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September 9, 2019

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 Education Center – Rooms:12W, PD1, PD6, PD5
612 Apple St.
Burlington, North Carolina 27302
Project No.: 201-1909-07

Dear Mr. Fuller:

ALIS has completed the airborne microbial sampling at Sellars-Gunn Education Center in Burlington, North Carolina. On September 5, 2019, 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 areas of concern. Air sampling pumps were calibrated and placed in the following locations: Rooms 12W, PD1, PD6, PD5. One sample was collected from outside the building as a reference (baseline) for comparison to the inside conditions. No other areas of the building were included in the scope of work.

Results

The laboratory results found no significantly higher levels of fungal spores on the indoor samples when compared to levels found on the outdoor sample. One *Curvularia* spore was detected on the samples collected from rooms PD1 and PD6, and one *Alternaria* spore from room PD6. Airborne fungal spores present on indoor samples yet absent on outdoor samples, suggest some active mold growth may be occurring. Sample results and additional information on fungal spores are attached to this report: "Spore Trap Analysis"

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.

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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"



#19036386

Analysis Report prepared for

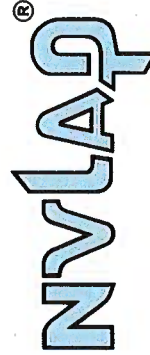
ALIS Environmental Inc.

1027 Koontz Haven Rd
Pinnacle, NC 27043

Phone: (336) 368-4500

Sellers-Gunn ED CTR

Collected: September 5, 2019
Received: September 6, 2019
Reported: September 6, 2019



We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 6 samples by FedEx in good condition for this project on September 6th, 2019.

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.

EPA Laboratory ID: VA01419

Lab ID: #188863

NVLAP Lab Code: 500096-0

DPH License: #PH-0198

| Sample Number | 02269902 | 02269350 | | | | |
|-------------------------|-------------------------|------------------------|------------|-----------|------------------------|------------|
| Sample Name | O/S Bldg | Blank | | | | |
| Sample Volume | 150.00 liter | 0.00 liter | | | | |
| Reporting Limit | 7 spores/m ³ | 1 spore/m ³ | | | | |
| Background | 2 | NBD | | | | |
| Fragments | ND | ND | | | | |
| | | | | | | |
| | | | | | | |
| Organism | Raw Count | Count / m ³ | % of Total | Raw Count | Count / m ³ | % of Total |
| Alternaria | | | | | | |
| Ascospores | 160 | 1067 | 4.5% | | | |
| Aspergillus Penicillium | 3 | 20 | <1% | | | |
| Basidiospores | 144 | 960 | 4.1% | | | |
| Bipolaris Drechslera | 1 | 7 | <1% | | | |
| Chaetomium | | | | | | |
| Cladosporium | 3200 | 21333 | 90.8% | | | |
| Curvularia | | | | | | |
| Epicoccum | 1 | 7 | <1% | | | |
| Fusarium | | | | | | |
| Memnoniella | | | | | | |
| Myxomycetes | 1 | 7 | <1% | | | |
| Pithomyces | 5 | 33 | <1% | | | |
| Stachybotrys | | | | | | |
| Stemphylium | | | | | | |
| Torula | | | | | | |
| Ulocladium | | | | | | |
| Cercospora | 8 | 53 | <1% | | | |
| Total | 3523 | 23487 | 100% | ND | ND | |

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

Collected: **Sep 5, 2019** Received: **Sep 6, 2019** Reported: **Sep 6, 2019**

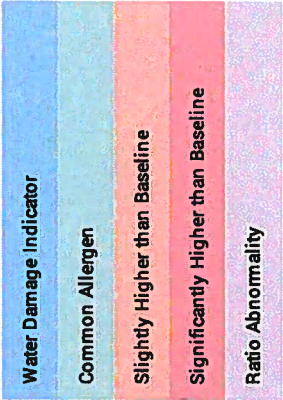
Project Analyst: **P. Ramesh** Reviewed By: **Stephen A. Hayes**

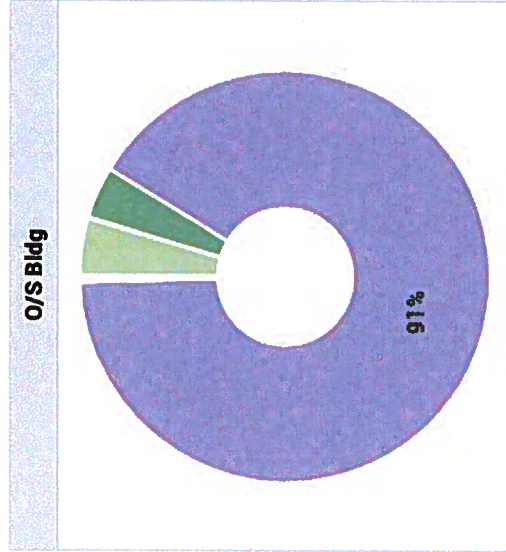
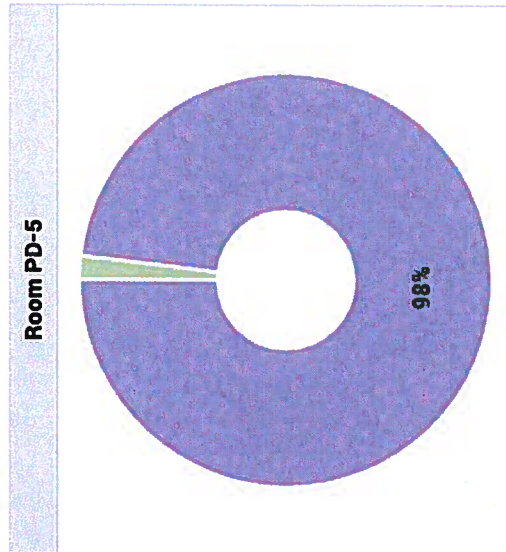
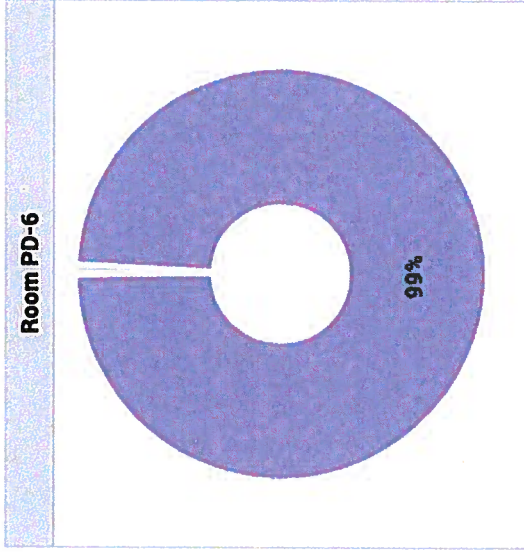
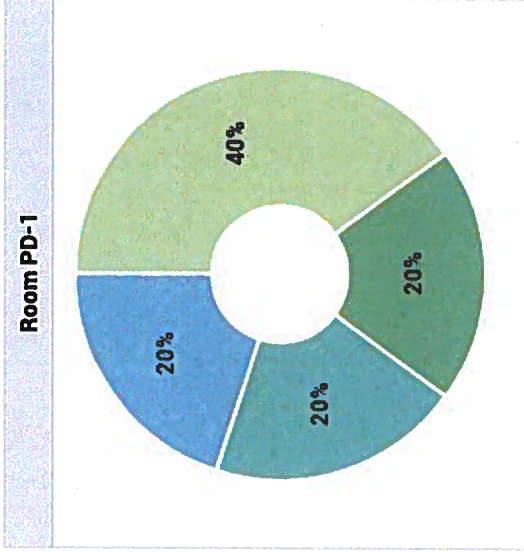
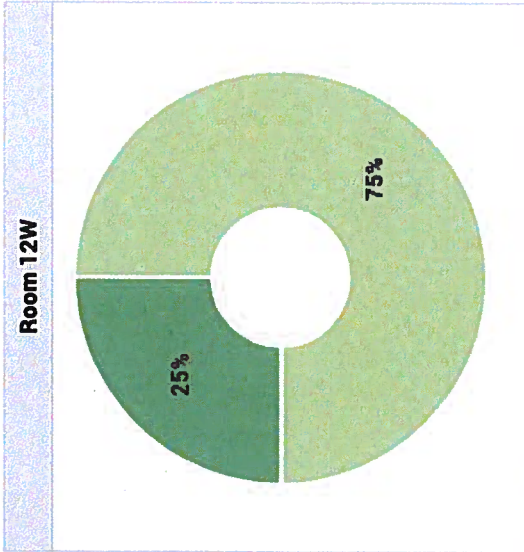
Ramesh Poluri, PHD Steve Hayes, BSMT Date: **09 - 06 - 2019**

3005 East Boundary Terrace, Suite F. Midlothian, VA. 23112 contact@hayesmicrobial.com Page: **3 of 8**

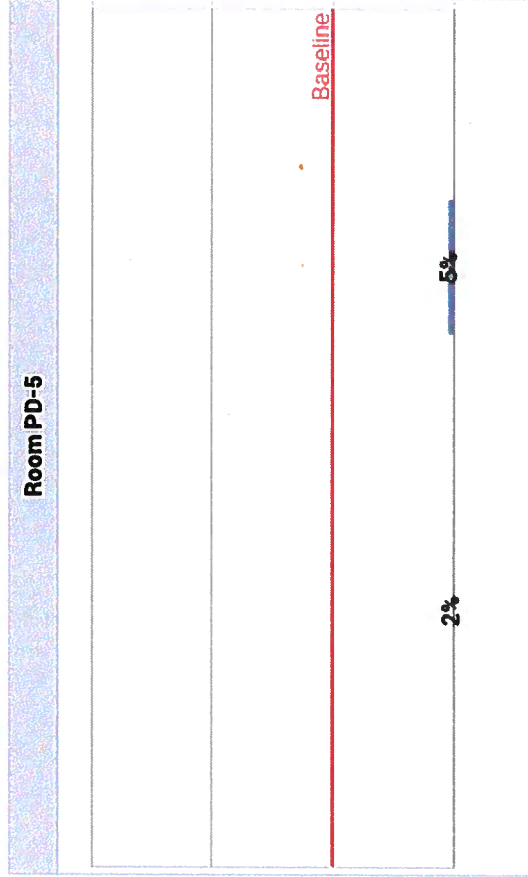
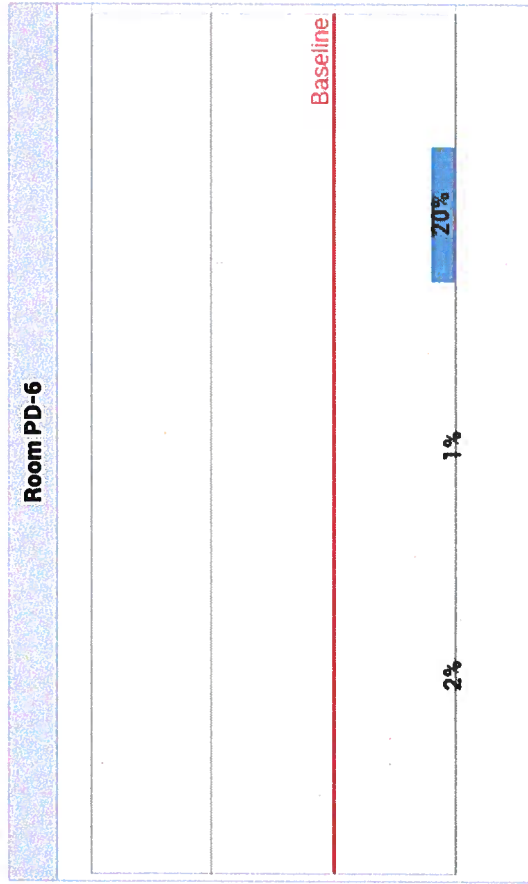
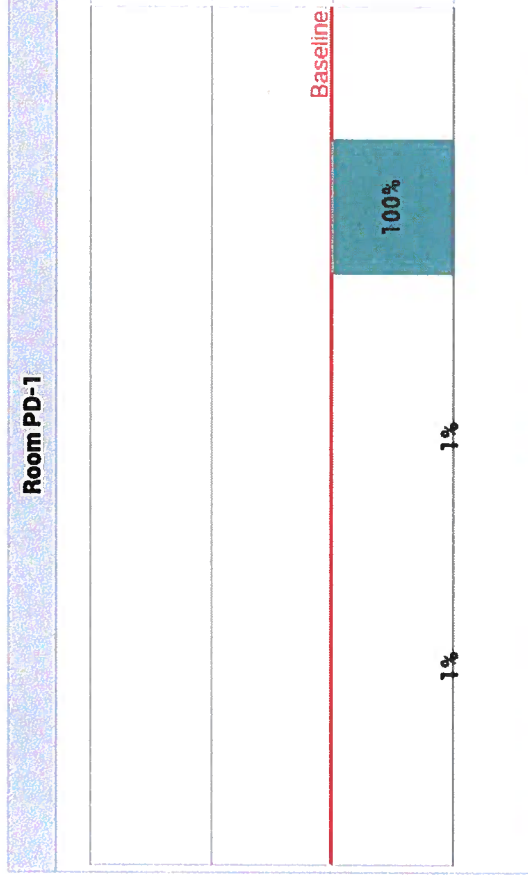
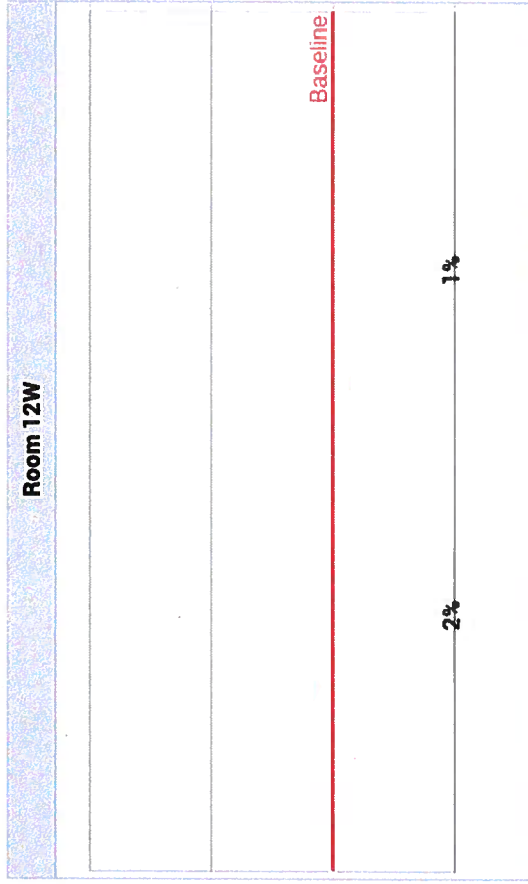


Spore Trap Information

| |
|---|
| <p>Reporting Limit</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>Blanks</p> <p>Results have not been corrected for field or laboratory blanks.</p> |
| <p>Background</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>NBD: No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)</p> <p>1 : <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 : >90% of field occluded. Suggested recollection of sample.</p> |
| <p>Fragments</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>Control Comparisons</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>Water Damage Indicator (Blue)</p> <p>Common Allergen (Green)</p> <p>Slightly Higher than Baseline (Orange)</p> <p>Significantly Higher than Baseline (Red)</p> <p>Ratio Abnormality (Violet)</p> <p>Blue: These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem. Green: Although all molds are potential allergens, these are the most common allergens that may be found indoors. Orange: The spore count is slightly higher than the outside count and may or may not indicate a source of contamination. Red: The spore count is significantly higher than the baseline count and probably indicates a source of contamination. Violet: 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>Color Coding</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> |



| | | | | |
|--------------|-------------------------|------------|----------------------|------------|
| Ascospores | Basidiospores | Curvularia | Bipolaris/Drechslera | Alternaria |
| Cladosporium | Aspergillus/Penicillium | Epicoccum | Myxomycetes | Pithomyces |
| Cercospora | | | | |



Organism Descriptions

Altemaria

Habitat: Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces.

Effects: A common allergen and has been associated with hypersensitivity pneumonitis. *Alternaria* is capable of producing toxic metabolites which may be associated with disease in humans or animals. Occasionally an agent of onychomycosis, ulcerated cutaneous infection and chronic sinusitis, principally in the immunocompromised patient.

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.

Bipolaris | Drechslera

Habitat: They are found in soil and as plant pathogens. Can grow indoors on a variety of substrates.

Effects: They may be allergenic and are very commonly involved in allergic fungal sinusitis. They are opportunistic pathogens but occasionally infect healthy individuals, causing keratitis, sinusitis and osteomyelitis.

Cercospora

Habitat: Found on wood and decaying plant matter.

Effects: Health effects are poorly studied.

Organism Descriptions

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.

Curvularia

Habitat:

They exist in soil and plant debris, and are plant pathogens.

Effects:

They are allergenic and a common cause of allergic fungal sinusitis. An occasional cause of human infection, including keratitis, sinusitis, onychomycosis, mycetoma, pneumonia, endocarditis and disseminated infection, primarily in the immunocompromised.

Epicoecium

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.

Pithomyces

Habitat:

Common fungus isolated from soil, decaying plant material. Rarely found indoors.

Effects:

Allergenic properties are poorly studied. No cases of infection in humans.