



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 #: 24-3283
Project Location: Maintenance Shop/ Bus Garage

Project Type: IAQ
PO/Claim #:

Table 1: Non-Viable Air Samples

Date Collected:	11/13/24	11/13/24	11/13/24	11/13/24	11/13/24
	1	2	3	4	5
Spore Identification	MS Front Office	MS Rear Break Room	BG Shop Office	BG Office	BG 2nd Floor Office
<i>Cladosporium</i>	240	173	80	173	93
Ascospores	53	53	27	40	40
Basidiospores ²	27	80	67	53	53
Smuts, <i>Periconia</i> , <i>Myxomycetes</i> ⁴	53	120	67	107	120
<i>Penicillium/Aspergillus</i> Group ¹	-	40	200	40	53
Hyphal Elements ³	120	80	80	93	53
<i>Alternaria</i>	-	40	-	13	27
<i>Curvularia</i>	53	120	13	80	13
<i>Epicoccum</i>	-	27	-	-	-
<i>Cercospora</i>	-	-	-	-	-
<i>Arthrinium</i>	-	-	-	-	-
Clear Brown	-	-	-	-	-
Colorless	-	-	-	-	-
Trichocladium	-	-	-	-	-
Unidentified	-	13	-	27	-
<i>Ulocladium</i>	-	13	-	-	-
Torula	-	27	-	13	-
Pithomyces	-	-	-	-	-
Rust ⁵	-	-	-	-	-
<i>Drechslera/Bipolaris</i>	13	27	13	-	13
<i>Tetraploa</i>	-	-	-	-	-
<i>Chaetomium</i>	-	-	-	-	-
<i>Stachybotrys</i>	-	-	-	-	-
	-	-	-	-	-
Total Spores/m³	560	813	547	640	467
Particulate Level	moderate-heavy	moderate-heavy	moderate-heavy	moderate-heavy	moderate-heavy
Date Analyzed:	11/18/24	11/18/24	11/18/24	11/18/24	11/18/24

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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Table 1: Non-Viable Air Samples

Date Collected:	11/13/24
Spore Identification	6
	Outdoor Air
<i>Cladosporium</i>	373
Ascospores	120
Basidiospores ²	133
Smuts, <i>Periconia</i> , <i>Myxomycetes</i> ⁴	107
<i>Penicillium/Aspergillus</i> Group ¹	160
Hyphal Elements ³	27
<i>Alternaria</i>	-
<i>Curvularia</i>	40
<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	987
Particulate Level	low
Date Analyzed:	11/18/24

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

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Project #: 24-3283
Project Location: Maintenance Shop/ Bus Garage

Project Type: IAQ
PO/Claim #:

Sample Number: 1
Sample Location: MS Front Office
Date Collected: 11/13/24
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/18/24

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

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	18	240	spores/m ³	43%
Ascospores	4	53	spores/m ³	10%
Basidiospores	2	27	spores/m ³	5%
Smuts, <i>Periconia</i> , Myxomycetes	4	53	spores/m ³	10%
<i>Penicillium/Aspergillus</i> Group		-	spores/m ³	-
Hyphal Elements	9	120	spores/m ³	21%
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>	4	53	spores/m ³	10%
<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>	1	13	spores/m ³	2%
<i>Tetraploa</i>		-	spores/m ³	-
<i>Chaetomium</i>		-	spores/m ³	-
<i>Stachybotrys</i>		-	spores/m ³	-
		-	spores/m ³	-
Total Spores	42	560	spores/m³	

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Project #: 24-3283
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Project Type: IAQ
PO/Claim #:

Sample Number: 2
Sample Location: MS Rear Break Room
Date Collected: 11/13/24
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/18/24

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

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	13	173	spores/m ³	21%
Ascospores	4	53	spores/m ³	7%
Basidiospores	6	80	spores/m ³	10%
Smuts, <i>Periconia</i> , Myxomycetes	9	120	spores/m ³	15%
<i>Penicillium/Aspergillus</i> Group	3	40	spores/m ³	5%
Hyphal Elements	6	80	spores/m ³	10%
<i>Alternaria</i>	3	40	spores/m ³	5%
<i>Curvularia</i>	9	120	spores/m ³	15%
<i>Epicoccum</i>	2	27	spores/m ³	3%
<i>Cercospora</i>		-	spores/m ³	-
<i>Arthrimum</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	2%
<i>Ulocladium</i>	1	13	spores/m ³	2%
Torula	2	27	spores/m ³	3%
<i>Pithomyces</i>		-	spores/m ³	-
Rust		-	spores/m ³	-
<i>Drechslera/Bipolaris</i>	2	27	spores/m ³	3%
<i>Tetraploa</i>		-	spores/m ³	-
<i>Chaetomium</i>		-	spores/m ³	-
<i>Stachybotrys</i>		-	spores/m ³	-
		-	spores/m ³	-
Total Spores	61	813	spores/m³	

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Project #: 24-3283
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Project Type: IAQ
PO/Claim #:

Sample Number: 3
Sample Location: BG Shop Office
Date Collected: 11/13/24
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/18/24
Volume (L): 75
Percentage of Slide Read: 100.0%
Detection Limit: 13.33
Particulate Level: moderate-heavy
Notes:

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	6	80	spores/m ³	15%
Ascospores	2	27	spores/m ³	5%
Basidiospores	5	67	spores/m ³	12%
Smuts, <i>Periconia</i> , Myxomycetes	5	67	spores/m ³	12%
<i>Penicillium/Aspergillus</i> Group	15	200	spores/m ³	37%
Hyphal Elements	6	80	spores/m ³	15%
<i>Alternaria</i>		-	spores/m ³	-
<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>		-	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>	1	13	spores/m ³	2%
<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 Type: IAQ
PO/Claim #:

Sample Number: 4
Sample Location: BG Office
Date Collected: 11/13/24
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/18/24

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

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	13	173	spores/m ³	27%
Ascospores	3	40	spores/m ³	6%
Basidiospores	4	53	spores/m ³	8%
Smuts, <i>Periconia</i> , Myxomycetes	8	107	spores/m ³	17%
<i>Penicillium/Aspergillus</i> Group	3	40	spores/m ³	6%
Hyphal Elements	7	93	spores/m ³	15%
<i>Alternaria</i>	1	13	spores/m ³	2%
<i>Curvularia</i>	6	80	spores/m ³	13%
<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	2	27	spores/m ³	4%
<i>Ulocladium</i>		-	spores/m ³	-
Torula	1	13	spores/m ³	2%
<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	48	640	spores/m³	

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Project #: 24-3283
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Project Type: IAQ
PO/Claim #:

Sample Number: 5
Sample Location: BG 2nd Floor Office
Date Collected: 11/13/24
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/18/24

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

Spore Identification	Count	Results	Units	Percentage
<i>Cladosporium</i>	7	93	spores/m ³	20%
Ascospores	3	40	spores/m ³	9%
Basidiospores	4	53	spores/m ³	11%
Smuts, <i>Periconia</i> , Myxomycetes	9	120	spores/m ³	26%
<i>Penicillium/Aspergillus</i> Group	4	53	spores/m ³	11%
Hyphal Elements	4	53	spores/m ³	11%
<i>Alternaria</i>	2	27	spores/m ³	6%
<i>Curvularia</i>	1	13	spores/m ³	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>	1	13	spores/m ³	3%
<i>Tetraploa</i>		-	spores/m ³	-
<i>Chaetomium</i>		-	spores/m ³	-
<i>Stachybotrys</i>		-	spores/m ³	-
		-	spores/m ³	-
Total Spores	35	467	spores/m³	

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



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Project #: 24-3283
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Project Type: IAQ
PO/Claim #:

Sample Number: 6
Sample Location: Outdoor Air
Date Collected: 11/13/24
Test Requested: Non-viable spore trap analysis
Date Analyzed: 11/18/24
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>	28	373	spores/m ³	38%
Ascospores	9	120	spores/m ³	12%
Basidiospores	10	133	spores/m ³	14%
Smuts, <i>Periconia</i> , Myxomycetes	8	107	spores/m ³	11%
<i>Penicillium/Aspergillus</i> Group	12	160	spores/m ³	16%
Hyphal Elements	2	27	spores/m ³	3%
<i>Alternaria</i>		-	spores/m ³	-
<i>Curvularia</i>	3	40	spores/m ³	4%
<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>	1	13	spores/m ³	1%
Rust		-	spores/m ³	-
<i>Drechslera/Bipolaris</i>	1	13	spores/m ³	1%
<i>Tetraploa</i>		-	spores/m ³	-
<i>Chaetomium</i>		-	spores/m ³	-
<i>Stachybotrys</i>		-	spores/m ³	-
		-	spores/m ³	-
Total Spores	74	987	spores/m³	

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



Certificate of Laboratory Analysis

Project #: **24-3283**

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