospora</i>	-	-	-
<i>Arthrinium</i>	-	-	-
Clear Brown	-	-	-
Colorless	-	-	-
<i>Trichocladium</i>	-	-	-
Unidentified	-	-	-
<i>Ulocladium</i>	-	-	-
Torula	-	-	-
Pithomyces	-	-	-
Rust ⁵	-	-	-
<i>Drechslera/Bipolaris</i>	-	-	53
<i>Tetraploa</i>	-	-	-
<i>Chaetomium</i>	-	-	-
<i>Stachybotrys</i>	-	-	-
	-	-	-
Total Spores/m³	27	253	8213
Particulate Level	low-moderate	low-moderate	low-moderate
Date Analyzed:	5/8/23	5/8/23	5/8/23

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Project #: 24-2418
Project Location: First Flight Elementary
Project Type: - IAQ
PO/Claim #: -

Sample Number: 1
Sample Location: Cafeteria
Date Collected: 5/3/24
Test Requested: Non-viable spore trap analysis
Date Analyzed: 5/8/23

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>	16	213	spores/m ³	39%
Ascospores	3	40	spores/m ³	7%
Basidiospores	3	40	spores/m ³	7%
Smuts, <i>Periconia</i> , Myxomycetes	1	13	spores/m ³	2%
<i>Penicillium/Aspergillus</i> Group	3	40	spores/m ³	7%
Hyphal Elements	10	133	spores/m ³	24%
<i>Alternaria</i>	2	27	spores/m ³	5%
<i>Curvularia</i>	1	13	spores/m ³	2%
<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>	1	13	spores/m ³	2%
Unidentified		-	spores/m ³	-
<i>Ulocladium</i>		-	spores/m ³	-
Torula		-	spores/m ³	-
<i>Pithomyces</i>	1	13	spores/m ³	2%
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	41	547	spores/m³	

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Project #: 24-2418
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Project Type: -
 IAQ
PO/Claim #: -

Sample Number: 2
Sample Location: Gym
Date Collected: 5/3/24
Test Requested: Non-viable spore trap analysis
Date Analyzed: 5/8/23

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>	2	27	spores/m ³	40%
Ascospores	1	13	spores/m ³	20%
Basidiospores	1	13	spores/m ³	20%
Smuts, <i>Periconia</i> , Myxomycetes		-	spores/m ³	-
<i>Penicillium/Aspergillus</i> Group	1	13	spores/m ³	20%
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	5	67	spores/m³	

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Project Type: IAQ
PO/Claim #: -

Sample Number:	5	Volume (L):	75
Sample Location:	Media Center	Percentage of Slide Read:	100.0%
Date Collected:	5/3/24	Detection Limit:	13.33
Test Requested:	Non-viable spore trap analysis	Particulate Level:	moderate
Date Analyzed:	5/8/23	Notes:	-

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	6	80	spores/m ³	46%
Ascospores		-	spores/m ³	-
Basidiospores	1	13	spores/m ³	8%
Smuts, <i>Periconia</i> , Myxomycetes		-	spores/m ³	-
<i>Penicillium/Aspergillus</i> Group		-	spores/m ³	-
Hyphal Elements	3	40	spores/m ³	23%
<i>Alternaria</i>	3	40	spores/m ³	23%
<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	13	173	spores/m³	

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Project Type: -
 IAQ
PO/Claim #: -

Sample Number: 8
Sample Location: Hall at C122
Date Collected: 5/3/24
Test Requested: Non-viable spore trap analysis
Date Analyzed: 5/8/23

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>	3	40	spores/m ³	25%
Ascospores		-	spores/m ³	-
Basidiospores		-	spores/m ³	-
Smuts, <i>Periconia</i> , Myxomycetes		-	spores/m ³	-
<i>Penicillium/Aspergillus</i> Group	5	67	spores/m ³	42%
Hyphal Elements	4	53	spores/m ³	33%
<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	12	160	spores/m³	

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



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Project #: **24-2418**

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.

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

5/8/2023