



Office: 336.368.4500  
Mobile: 336.575.2343  
jmcmanus@allsenvironmental.com

January 17, 2021

Jay Fuller  
Director of Facilities and Maintenance

Alamance-Burlington School System  
307 Prison Camp Road  
Graham, North Carolina 27253

Subject: Report of Airborne Microbial Sampling  
Sellars-Gunn Educational Center – Room #48  
612 Apple Street  
Burlington, North Carolina  
Project No.: 201-2101-01

Dear Mr. Fuller:

ALIS has completed the airborne microbial sampling at Sellars-Gunn Educational Center in Burlington, North Carolina. On January 11, 2021, at your request, we conducted air sampling for the presence of airborne fungi at the subject property. The purpose of our sampling was to determine the presence and species of airborne fungi and the degree of concentration within the area of concern. One air sampling pump was calibrated and placed inside the audiology room #48. One sample was collected from outside the building as a reference (baseline) for comparison to the inside conditions. No other areas of the facility were included in the scope of work.

#### Results

The laboratory results found the total spore counts on the indoor sample to be generally similar when compared to the outdoor sample. Although spore counts were found to be at similar levels indoors, four spores of the species *Myxomycetes* were detected on the indoor sample and were not found on the outdoor sample. Although this species was not detected on the outdoor sample, the indoor level is not sufficient to suspect that significant active growth is occurring. However, a small amount of visible mold spots was observed on the ceiling-mounted supply vents. The AC unit supplying air for this room is in an area that appears to get little sun light. The outdoor unit exhibited a light green mold growth on the housing. The air intake port is positioned close to the ground increasing the potential to draw into the system, fungal spores from soil and decaying plant matter. We recommend the entire system be professionally cleaned and inspected. Sample results and additional information on fungal spores are attached to this report: "Spore Trap Analysis."

January 17, 2021

### **Sampling Methodology**

Non-viable samples were collected with a spore trap slide using Allergenco-D Cassettes mounted to a sampling pump. The cassettes contain glass slides that are coated with a sticky substance that captures airborne particulates that impinge on the slides. The air samples were collected at 15 liters per minute for 10 minutes. Calibration of sampling equipment was performed with a precision rotameter (a secondary calibration source). Rotameters are calibrated against a primary standard. Field calibration was performed before and after sampling. The air samples were sealed for transport to Hayes Microbial Consulting in Midlothian, Virginia for analysis. Hayes Microbial is a participant in the American Industrial Hygiene Association, Laboratory Accreditation Program (AIHA-LAP) for Environmental Microbiology.

### **Background Information on Mold in Buildings**

Mold spores exist normally in outdoor and indoor air and can be measured in air and carpets of normal homes, office buildings, hospitals and schools. Naturally occurring sources of mold spores include soil, plants and other sources. The air concentration of these normally occurring mold spores is dependent on the season, environmental conditions and other factors. Elevated levels of mold in building materials may occur if chronic moist conditions from water leaks, floods, chronic high relative humidity, or malfunctioning heating, ventilation or air conditioning systems, allow moisture to remain for prolonged periods on organic matter in the presence of warm ambient temperatures. Under these conditions, low levels of fungal spores in air, plants or other sources, may proliferate on cellulose containing materials such as carpets, wallboard, wood, paper or dusty surfaces (which may serve as a food source), and result in mold contamination. Many fungal spores are allergenic to susceptible persons exposed, though individual susceptibility varies greatly. There is no practical way to eliminate all mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.

ALIS appreciates the opportunity to be of service to you on this project. We would welcome the opportunity to discuss at your convenience, any of the results contained in this report. Please contact us if you have any questions or if we may be of further service.

Sincerely,  
ALIS ENVIRONMENTAL, INC.



James P. McManus  
Vice-President

Attachment: "Spore Trap Analysis"



#21001140

Analysis Report prepared for

# ALIS Environmental Inc.

1027 Koontz Haven Rd  
Pinnacle, NC 27043

Phone: (336) 368-4500

201-2101-01  
Sellars-Gunn Education Center  
612 Apple St.  
Burlington, NC 27217

Collected: January 11, 2021  
Received: January 13, 2021  
Reported: January 13, 2021



EPA Laboratory ID: VA01419

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 3 samples by FedEx in good condition for this project on January 13th, 2021.

The results in this analysis pertain only to this job, collected on the stated date, and should not be used in the interpretation of any other job. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

Steve Hayes, BSMT (ASCP)  
Laboratory Director  
Hayes Microbial Consulting, LLC.



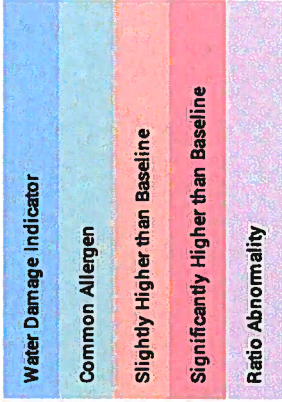
Lab ID: #188863



DPH License: #PH-0198



**Spore Trap Information**

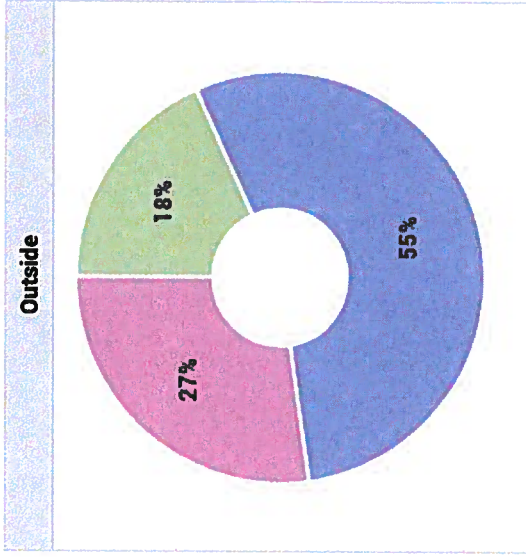
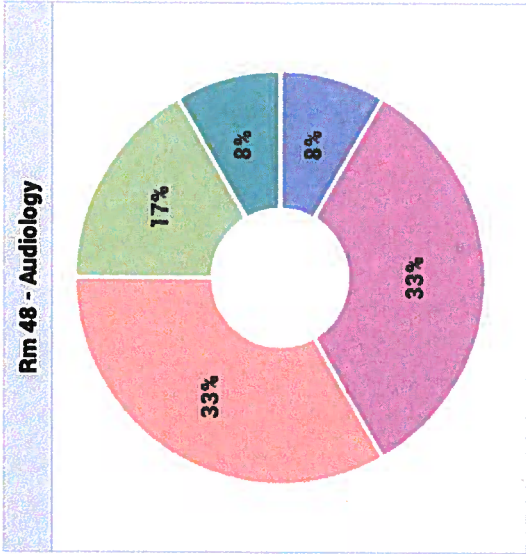
<p><b>Reporting Limit</b></p> <p>The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.</p>
<p><b>Blanks</b></p> <p>Results have not been corrected for field or laboratory blanks.</p>
<p><b>Background</b></p> <p>The Background is the amount of debris that is present in the sample. This debris consists of skin cells, dirt, dust, pollen, drywall dust and other organic and non-organic matter. As the background density increases, the likelihood of spores, especially small spores such as those of <i>Aspergillus</i> and <i>Penicillium</i> may be obscured. The background is rated on a scale of 1 to 5 and each level is determined as follows:</p> <p><b>NBD:</b> No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)</p> <p>1 : &lt;5% of field occluded. No spores will be uncountable.</p> <p>2 : 5-25% of field occluded.</p> <p>3 : 25-75% of field occluded.</p> <p>4 : 75-90% of field occluded.</p> <p>5 : &gt;90% of field occluded. Suggested recollection of sample.</p>
<p><b>Fragments</b></p> <p>Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.</p>
<p><b>Control Comparisons</b></p> <p>There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.</p>
 <p><b>Water Damage Indicator</b> (Blue)</p> <p><b>Common Allergen</b> (Green)</p> <p><b>Slightly Higher than Baseline</b> (Orange)</p> <p><b>Significantly Higher than Baseline</b> (Red)</p> <p><b>Ratio Abnormality</b> (Violet)</p> <p><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</p> <p><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</p> <p><b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</p> <p><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</p> <p><b>Violet:</b> The types of spores found indoors should be similar to the ones that were identified in the baseline sample. Significant increases (more than 25%) in the ratio of a particular spore type may indicate the presence of abnormal levels of mold, even if the total number of spores of that type is lower in the indoor environment than it was outdoors.</p>
<p><b>Color Coding</b></p> <p>Fungi that are present in indoor samples at levels lower than 200 per cubic meter are not color coded on the report, unless they are one of the water damage indicators.</p>

**Jim McManus**  
**ALIS Environmental Inc.**  
 1027 Koontz Haven Rd  
 Pinnacle, NC 27043  
 (336) 368-4500

**201-2101-01**  
 Sellars-Gunn Education Center  
 612 Apple St.  
 Burlington, NC 27217

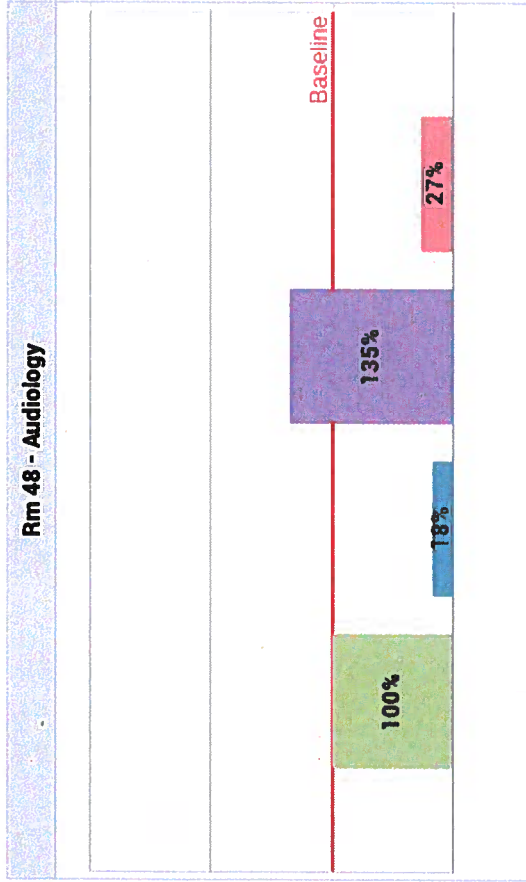
**#21001140**

**Spore Counts - Pie Charts**



Ascospores	Basidiospores	Cladosporium	Epicoccum	Myxomycetes





**Ascospores**

**Habitat:** A large group consisting of more than 3000 species of fungi. Common plant pathogens and outdoor numbers become very high following rain. Most of the genera are indistinguishable by spore trap analysis and are combined on the report.  
**Effects:** Health affects are poorly studied, but many are likely to be allergenic.

**Basidiospores**

**Habitat:** A common group of Fungi that includes the mushrooms and bracket fungi. They are saprophytes and plant pathogens. In wet conditions they can cause structural damage to buildings.  
**Effects:** Common allergens and are also associated with hypersensitivity pneumonitis.

**Cladosporium**

**Habitat:** One of the most common genera worldwide. Found in soil and plant debris and on the leaf surfaces of living plants. The outdoor numbers are lower in the winter and often relatively high in the summer, especially in high humidity. The outdoor numbers often spike in the late afternoon and evening. Indoors, it can be found growing on textiles, wood, sheetrock, moist window sills and in HVAC supply ducts.  
**Effects:** A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

**Epicoccum**

**Habitat:** It is found in soil and plant litter and is a plant pathogen. It can grow indoors on a variety of substrates, including paper and textiles and is commonly found on wet drywall.  
**Effects:** It is a common allergen. No cases of infection have been reported in humans.

**Myxomycetes**

**Habitat:** Found on decaying plant material and as a plant pathogen.  
**Effects:** Some allergenic properties reported, but generally pose no health concerns to humans.







March 5, 2021

Dr. Todd Thorpe  
Alamance-Burlington School System  
1712 Vaughn Road  
Burlington, North Carolina

Subject: Report of Airborne Microbial Sampling  
Central Office – Finberg Office  
1712 Vaughn Road  
Burlington, North Carolina  
Project No.: 201-2103-02

Dear Dr. Thorpe:

ALIS has completed the airborne microbial sampling at the Central Office located at 1712 Vaughn Road in Burlington, North Carolina. On March 2, 2021, at your request, we conducted air sampling for the presence of airborne fungi at the subject property. The purpose of our sampling was to determine the presence and species of airborne fungi and the degree of concentration within the area of concern. One air sampling pump was calibrated and placed inside the office of Ms. Finberg, and one sample was collected from outside the building as a reference (baseline) for comparison to the inside conditions. No other areas of the facility were included in the scope of work.

#### Results

The laboratory results found the cumulative total spore counts on the indoor sample to be greater than those found on the outdoor sample. The species Cladosporium and Myxomycetes were detected on the indoor sample but not on the outdoor. Aspergillus/Penicillium was detected in greater numbers indoors than outdoors. Although visible growth on interior finishes and within the ceiling plenum was not observed during our visit, nor did we detect the presence of musty odors, the results of the spore trap analysis suggests mold growth may be active. We recommend the window units be cleaned and inspected for leaks, the carpet cleaned, and the heating unit be cleaned and inspected for proper drainage and general level of performance-efficiency. Temperature and relative humidity readings were obtained from inside and outside the building. The following was recorded:

- | <u>Indoor:</u> | <u>Outdoor:</u> |
|----------------|-----------------|
| • T: 73.9°     | T: 46.4°        |
| • RH: 29.3%    | RH: 27.0%       |

Sample results and additional information on fungal spores are attached to this report: "Spore Trap Analysis."

March 5, 2021

### Sampling Methodology

Non-viable samples were collected with a spore trap slide using Allergenco-D Cassettes mounted to a sampling pump. The cassettes contain glass slides that are coated with a sticky substance that captures airborne particulates that impinge on the slides. The air samples were collected at 15 liters per minute for 10 minutes. Calibration of sampling equipment was performed with a precision rotameter (a secondary calibration source). Rotameters are calibrated against a primary standard. Field calibration was performed before and after sampling. The air samples were sealed for transport to Hayes Microbial Consulting in Midlothian, Virginia for analysis. Hayes Microbial is a participant in the American Industrial Hygiene Association, Laboratory Accreditation Program (AIHA-LAP) for Environmental Microbiology.

### Background Information on Mold in Buildings

Mold spores exist normally in outdoor and indoor air and can be measured in air and carpets of normal homes, office buildings, hospitals and schools. Naturally occurring sources of mold spores include soil, plants and other sources. The air concentration of these normally occurring mold spores is dependent on the season, environmental conditions and other factors. Elevated levels of mold in building materials may occur if chronic moist conditions from water leaks, floods, chronic high relative humidity, or malfunctioning heating, ventilation or air conditioning systems, allow moisture to remain for prolonged periods on organic matter in the presence of warm ambient temperatures. Under these conditions, low levels of fungal spores in air, plants or other sources, may proliferate on cellulose containing materials such as carpets, wallboard, wood, paper or dusty surfaces (which may serve as a food source), and result in mold contamination. Many fungal spores are allergenic to susceptible persons exposed, though individual susceptibility varies greatly. There is no practical way to eliminate all mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.

ALIS appreciates the opportunity to be of service to you on this project. We would welcome the opportunity to discuss at your convenience, any of the results contained in this report. Please contact us if you have any questions or if we may be of further service.

Sincerely,  
ALIS ENVIRONMENTAL, INC.



James P. McManus  
Vice-President

Attachment: "Spore Trap Analysis"



#21007163

Analysis Report prepared for

# ALIS Environmental Inc.

1027 Koontz Haven Rd  
Pinnacle, NC 27043

Phone: (336) 368-4500

201-2103-02  
Central Office  
1712 Vaughn Rd.  
Burlington, NC 27217

Collected: March 2, 2021  
Received: March 3, 2021  
Reported: March 3, 2021



EPA Laboratory ID: VA01419

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 3 samples by FedEx in good condition for this project on March 3rd, 2021.

The results in this analysis pertain only to this job, collected on the stated date, and should not be used in the interpretation of any other job. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC..

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

Steve Hayes, BSMT (ASCP)  
Laboratory Director  
Hayes Microbial Consulting, LLC.



Lab ID: #188863



DPH License: #PH-0198

Sample Number	3015	7119	5399			
Sample Name	Finberg Office	Outside	Blank			
Sample Volume	150.00 liter	150.00 liter	0.00 liter			
Reporting Limit	7 spores/m <sup>3</sup>	7 spores/m <sup>3</sup>	1 spore/m <sup>3</sup>			
Background	3	2	NBD			
Fragments	ND	ND	ND			
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria	12	80	25.5%			
Ascospores	26	173	55.3%			
Aspergillus Penicillium	4	27	8.5%			
Basidiospores						
Bipolaris Drechslera						
Chaetomium	3	20	6.4%			
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Memnoniella						
Myxomycetes	2	13	4.3%			
Pithomyces						
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
<b>Total</b>	<b>47</b>	<b>313</b>	<b>100%</b>	<b>ND</b>	<b>174</b>	<b>100%</b>

Water Damage Indicator Common Allergen Slightly Higher than Baseline Significantly Higher than Baseline Ratio Abnormality

Collected: Mar 2, 2021 Received: Mar 3, 2021 Reported: Mar 3, 2021

Project Analyst: Connor Galliot, BS Date: 03 - 03 - 2021

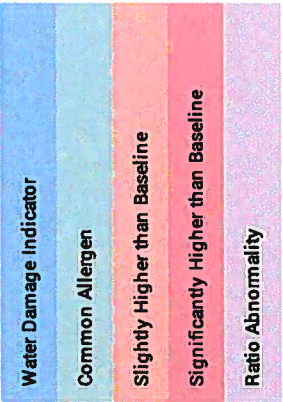
Reviewed By: Steve Hayes, BSMT Date: 03 - 03 - 2021

Signature: *Stephen A. Hayes*

3005 East Boundary Terrace, Suite F. Midlothian, VA. 23112 (804) 562-3435 contact@hayesmicrobial.com



**Spore Trap Information**

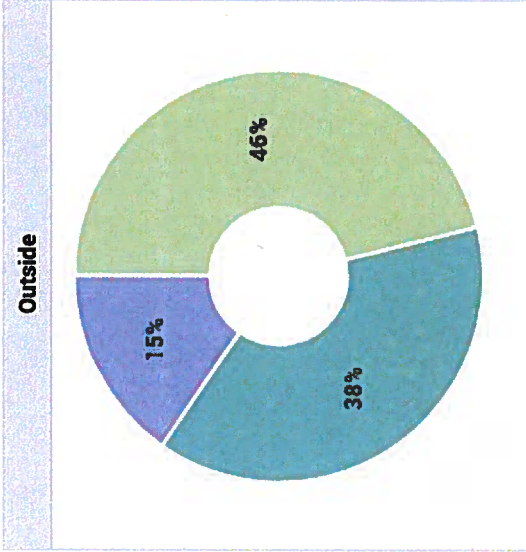
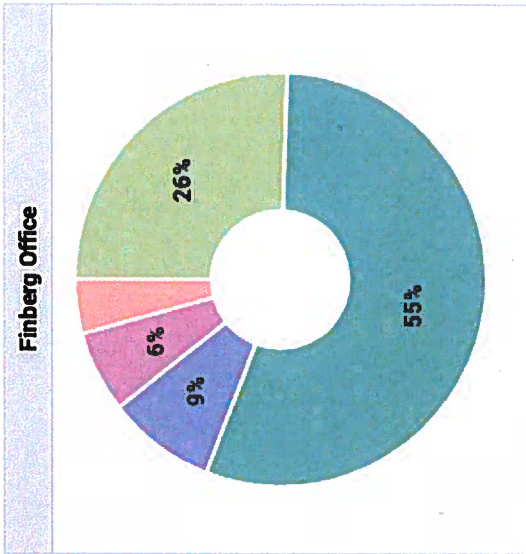
<p><b>Reporting Limit</b></p> <p>The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.</p>
<p><b>Blanks</b></p> <p>Results have not been corrected for field or laboratory blanks.</p>
<p><b>Background</b></p> <p>The Background is the amount of debris that is present in the sample. This debris consists of skin cells, dirt, dust, pollen, drywall dust and other organic and non-organic matter. As the background density increases, the likelihood of spores, especially small spores such as those of Aspergillus and Penicillium may be obscured. The background is rated on a scale of 1 to 5 and each level is determined as follows:</p> <p><b>NBD:</b> No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)</p> <p>1 : &lt;5% of field occluded. No spores will be uncountable.          2 : 5-25% of field occluded.          3 : 25-75% of field occluded.          4 : 75-90% of field occluded.          5 : &gt;90% of field occluded. Suggested recollection of sample.</p>
<p><b>Fragments</b></p> <p>Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.</p>
<p><b>Control Comparisons</b></p> <p>There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.</p>
 <p><b>Water Damage Indicator</b> (Blue)</p> <p><b>Common Allergen</b> (Green)</p> <p><b>Slightly Higher than Baseline</b> (Orange)</p> <p><b>Significantly Higher than Baseline</b> (Red)</p> <p><b>Ratio Abnormality</b> (Violet)</p> <p><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</p> <p><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</p> <p><b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</p> <p><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</p> <p><b>Violet:</b> The types of spores found indoors should be similar to the ones that were identified in the baseline sample. Significant increases (more than 25%) in the ratio of a particular spore type may indicate the presence of abnormal levels of mold, even if the total number of spores of that type is lower in the indoor environment than it was outdoors.</p>
<p><b>Color Coding</b></p> <p>Fungi that are present in indoor samples at levels lower than 200 per cubic meter are not color coded on the report, unless they are one of the water damage indicators.</p>

**Jim McManus**  
**ALIS Environmental Inc.**  
 1027 Koontz Haven Rd  
 Pinnacle, NC 27043  
 (336) 368-4500

**201-2103-02**  
 Central Office  
 1712 Vaughn Rd.  
 Burlington, NC 27217

**#21007163**

**Spore Counts - Pie Charts**



Ascospores	Aspergillus/Penicillium	Basidiospores	Cladosporium	Myxomycetes



**HAYES**  
 MICROBIAL CONSULTING 3005 East Boundary Terrace, Suite F. Midlothian, VA. 23112

(804) 562-3435

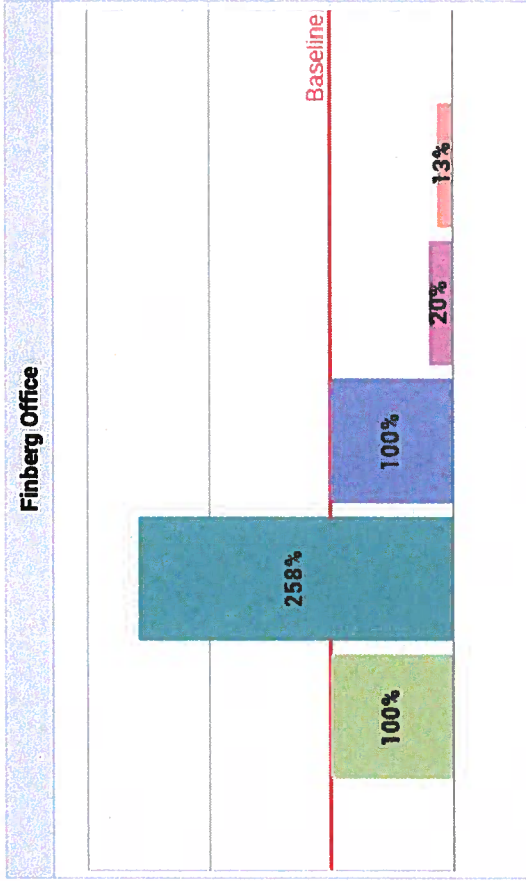
contact@hayesmicrobial.com

**Jim McManus**  
**ALIS Environmental Inc.**  
1027 Koontz Haven Rd  
Pinnacle, NC 27043  
(336) 368-4500

**201-2103-02**  
Central Office  
1712 Vaughn Rd.  
Burlington, NC 27217

**#21007163**

**Spore Counts - Bar Graphs**





**Organism Descriptions**

**Ascospores**

**Habitat:** A large group consisting of more than 3000 species of fungi. Common plant pathogens and outdoor numbers become very high following rain. Most of the genera are indistinguishable by spore trap analysis and are combined on the report.

**Effects:** Health affects are poorly studied, but many are likely to be allergenic.

**Aspergillus | Penicillium**

**Habitat:** The most common fungi isolated from the environment. Very common in soil and on decaying plant material. Are able to grow well indoors on a wide variety of substrates.

**Effects:** This group contains common allergens and many can cause hypersensitivity pneumonitis. They may cause extrinsic asthma, and many are opportunistic pathogens. Many species produce mycotoxins which may be associated with disease in humans and other animals. Toxin production is dependent on the species, the food source, competition with other organisms, and other environmental conditions.

**Basidiospores**

**Habitat:** A common group of Fungi that includes the mushrooms and bracket fungi. They are saprophytes and plant pathogens. In wet conditions they can cause structural damage to buildings.

**Effects:** Common allergens and are also associated with hypersensitivity pneumonitis.

**Cladosporium**

**Habitat:** One of the most common genera worldwide. Found in soil and plant debris and on the leaf surfaces of living plants. The outdoor numbers are lower in the winter and often relatively high in the summer, especially in high humidity. The outdoor numbers often spike in the late afternoon and evening. Indoors, it can be found growing on textiles, wood, sheetrock, moist window sills and in HVAC supply ducts.

**Effects:** A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

**Myxomycetes**

**Habitat:** Found on decaying plant material and as a plant pathogen.

**Effects:** Some allergenic properties reported, but generally pose no health concerns to humans.



TRINITY ENVIRONMENTAL, LLC  
3747 EVERGREEN DRIVE  
TRINITY, NORTH CAROLINA 27370

INDUSTRIAL HYGIENE REPORT

**Project:** Asbestos Abatement  
Alamance-Burlington School System  
Eastlawn Elementary School  
502 North Graham Hopedale Road  
Burlington, North Carolina

**Client:** Abatemaster, LLC  
6022 Old UD Hwy 52  
Lexington, NC 27295

**Contractor:** Abatemaster, LLC  
6022 Old UD Hwy 52  
Lexington, NC 27295

**Project I.D. #:** 21-014242

**Project Date:** March 24, 2021

**Report Date:** March 26, 2021

**Technician:** James Buchanan - NC Accred. Air Monitor No. 80044

**I. SUMMARY**

Trinity Environmental has performed a visual inspection and air sampling following the removal of asbestos containing building materials from the Eastlawn Elementary School located at 502 N. Graham Hopedale Road in Burlington, North Carolina. Removed was Room #22 was approximately 675 square feet of 9" floor tile and tile mastic from a concrete base. The removal was completed in a negative pressured enclosure using reported non-friable removal methods.

The work area was visually inspected and no remaining suspect material was observed. One air sample was collected within the work area and was analyzed by EMSL Analytical using the NIOSH 7400 Method with phase contrast microscopy. Results indicate the airborne fiber level to be below 0.0019 fibers per square centimeter for the period sampled. Based on the satisfactory visual inspection and air sample results all below the North Carolina acceptable level of 0.01f/cc for a public area we recommend the work area for occupancy.



**EMSL Analytical, Inc.**

706 Gralin Street Kenersville, NC 27284  
 Tel/Fax: (336) 992-1025 / (336) 992-4175  
 http://www.EMSL.com / greensborolab@emsl.com

EMSL Order: 022102158  
 Customer ID: TRNY34  
 Customer PO:  
 Project ID:

Attention: Jim Buchanan  
 Trinity Environmental  
 PO Box 45  
 Trinity, NC 27370

Phone: (336) 402-0099  
 Fax:  
 Received Date: 03/25/2021 03:10 PM  
 Analysis Date: 03/26/2021  
 Collected Date:

Project: Eastlawn Elementary

**Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 3, 6/15/2019**

Sample	Location	Sample Date	Volume (L)	Fibers	Fields	LOD (fib/cc)	Fibers/mm <sup>3</sup>	Fibers/cc	Notes
1 022102158-0001	Room #22- Center		1397	<5.5	100	0.0019	<7.01	<0.0019	

This method requires the submission of field blanks with each sample set. No discernable field blanks were submitted, samples are not blank corrected.

Analyst(s)  
 Stephen Bennett PCM 1

Stephen Bennett, Laboratory Manager  
 or other Approved Signatory

**II. METHODOLOGY**

Air sampling was performed using Trinity Environmental air sampling procedures. Fiber counting was performed with phase contrast microscopy. The procedures used were adapted from NIOSH Method 7400.

**Abatement Area Final Visual and Clearance**

A visual inspection of the abatement area was conducted following the guidelines:

- Guidance for Controlling Asbestos-Containing Materials in Buildings, USEPA 560/5-85-024, June 1985.
- Standard Practice for Visual Inspection of Asbestos Abatement Projects, ASTM Designation: E 1368-90.
- Measuring Airborne Asbestos Following an Abatement Action. USEPA 600/4-85-049, November 1985.

### III. RESULTS

1. Air Monitoring/Fiber Analysis - Attached.
2. Final Clearance Notification - Attached.
3. EMSL Analytical Report #022102158

Prepared By:



James Buchanan, CIE  
NC Accredited Air Monitor No. 80044



TRINITY ENVIRONMENTAL  
3747 EVERGREEN DRIVE  
TRINITY, NC 27370

**Final Visual Inspection and Air Sampling**

Project: Eastlawn Elementary School Date: 3/24/2021

Location: 502 N. Graham Hopedale Road, Burlington, North Carolina

Contractor: Abatemaster, Inc.

Final Visual Inspection No. 1 Time Started 14:35 Time Finished 15:05

**VISUAL INSPECTION**

AREA	Residual Dust	Pass/Fail
Removal Room #22 9" floor tile and tile mastic; +/-675 SF	None Observed	Pass

**AIR SAMPLING**

Sample ID No.	Sample Location	Fibers per cc	Pass / Fail
1	Room #22 - center	<0.0019	Pass

These results are for the abatement area and this final report may be invalidated upon further demolition, renovation or other construction that occurs in the abatement area after visual and final air clearance.

LABORATORY: EMSL Analytical, Inc. 706 Galin Street Kernersville, NC

IHPAT Laboratory Id: 102104-0 Report #022102158

This inspection report is not valid without the attached Laboratory Report

Comments: Negative Pressure Enclosure

Reported non-friable removal

*James E Buchanan*

80044

Signature of Accredited Air Monitor / NC No.

90054

Signature of Supervising Air Monitor / NC No.



# EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

http://www.EMSL.com / greensborolab@emsl.com

EMSL Order: 022102158

Customer ID: TRNY34

Customer PO:

Project ID:

Attention: Jim Buchanan  
Trinity Environmental  
PO Box 45  
Trinity, NC 27370

Phone: (336) 402-0099  
Fax:  
Received Date: 03/25/2021 03:10 PM  
Analysis Date: 03/26/2021  
Collected Date:

Project: Eastlawn Elementary

## Test Report: Fiber Count by Phase Contrast Microscopy (PCM), NIOSH 7400 Method - A Rules, Revision 3, Issue 3, 6/15/2019

Sample	Location	Sample Date	Volume (L)	Fibers	Fields	LOD (fib/cc)	Fibers/mm <sup>2</sup>	Fibers/cc	Notes
1	Room #22- Center		1397	<5.5	100	0.0019	<7.01	<0.0019	

022102158-0001

This method requires the submission of field blanks with each sample set. No discernable field blanks were submitted, samples are not blank corrected.

Analyst(s):

Stephen Bennett PCM 1

Stephen Bennett, Laboratory Manager  
or other Approved Signatory

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Intra-laboratory Sr values: 5-20 fibers = 0.26, 21-50 fibers = 0.22, 51-100 fibers = 0.15. Inter-laboratory Sr values (Average of EMSL round robin data) = 0.34.  
Samples analyzed by EMSL Analytical, Inc. Kernersville, NC Virginia 3333-000228

Initial report from: 03/26/2021 02:29 PM





# EMSL Analytical, Inc.

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Tel/Fax: (336) 992-1025 / (336) 992-4175  
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EMSL Order: 022106231  
Customer ID: TRNY34  
Customer PO:  
Project ID:

**Attention:** Jim Buchanan  
Trinity Environmental  
PO Box 45  
Trinity, NC 27370  
**Project:** Andrew's Elementary

**Phone:** (336) 402-0099  
**Fax:**  
**Collected Date:**  
**Received Date:** 08/23/2021 08:00 AM  
**Analyzed Date:** 08/23/2021

### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	022106231-0001		
Client Sample ID:	1		
Volume (L):	75		
Sample Location:	Room 155		
<b>Spore Types</b>	<b>Raw Count</b>	<b>Count/M<sup>3</sup></b>	<b>% of Total</b>
Alternaria (Ulocladium)	-	-	-
Ascospores	-	-	-
Aspergillus/Penicillium	-	-	-
Basidiospores	-	-	-
Bipolaris++	-	-	-
Chaetomium	-	-	-
Cladosporium	-	-	-
Curvularia	-	-	-
Epicoccum	-	-	-
Fusarium	-	-	-
Ganoderma	-	-	-
Myxomycetes++	-	-	-
Pithomyces++	-	-	-
Rust	-	-	-
Scopulariopsis/Microascus	-	-	-
Stachybotrys/Memnoniella	-	-	-
Unidentifiable Spores	-	-	-
Zygomycetes	-	-	-
<b>Total Fungi</b>	-	<b>None Detect</b>	-
Hyphal Fragment	-	-	-
Insect Fragment	-	-	-
Pollen	-	-	-
Analyt. Sensitivity 600x	-	42	-
Analyt. Sensitivity 300x	-	13*	-
Skin Fragments (1-4)	-	1	-
Fibrous Particulate (1-4)	-	-	-
Background (1-5)	-	1	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

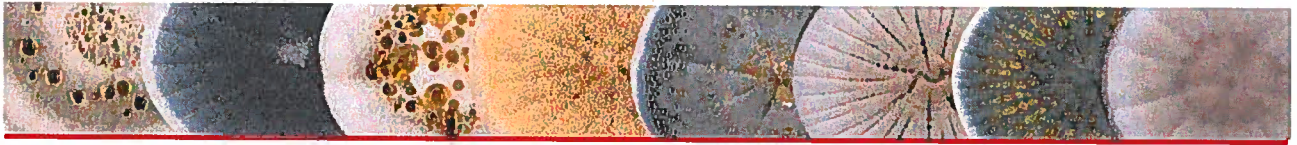
*Nicole Shutts*  
Nicole Shutts, Microbiology Laboratory Manager  
or other Approved Signatory

No discernable field blank was submitted with this group of samples.

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Samples analyzed by EMSL Analytical, Inc. Kernersville, NC

Initial report from: 08/23/2021 05:36 PM

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)



# EXPANDED FUNGAL REPORT <sup>TM</sup>

Prepared Exclusively For

Abatemaster, LLC  
6022 Old US Hwy 52  
Lexington, NC 27295  
Phone:336-731-4396

**Report Date:** 8/23/2021  
**Project:** Andrews Elementary School  
**EMSL Order:** 412107425

AIHA-LAP, LLC-EMLAP Accredited  
#192283



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**Attn:** Doug Riggs  
Abatemaster, LLC  
6022 Old US Hwy 52  
Lexington, NC 27295

**EMSL Order:** 412107425  
**Customer ID:** MAST51  
**Collected:** 8/20/2021  
**Received:** 8/23/2021  
**Analyzed:** 8/23/2021

**Proj:** Andrews Elementary School

### 1. Description of Analysis

#### **Analytical Laboratory**

EMSL Analytical, Inc. (EMSL) is a nationwide, full service, analytical testing laboratory network providing Asbestos, Mold, Indoor Air Quality, Microbiological, Environmental, Chemical, Forensic, Materials, Industrial Hygiene and Mechanical Testing services since 1981. Ranked as the premier independently owned environmental testing laboratory in the nation, EMSL puts analytical quality as its top priority. This quality is recognized by many well-respected federal, state and private accrediting agencies, and assured by our high quality personnel, including many Ph.D. microbiologists and mycologists.

EMSL is an independent laboratory that performed the analysis of these samples. EMSL did not conduct the sampling or site investigation for this report. The samples referenced herein were analyzed under strict quality control procedures using state-of-the-art microbiological methods. The analytical methods used and the data presented are scientifically and legally defensible.

The laboratory data is provided in compliance with ISO-IEC 17025 guidelines for the particular test(s) requested, including any associated limitations for the methods employed. These data are intended for use by professionals having knowledge of the testing methods necessary to interpret them accurately.

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EMSL Order: 412107425  
Customer ID: MAST51  
Collected: 8/20/2021  
Received: 8/23/2021  
Analyzed: 8/23/2021

Proj: Andrews Elementary School

### Air Samples - Spore traps:

Spore traps are commercially available sampling devices that capture airborne particles on an adhesive slide. Air is pulled through the device using a vacuum pump. Spores, as well as other airborne particles, are impacted on the collection adhesive. Using spore trap collection methods has inherent limitations. These collection methods are biased towards larger spore sizes.

The analysis for total spore counts is a direct microscopic examination and does not include culturing or growing the fungi. Therefore, the results include both viable and non-viable spores. Some fungal groups produce similar spore types that cannot be distinguished by direct microscopic examination alone (i.e., *Aspergillus/Penicillium*, and others). Other spore types may lack distinguishing features that aid in their identification. These types are grouped into larger categories such as Ascospores or Basidiospores.

Fungal spores are identified and grouped by morphological characteristics including color, shape, septation, ornamentation, and fruiting structures (if present) which are compared to published mycological identification keys and texts. EMSL reports provide spore counts per cubic meter of air to three significant figures. Please note that each spore category is reported to three significant figures. Due to rounding and the application of three significant figures the sum of the individual spore numbers may not equal the total spore count on the report. EMSL does not maintain responsibility for final volume concentrations (counts/m<sup>3</sup>) since this volume is provided by the field collector and can not be verified by EMSL.

EMSL analyzes spore traps using phase contrast microscopy. There is a wide choice of collection devices (Air-O-Cell, Micro-5, Burkhard, etc.) on the market. Differences in analytical method may exist between spore trap devices.

Spore trap results are reported in spores per cubic meter of air. Due to the other airborne particles collected with the spores, EMSL reports a background particle density. Background density is an indication of overall particulate matter present on the sample (i.e. dust in the air). High background concentrations may obscure spores such as the *Penicillium/Aspergillus* group. The rating system is from 1-5 with 1 = 1 - 25% of the background obscured by material, 2 = 26 - 50%, 3 = 51 - 75%, 4 = 76% - 99%, 5 = 100% or overloaded. A background rating of 4 or higher should be regarded as a minimum count since the actual concentrations may be higher than those reported. EMSL will not be held responsible for overloading of samples. Sample volumes are left to the discretion of the company or persons conducting the fieldwork.

Skin fragment density is the percentage of skin cells making up the total background material, 1 = 1 - 25%, 2 = 26 - 50%, 3 = 51 - 75%, 4 = 76-100%. Skin fragment density is considered an indication of the general cleanliness in the area sampled. It has been estimated that up to 90% of household dust consists of dead skin cells.

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**Attn:** Doug Riggs  
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6022 Old US Hwy 52  
Lexington, NC 27295

**EMSL Order:** 412107425  
**Customer ID:** MAST51  
**Collected:** 8/20/2021  
**Received:** 8/23/2021  
**Analyzed:** 8/23/2021

**Proj:** Andrews Elementary School

### 2. Analytical Results

See attached data reports and charts.

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EMSL Order: 412107425  
Customer ID: MAST51  
Collected: 8/20/2021  
Received: 8/23/2021  
Analyzed: 8/23/2021

Proj: Andrews Elementary School

## Spore Trap ASSESSMENT Report™ Air-O-Cell™ Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

Particle Identification	Raw Count	(Count/m <sup>3</sup> )	% of Total	Interpretation Guideline	
412107425-0001	Altermaria (Ulocladium)	1*	7*	0.1	
	Ascospores	22	450	3.9	
Client Sample ID	Aspergillus/Penicillium	-	-	-	
1	Basidiospores	480	9850	85.7	
	Bipolaris++	-	-	-	
	Chaetomium	-	-	-	
Location	Cladosporium	41	840	7.3	
Outside	Curvularia	2	40	0.3	
	Epicoccum	2*	10*	0.1	
Sample Volume (L)	Fusarium	2	40	0.3	
150	Ganoderma	2	40	0.3	
	Myxomycetes++	2*	10*	0.1	
	Piithomyces++	1	20	0.2	
Sample Type	Rust	-	-	-	
Background	Scopulariopsis/Microascus	-	-	-	
	Stachybotrys/Memnoniella	-	-	-	
Comments	Unidentifiable Spores	-	-	-	
	Blakeslea/Choanephora	3	60	0.5	
	Cercospora++	1	20	0.2	
	Paecilomyces-like	3	60	0.5	
	Pyricularia	2	40	0.3	
	<b>Total Fungi</b>	<b>564</b>	<b>11487</b>	<b>100</b>	
	Hyphal Fragment	-	-	-	
	Insect Fragment	-	-	-	
	Pollen	1	20	-	
Analytical Sensitivity 600x: 21 counts/cubic meter		Skin Fragments: 1		1 to 4 (low to high)	
Analytical Sensitivity 300x *: 7* counts/cubic meter		Fibrous Particulate: 1		1 to 4 (low to high)	
		Background: 1		1 to 4 (low to high); 5 (overloaded)	

- Not commonly found growing indoors, spores likely come from outside.
- Spores reported to be able to cause allergies in individuals.
- Potential for mycotoxin production exists with these fungi.
- These fungi are considered water damage indicators.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category

Lee Plumley, Laboratory Manager  
or Other Approved Signatory

Initial report from: 08/23/2021 14:27:52

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Samples analyzed by EMSL Analytical, Inc. Pineville, NC AIHA-LAP, LLC-EMLAP Accredited #192283

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Attn: Doug Riggs  
Abatemaster, LLC  
6022 Old US Hwy 52  
Lexington, NC 27295

EMSL Order: 412107425  
Customer ID: MAST51  
Collected: 8/20/2021  
Received: 8/23/2021  
Analyzed: 8/23/2021

Proj: Andrews Elementary School

## Spore Trap ASSESSMENT Report™ Air-O-Cell™ Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

	Particle Identification	Raw Count	(Count/m <sup>3</sup> )	% of Total	Interpretation Guideline
412107425-0002	Alternaria (Ulocladium)	-	-	-	
	Ascospores	-	-	-	
<b>Client Sample ID</b>	Aspergillus/Penicillium	158	3240	96.2	<b>ELEVATED</b>
2	Basidiospores	-	-	-	
	Bipolaris++	-	-	-	
	Chaetomium	-	-	-	
<b>Location</b>	Cladosporium	5	100	3	Acceptable
Rm 105	Curvularia	1	20	0.6	Acceptable
	Epicoccum	-	-	-	
<b>Sample Volume (L)</b>	Fusarium	-	-	-	
150	Ganoderma	-	-	-	
	Myxomycetes++	1*	7*	0.2	Acceptable
	Pithomyces++	-	-	-	
<b>Sample Type</b>	Rust	-	-	-	
Inside	Scopulariopsis/Microascus	-	-	-	
	Stachybotrys/Memnoniella	-	-	-	
<b>Comments</b>	Unidentifiable Spores	-	-	-	
	Blakeslea/Choanephora	-	-	-	
	Cercospora++	-	-	-	
	Paecilomyces-like	-	-	-	
	Pyricularia	-	-	-	
	<b>Total Fungi</b>	<b>165</b>	<b>3367</b>	<b>100</b>	<b>Acceptable</b>
	Hyphal Fragment	-	-	-	
	Insect Fragment	-	-	-	
	Pollen	-	-	-	
Analytical Sensitivity 600x: 21 counts/cubic meter		Skin Fragments: 2		1 to 4 (low to high)	
Analytical Sensitivity 300x *: 7* counts/cubic meter		Fibrous Particulate: 1		1 to 4 (low to high)	
		Background: 1		1 to 4 (low to high); 5 (overloaded)	

**Acceptable** Concentration at or below background

**Slightly Elevated** Concentration above background

**ELEVATED** Concentration 10X or more above background

Not commonly found growing indoors, spores likely come from outside.

Spores reported to be able to cause allergies in individuals.

Potential for mycotoxin production exists with these fungi.

These fungi are considered water damage indicators.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category

Lee Plumley, Laboratory Manager  
or Other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc. Pineville, NC AIHA-LAP, LLC-EMLAP Accredited #192283

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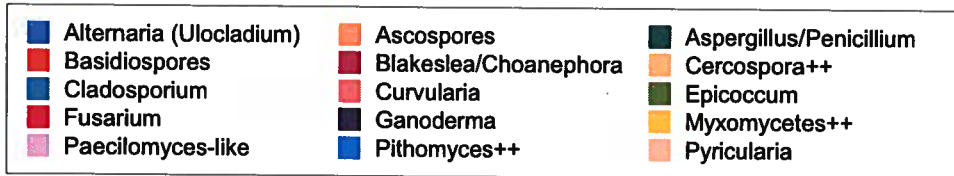
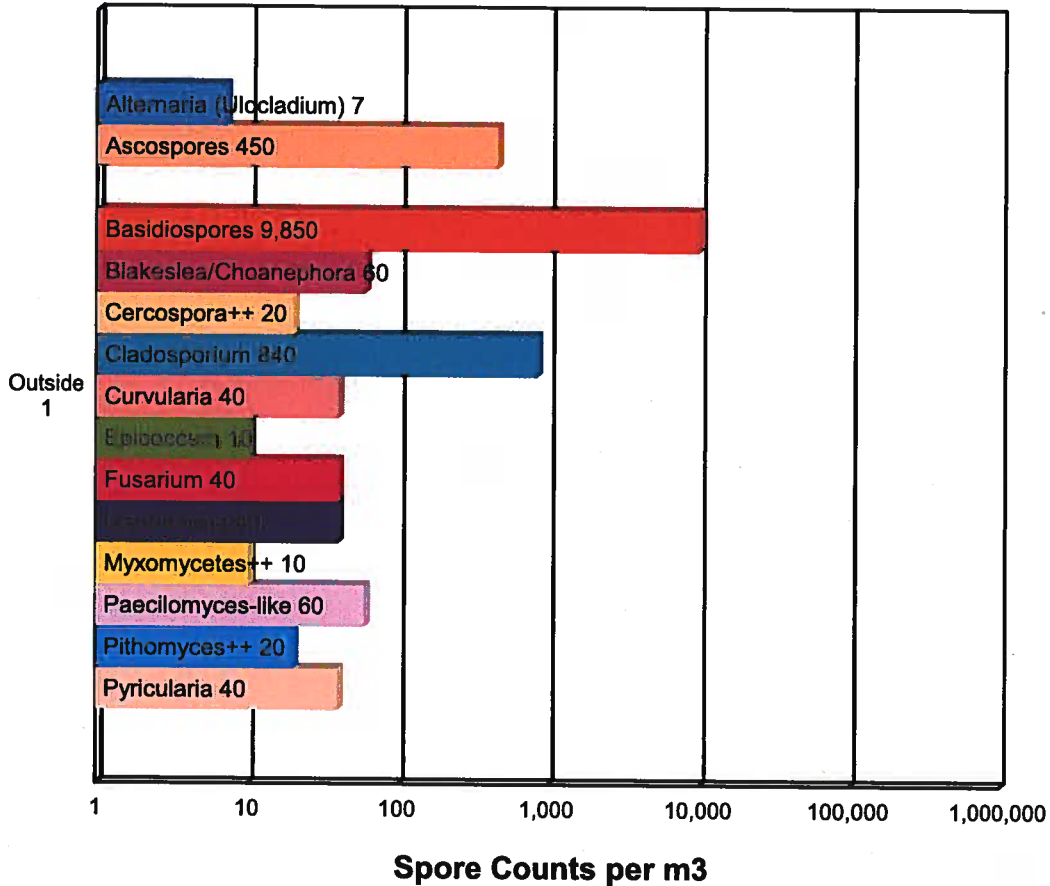
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Attn: Doug Riggs  
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6022 Old US Hwy 52  
Lexington, NC 27295

EMSL Order: 412107425  
Customer ID: MAST51  
Collected: 8/20/2021  
Received: 8/23/2021  
Analyzed: 8/23/2021

Proj: Andrews Elementary School

## Spore Trap Report: Total Counts



\* The chart is displayed using a logarithmic scale. Bar size is not directly proportional to the number of spores.

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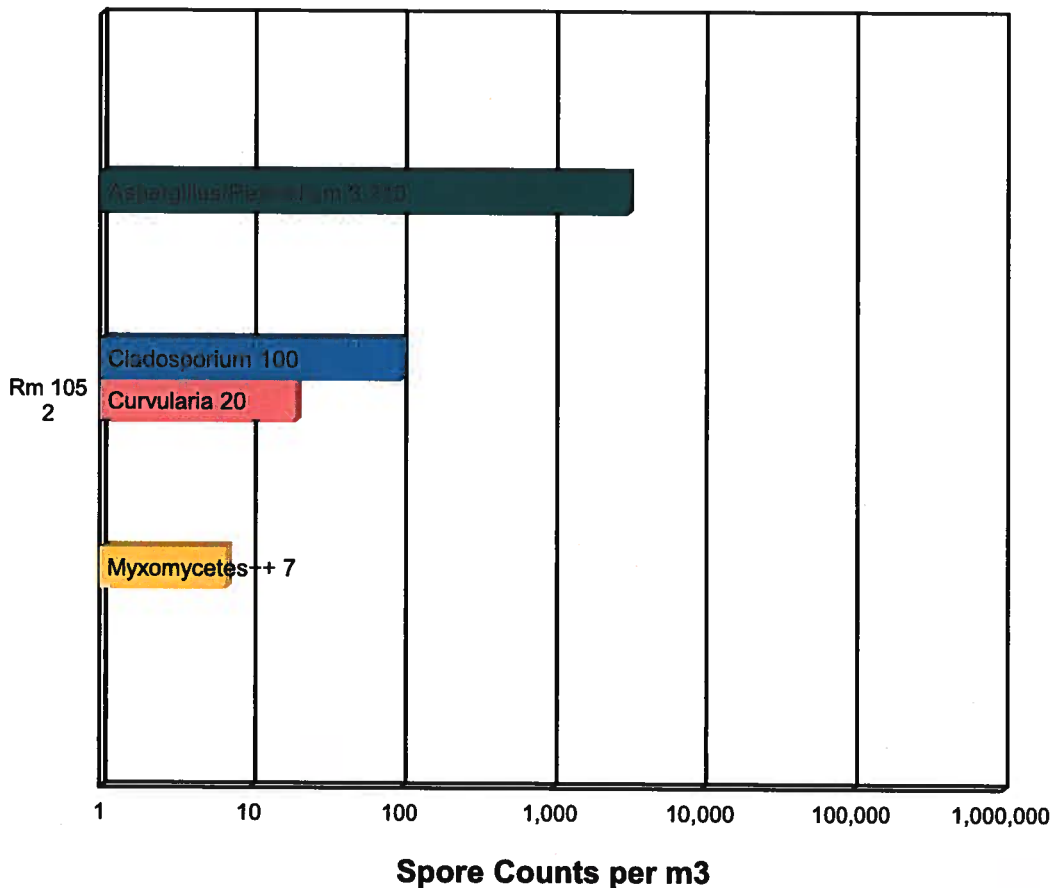
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Lexington, NC 27295

EMSL Order: 412107425  
Customer ID: MAST51  
Collected: 8/20/2021  
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Analyzed: 8/23/2021

Proj: Andrews Elementary School

## Spore Trap Report: Total Counts



■ Alternaria (Ulocladium)	■ Ascospores	■ Aspergillus/Penicillium
■ Basidiospores	■ Blakeslea/Choanephora	■ Cercospora++
■ Cladosporium	■ Curvularia	■ Epicoccum
■ Fusarium	■ Ganoderma	■ Myxomycetes++
■ Paecilomyces-like	■ Pithomyces++	■ Pyricularia

\* The chart is displayed using a logarithmic scale. Bar size is not directly proportional to the number of spores.

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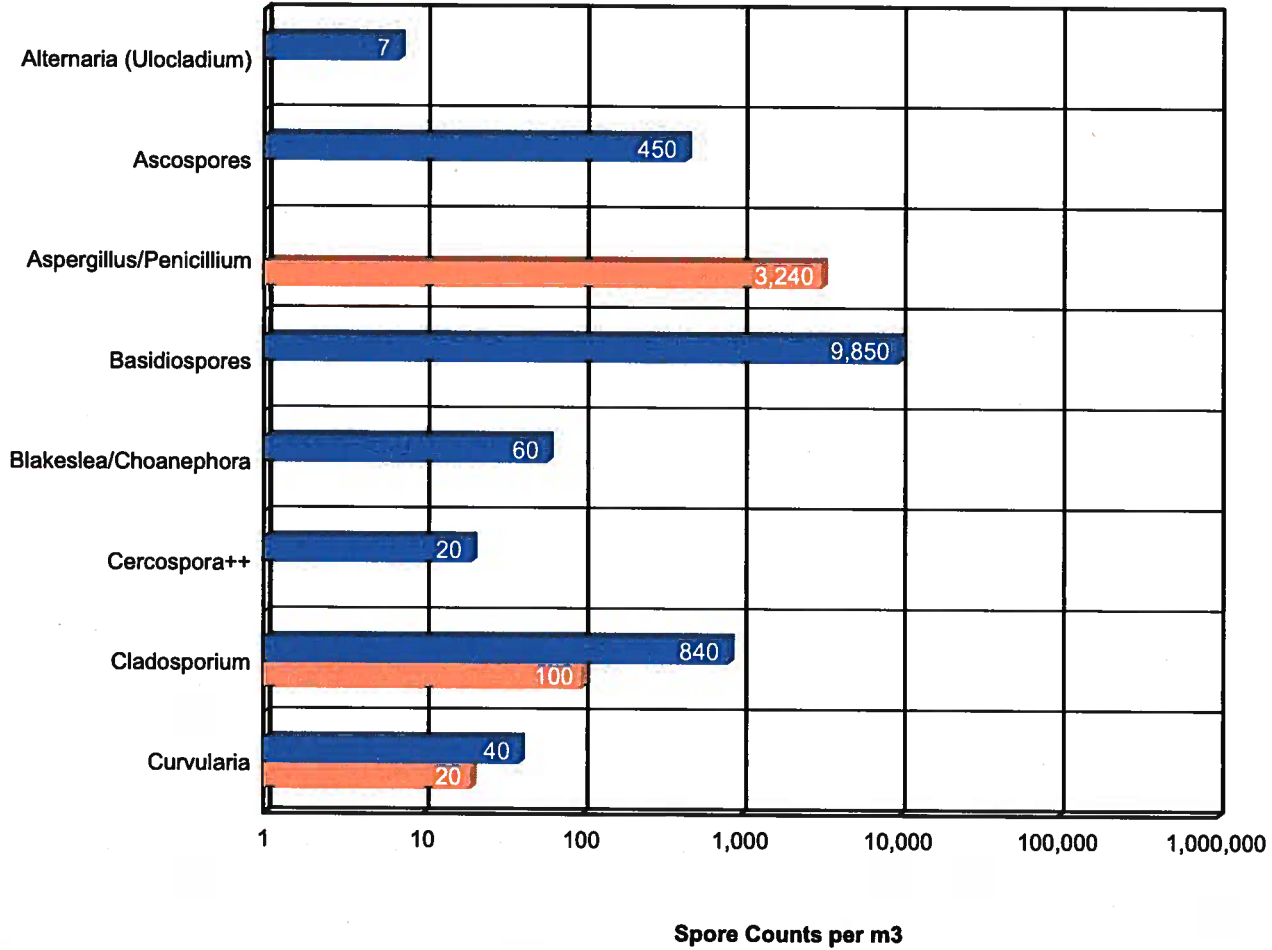
Email: [charlottelab@emsl.com](mailto:charlottelab@emsl.com)

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Lexington, NC 27295

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Collected: 8/20/2021  
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Proj: Andrews Elementary School

## Background Comparison Chart



\* The chart is displayed using a logarithmic scale. The bar size is not directly proportional to the number of spores.

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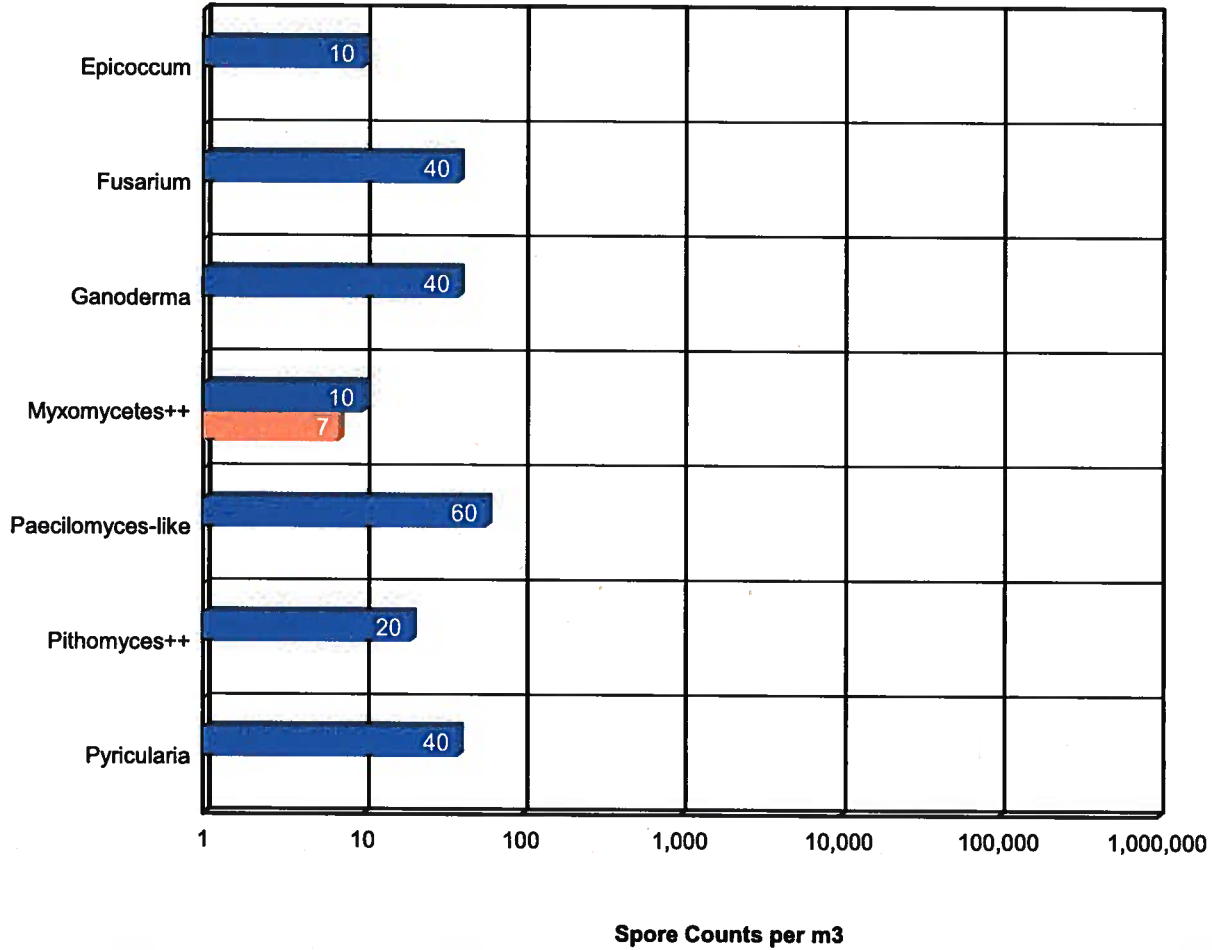
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## Background Comparison Chart



Spore Counts per m3



\* The chart is displayed using a logarithmic scale. The bar size is not directly proportional to the number of spores.

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### 3. Understanding the Results

EMSL Analytical, Inc. is an independent laboratory, providing unbiased and scientifically valid results. These data represent only a portion of an overall IAQ investigation. Visual information and environmental conditions measured during the site assessment (humidity, moisture readings, etc.) are crucial to any final interpretation of the results. Many factors impact the final results; therefore, result interpretation should only be conducted by qualified individuals. The American Conference of Governmental Industrial Hygienists (ACGIH) has published a good reference book covering sampling and data interpretation. It is entitled, Bioaerosols: Assessment and Control, 1999.

Fungal spores are found everywhere. Whether or not symptoms develop in people exposed to fungi depends on the nature of the fungal material (e.g., allergenic, toxic, or infectious), the exposure level, and the susceptibility of exposed persons. Susceptibility varies with the genetic predisposition (e.g., allergic reactions do not always occur in all individuals), age, pre-existing medical conditions (e.g., diabetes, cancer, or chronic lung conditions), use of immunosuppressive drugs, and concurrent exposures. These reasons make it difficult to identify dose/response relationships that are required to establish "safe" or "unsafe" levels (i.e., permissible exposure limits).

It is generally accepted in the industry that indoor fungal growth is undesirable and inappropriate, necessitating removal or other appropriate remedial actions. The New York City guidelines and EPA guidelines for mold remediation in schools and commercial buildings define the conditions warranting mold remediation. Always remember that water is the key. Preventing water damage or water condensation will prevent mold growth.

This report is not intended to provide medical advice or advice concerning the relative safety of an occupied space. Always consult an occupational or environmental health physician who has experience addressing indoor air contaminants if you have any questions.

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## 4. Glossary of Fungi

<b>ALTERNARIA(ULOCLADIUM)</b>	
<b>Natural Habitat</b>	Common saprobe and pathogen of plants. Typically found on plant tissue, decaying wood, and foods. Soil . Air outdoors.
<b>Suitable Substrates in the Indoor Environment</b>	Indoors near condensation (window frames, showers), House dust (in carpets, and air). Also colonizes building supplies, computer disks, cosmetics, leather, optical instruments, paper, sewage, stone monuments, textiles, wood pulp, and jet fuel
<b>Water Activity</b>	Aw =0.85-0.88 (water damage indicator)
<b>Mode of Dissemination</b>	Wind
<b>Allergic Potential</b>	Type I allergies (hay fever, asthma), Type III (hypersensitivity pneumonitis)
<b>Potential or Opportunistic Pathogens</b>	Phaeohyphomycosis (causing cystic granulomas in the skin and subcutaneous tissue). In immunocompetent patients, Alternaria colonizes the paranasal sinuses, leading to chronic hypertrophic sinusitis
<b>Industrial Uses</b>	Biocontrol of weed plants ·Biocontrol fungal plant pathogens.
<b>Potential Toxins Produced</b>	Alternariol (AOH) . Alternariol monomethylether (AME). Tenuazonic acid (TeA). Altenuene (ALT). Altertoxins (ATX)
<b>Other Comments</b>	Many species of Ulocladium have been renamed as 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
<b>References</b>	Alternaria redefined. J. Woudenberg et al., Studies in Mycology. Volume 75, June 2013, Pages 171-212

<b>ASCOSPORES</b>	
<b>Natural Habitat</b>	Everywhere in nature.
<b>Suitable Substrates in the Indoor Environment</b>	Depends on genus and species.
<b>Water Activity</b>	Depends on genus and species.
<b>Mode of Dissemination</b>	Forcible ejection or passive release and dissemination by wind or insects.
<b>Allergic Potential</b>	Depends on genus and species.
<b>Potential or Opportunistic Pathogens</b>	Depends on genus and species.
<b>Industrial Uses</b>	Depends on genus and species.
<b>Potential Toxins Produced</b>	Depends on genus and species.
<b>Other Comments</b>	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.

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<b>ASPERGILLUS/PENICILLIUM</b>	
Natural Habitat	Plant debris · Seed · Cereal crops
Suitable Substrates in the Indoor Environment	Grows on a wide range of substrates indoors · Prevalent in water damaged buildings · Foods (blue mold on cereals, fruits, vegetables, dried foods) · House dust · Fabrics · Leather · Wallpaper · Wallpaper glue
Water Activity	Aw=0.75-0.94
Mode of Dissemination	Wind · Insects
Allergic Potential	Type I (hay fever, asthma) · Type III (hypersensitivity)
Potential or Opportunistic Pathogens	Possible depending on the species.
Industrial Uses	Many depending on the species
Potential Toxins Produced	Possible depending on the species.
Other Comments	Spores of Aspergillus and Penicillium (including others such as Acremonium, Talaromyces, and Paecilomyces) are small and spherical with few distinguishing characteristics. They cannot be differentiated or speciated by non-viable impactation sampling methods. Some species with very small spores may be undercounted in samples with high background debris.

<b>BASIDIOSPORES</b>	
Natural Habitat	Forest floors. Lawns · Plants (saprobies or pathogens depending on genus)
Suitable Substrates in the Indoor Environment	Depends on genus. Wood products
Water Activity	Unknown.
Mode of Dissemination	Forcible ejection. Wind currents.
Allergic Potential	Type I allergies (hay fever, asthma) · Type III (hypersensitivity pneumonitis)
Potential or Opportunistic Pathogens	Depends on genus.
Industrial Uses	Edible mushrooms are used in the food industry.
Potential Toxins Produced	Amanitins. monomethyl-hydrazine. muscarine. ibotenic acid. psilocybin.
Other Comments	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.

<b>BLAKESLEA/CHOANEPHORA</b>	
Natural Habitat	Many Basidiomycetes form arthrospores during their mycelial stage. Geotrichum and Oidiodendron are typical ascomycete arthrospore formers. Arthrospores are formed by microfungi, and yeast-like fungi. Arthrospores are disarticulated cells of a formerly vegetative filament that function as spores.
Suitable Substrates in the Indoor Environment	Potentially on rotting vegetables, other sources unknown.
Allergic Potential	Unknown
Potential Opportunist or Pathogen	Not known to infect humans.
Potential Toxins Produced	Unknown
Free moisture required for mold growth	Unknown
Mode of Dissemination	Insects, Water Splash, Wind
Industrial Uses	Blakeslea is used as a source of beta carotene for dietary supplements and as a food additive.

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## CERCOSPORA

Natural Habitat	Parasite on higher plants, commonly causes leaf spot diseases.
Suitable Substrates in the Indoor Environment	Unknown
Water Activity	Moderate –High humidity
Mode of Dissemination	Irrigation water, Insects, Rain Wind
Allergic Potential	Unknown
Potential or Opportunistic Pathogens	Unknown
Other Comments	Includes morphologically similar spores of Cercospora, Pseudocercospora, and Septoria.

## CLADOSPORIUM

Natural Habitat	Dead plant matter. Straw. Soil. Woody plants
Suitable Substrates in the Indoor Environment	Fiberglass duct liner. Paint. Textiles. Found in high concentration in water-damaged building materials.
Water Activity	Aw 0.84-0.88
Mode of Dissemination	Air
Allergic Potential	Type I (asthma and hay fever).
Potential or Opportunistic Pathogens	Edema. keratitis. onychomycosis. pulmonary infections. Sinusitis.
Industrial Uses	Produces 10 antigens.
Potential Toxins Produced	Cladosporin and Emodin.

## CURVULARIA

Natural Habitat	A worldwide saprophytic fungi, being isolated from dead plant material and soil.
Suitable Substrates in the Indoor Environment	Paper, wood products
Free moisture required for mold growth	Unknown
Mode of Dissemination	Wind
Allergic Potential	Hay fever, asthma, allergic fungal sinusitis
Potential or Opportunistic Pathogens	In immunocompromised patients can cause cerebral abscess, endocarditis, mycetoma, ocular keratitis, onychomycosis, and pneumonia.

## EPICOCCUM

Natural Habitat	A worldwide saprophytic fungi, being isolated from dead plant material and soil.
Suitable Substrates in the Indoor Environment	Paper, textiles
Water Activity	0.86-0.90
Mode of Dissemination	Wind
Allergic Potential	Hay fever, asthma
Potential or Opportunistic Pathogens	Unknown

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<b>FUSARIUM</b>	
<b>Natural Habitat</b>	Soil. Plant pathogen causing root rot, stem rot, and wilt of many ornamental and crop plants.
<b>Suitable Substrates in the Indoor Environment</b>	Often found in humidifiers. Wet, cellulose-based building materials
<b>Water Activity</b>	Aw=0.86-0.91
<b>Mode of Dissemination</b>	Insects. Water droplets, rain. Wind when spores become dry.
<b>Allergic Potential</b>	Type I allergies (hay fever, asthma).
<b>Potential or Opportunistic Pathogens</b>	Esophageal cancer is believed to happen after consumption of <i>F. moniliforme</i> infected corn. Keratitis. Endophthalmitis. Onychomycosis. Cutaneous infections. Mycetoma. Sinusitis. Pulmonary infections. Endocarditis. Peritonitis. Central venous catheter infections. Septic arthritis. Neurological disease in horses after consumption of <i>F. moniliforme</i> infected corn. Respiratory disease in pigs after consumption of <i>F. moniliforme</i> infected corn.
<b>Industrial Uses</b>	Biological Weapon.
<b>Potential Toxins Produced</b>	Trichothecenes. Zearalenone. Fumonisin.
<b>Other Comments</b>	Major plant pathogen.
<b>Reference</b>	Atlas of Moulds in Europe causing respiratory Allergy, Foundation for Allergy Research in Europe, Edited by Knud Wilken-Jensen and Suzanne Gravesen, ASK Publishing, Denmark, 1984.

<b>GANODERMA</b>	
<b>Natural Habitat</b>	Grows on conifers and hardwoods worldwide, causing white rot, root rot, and stem rot.
<b>Suitable Substrates in the Indoor Environment</b>	Unknown.
<b>Water Activity</b>	Unknown.
<b>Mode of Dissemination</b>	Wind.
<b>Allergic Potential</b>	Ganoderma species are known to cause allergies in people on a worldwide scale.
<b>Potential or Opportunistic Pathogens</b>	Unknown.
<b>Industrial Uses</b>	Biopulping of wood for the paper industry. Potential medicinal use due to: 1. Inhibition of Ras dependent cell transformation, 2. Antifibrotic activity, 3. Immunomodulating activity, 4. Free-radicle scavenging
<b>Potential Toxins Produced</b>	Unknown.
<b>Other Comments</b>	Used in traditional Chinese medicine as an herbal supplement. It is also known as a "shelf fungus" because the fruiting body forms a stalk-less shelf on the sides of trees and logs. It is sometimes called "artists conk" because when you scratch the white pores of the fruiting body, the white rubs away and exposes the brown hyphae underneath. Thus, pictures can be produced on the fruiting body.
<b>Reference</b>	References: Craig, R.L., Levetin, E. 2000. Multi-year study of Ganoderma aerobiology. <i>Aerobiologia</i> 16: 75-81. <a href="http://www.pfc.forestry.ca/diseases/CTD/Group/Heart/heart6_e.html">http://www.pfc.forestry.ca/diseases/CTD/Group/Heart/heart6_e.html</a>

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## MYXOMYCETES++

Natural Habitat	Decaying logs, Dead leaves , Dung , Lawns , Mulched flower beds, Lawns
Suitable Substrates in the Indoor Environment	Rotting lumber
Free moisture required for mold growth	Unknown
Mode of Dissemination	Insects, Water, Wind
Allergic Potential	Type I
Potential or Opportunistic Pathogens	Unknown
Industrial Uses	
Other Comments	Includes Myxomycetes, Smut, and Periconia.

## PAECILOMYCES-LIKE

Natural Habitat	A worldwide saprophytic fungi, being isolated from dead plant material and soil.
Suitable Substrates in the Indoor Environment	Mattresses, carpets, leather, paper, jute fibers, tobacco
Water Activity	0.79-0.85
Mode of Dissemination	Wind
Allergic Potential	Hay fever, asthma, allergic alveolitis
Potential or Opportunistic Pathogens	Paecilomyces species can cause various infections in humans. Corneal ulcer, keratitis, and endophthalmitis due to Paecilomyces may develop following extended-wear contact lens use or ocular surgery. Paecilomyces is among the emerging causative agents of opportunistic mycoses in immunocompromised hosts . Direct cutaneous inoculation may lead to these infections. These infections may involve almost any organ or system of human body including soft tissue, pulmonary, and cutaneous infections, sinusitis, otitis media, endocarditis, osteomyelitis, peritonitis, and catheter-related fungal infections.
Other Comments	Spore appear morphologically similar to Paecilomyces but cannot be positively identified because of limitations of spore trap samples.

## PITHOMYCES

Natural Habitat	A worldwide saprophytic fungi, being isolated from dead plant material and soil.
Suitable Substrates in the Indoor Environment	Paper
Water Activity	Requires high moisture for spore germination
Mode of Dissemination	Wind
Allergic Potential	Unknown
Potential or Opportunistic Pathogens	Mycosis in immunocompromised patients
Other Comments	Pithomyces++ includes spores of Pithomyces and Pseudopithomyces.

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## PYRICULARIA

<b>Natural Habitat</b>	Parasite on leaves of different grasses and sometime other plants. Commonly causes leaf spot diseases. Rice blast disease caused by this fungus.
<b>Suitable Substrates in the Indoor Environment</b>	Unknown- require a living plant host for growth
<b>Water Activity</b>	Unknown
<b>Mode of Dissemination</b>	Wind, water
<b>Allergic Potential</b>	Unknown
<b>Potential or Opportunistic Pathogens</b>	Unknown

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### 5. References and Informational Links

#### Books

- **Bioaerosols: Assessment and Control.** Janet Macher, Ed., American Conference of Governmental Industrial Hygienists, Cincinnati, OH 1999.
- **Exposure Guidelines for Residential Indoor Air Quality.** Environmental Health Directorate, Health Protection Branch, Health Canada, Ottawa, Ontario, 1989.
- **Fungal Contamination in Public Buildings: Health Effects and Investigation Methods.** Health Canada, Ottawa, Ontario, 2004.
- **IICRC: S500 Standard and Reference Guide for Professional Water Damage Restoration.** 3rd Edition, Institute of Inspection, Cleaning, and Restoration Certification, Vancouver, WA, 2006
- **IICRC: S520 Standard and Reference Guide for Professional Mold Remediation.** 1st Edition, Institute of Inspection, Cleaning, and Restoration Certification, Vancouver, WA, 2004
- **Field Guide for the Determination of Biological Contaminants in Environmental Samples.** 2nd Edition, American Industrial Hygiene Association, 2005.

#### Consumer Links

Read the full text of AIHA's "The Facts About Mold" consumer brochure.

<http://www.aiha.org/get-involved/VolunteerGroups/Documents/BiosafetyVG-FactsAbout%20MoldDecember2011.pdf>

The Occupational Safety and Health Administration (OSHA)

<http://www.osha.gov/SLTC/molds/index.html>

CDC Mold Facts

<http://www.cdc.gov/mold/faqs.htm>

CDC Stachybotrys - Questions and answers on Stachybotrys chartarum and other molds

<http://www.cdc.gov/mold/stachy.htm>

IOM, NAS: Clearing the Air: Asthma and Indoor Air Exposures

<https://www.epa.gov/indoor-air-quality-iaq/should-you-have-air-ducts-your-home-cleaned>

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National Library of Medicine-Mold website  
<http://www.nlm.nih.gov/medlineplus/molds.html>

California Department of Health Services (CADOHS)  
<https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Mold.aspx>

Minnesota Department of Health  
<http://www.health.state.mn.us/divs/eh/indoorair/mold/index.html>

New York City Department of Health and Mental Hygiene  
<https://www1.nyc.gov/site/doh/health/health-topics/mold.page>

H.R.: The United States Toxic Mold Safety and Protection Act

### EPA

"Should You Have the Air Ducts in Your Home Cleaned?"  
<<http://www.epa.gov/iaq/pubs/airduct.html>>

General information about molds and actions that can be taken to clean up or prevent a mold problem.  
<<http://www.epa.gov/asthma/molds.html>>

"A Brief Guide to Mold, Moisture, and Your Home" - Includes basic information on mold, cleanup guidelines, and moisture and mold prevention  
<http://www.epa.gov/mold/moldguide.html>

"Mold Remediation in Schools and Commercial Buildings" - Information on remediation in schools and commercial property, references for potential mold and moisture remediators.  
<https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide>

### FEMA

"Homes That Were Flooded May Harbor Mold Problems" - Information and tips for cleaning mold.  
<http://www.fema.gov/news-release/homes-were-flooded-may-harbor-mold-problems>

"Dealing With Mold & Mildew in Your Flood Damaged Home."  
[http://www.fema.gov/pdf/rebuild/recover/fema\\_mold\\_brochure\\_english.pdf](http://www.fema.gov/pdf/rebuild/recover/fema_mold_brochure_english.pdf)

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### 6. Important Terms, Conditions, and Limitations

#### A. Sample Retention

Samples analyzed by EMSL will be retained for 60 days after analysis date. Storage beyond this period is available for a fee with written request prior to the initial 30 day period. Samples containing hazardous/toxic substances which require special handling will be returned to the client immediately. EMSL reserves the right to charge a sample disposal fee or return samples to the client.

#### B. Change Orders and Cancellation

All changes in the scope of work or turnaround time requested by the client after sample acceptance must be made in writing and confirmed in writing by EMSL. If requested changes result in a change in cost the client must accept payment responsibility. In the event work is cancelled by a client, EMSL will complete work in progress and invoice for work completed to the point of cancellation notice. EMSL is not responsible for holding times that are exceeded due to such changes.

#### C. Warranty

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#### D. Limits of Liability

In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. EMSL will not be held responsible for the improper selection of sampling devices even if we supply the device to the user. The user of the sampling device has the sole responsibility to select the proper sampler and sampling conditions to insure that a valid sample is taken for analysis. Any resampling performed will be at the sole discretion of EMSL, the cost of which shall be limited to the reasonable value of the original sample delivery group (SDG) samples. In no event shall EMSL be liable to a client or any third party, whether based upon theories

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## EMSL Analytical, Inc.

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**Attn:** Doug Riggs  
Abatemaster, LLC  
6022 Old US Hwy 52  
Lexington, NC 27295

**EMSL Order:** 412107425  
**Customer ID:** MAST51  
**Collected:** 8/20/2021  
**Received:** 8/23/2021  
**Analyzed:** 8/23/2021

**Proj:** Andrews Elementary School

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of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder.

### E. Indemnification

Client shall indemnify EMSL and its officers, directors and employees and hold each of them harmless for any liability, expense or cost, including reasonable attorney's fees, incurred by reason of any third party claim in connection with EMSL services, the test result data or its use by client

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