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**Limited
Indoor Air Quality
And
Microbial
Assessment Report**

For

Pembroke Public Schools

At

**Hobomock Elementary School
81 Learning Lanes
Pembroke, MA 02359**

September 22, 2023

Prepared For:

Ms. Erin Obey
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Pembroke Public Schools
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PMEC Project #:

23-184



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Limited
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Assessment Report
At
Hobomock Elementary School
81 Learning Lanes
Pembroke, MA

1.0 Introduction

- A. Paul Matuszko Environmental Consulting (**PMEC**) is pleased to present this limited indoor air quality report to the Pembroke Public Schools (Client) for the assessment conducted at the Hobomock Elementary School, located at 81 Learning Lanes, Pembroke, Massachusetts. The limited indoor air quality (**IAQ**) and microbial (fungal) assessment was conducted by PMEC Principal, Paul Matuszko, CIH, after school hours on the afternoon of September 19, 2023. The assessment was conducted for conditions that may impact IAQ in designated areas of the building. Measurements were collected for baseline IAQ parameters and air samples collected for mold (fungal) analysis in specific areas as requested by the client. The following report summarizes the findings of the assessment, analysis results, and recommendations.

2.0 Scope of Work

- A. The indoor air quality (IAQ) assessment was conducted in accordance with the following tasks:
1. General limited inspection of the representative areas for visible water damaged materials and mold growth. The assessment and sampling was limited to the following areas:
 - Classroom # 225
 - Art Wing Hallway
 - Hallway at Room #150
 - Hall/vestibule at cafeteria
 - Classroom # 245/250 back doorway
 2. Collect screening measurements in representative areas for the following baseline IAQ parameters:
 - Carbon monoxide (CO)
 - Carbon dioxide (CO₂)
 - Relative humidity (RH%)
 - Temperature (°F)
 3. Conduct bioaerosol (microbial) spore trap air sampling for airborne mold (fungal) analysis in designated locations as determined by the client.
 4. Prepare a detailed report detailing the findings of the assessment and sampling data to include recommendations for the improvement of IAQ.

3.0 Existing Conditions

- A. PMEC was informed that basic cleaning efforts were completed in specific areas by an outside contractor during the late 2023 summer. Touch point surfaces (desks, floors, doors, etc.) and perimeter carpeted shelving were disinfected. Visible suspect staining in lower hallway walls (at cove base edging) were removed where needed. The exact scope of work can be provided by the School Administration Office.
- B. Blower fans and dehumidifiers are operating in specific areas since the summer season to assist to provide additional ventilation and lower relative humidity levels.
- C. No visible suspect mold growth was identified in the representative areas inspected. The perimeter storage (cubby hole) spaces were inspected with no suspect visible mold growth or water staining

present on the interior surfaces. Ceiling tile and HVAC ceiling vents (diffusers) did not exhibit suspect surface mold growth. However, the interior duct surfacers were not inspected.

- D. No current water leaks or water staining was identified. Some areas of the school contain brown stained ceiling tiles from previous condensation dripping or minor roof leaks. PMEC did not detect any objectionable musty or moldy odors during the assessment.

4.0 Mold Sampling and Analysis Methods

- A. As part of the assessment, PMEC collected six (6) "spore trap" air samples for mold spore analysis using air-o-cell® brand sampling cassettes. Five (5) interior samples and one (1) outdoor ambient sample were collected for analysis. A calibrated, battery operated Zefon IAQ 15 connect sampling pump was used to draw air onto the sample cassette's adhesive slide. PMEC collected the samples at 15 liters of air per minute (LPM) for a five (5) minute sample duration for a total sample collection volume of 75 liters of air. The airborne aerosols (mold, particulates, pollen, etc.) are trapped on the filter media slide for direct microscopic examination.
- B. The samples were collected on September 19, 2023 from approximately 3:30 pm - 5:00 pm. The results and discussion described herein is only representative of the conditions on the date and time of sample collection. The samples were sent via chain of custody by Fed Ex to Hayes Microbial Laboratory (Hayes), located in Midlothian, Virginia. Hayes Laboratory is accredited by the American Industrial Hygiene Association (AIHA) for mold and bacteria identification and analysis (AIHA EMPAT Laboratory Accreditation ID # 188863).
- C. Results are reported as Total Fungi Counts in spores per cubic meter of air (C/m³). The samples were analyzed for both non-viable and viable fungi by direct analysis optical microscopy. A summary of analysis criteria of spore trap and direct identification analysis is provided in the lab analysis sheets. The sample results are provided in Attachment A to this report.

5.0 Laboratory Analysis Results

- A. **Mold Sample Analysis** - The results of the mold spore air sampling are presented in Table 1 below. Results highlighted in bold are species and/or levels of concern:

Table 1 Mold Sample Analysis Results September 19, 2023			
Sample #	Sample Location	Total Fungi (C/m³)	Specific Species & levels of note
35902807 (01)	Classroom 225 At front desk	5,610 C/m³	Ascospores – 67 C/m³ Aspergillus/Penicillium – 3,900 C/m³ Cladosporium – 1,300 C/m³ Curvularia – 40 C/m³ Myxomycetes – 290 C/m³ Pithomyces – 13 /m³
3590 2809 (02)	Art Hallway At room 263	27 C/m³	Ascospores – 27 C/m³
3590 2795 (03)	Outside ambient air Outside exit (comparison sample)	3,350 C/m³	Ascospores – 830 C/m³ Basidiospores – 450 C/m³ Cladosporium – 870 C/m³ Myxomycetes – 1,200 C/m³
3590 2811 (04)	Hallway at room 150	746 C/m³	Ascospores – 240 C/m³ Aspergillus/Penicillium – 40 C/m³ Basidiospores – 93 C/m³ Cladosporium – 360 C/m³ Pestalotiopsis – 13 C/m³

Table 1 - continued Mold Sample Analysis Results Hobomock Elementary School September 19, 2023			
Sample #	Sample Location	Total Fungi (C/m³)	Specific Species & levels of note
3590 2796 (05)	Vestibule/Hallway at Cafeteria (near Teacher's dining room)	67 C/m ³	Cladosporium – 67 C/m ³
3334 1753 (05)	Classroom 245 / 250 at back door	237 C/m ³	Aspergillus/Penicillium – 130 C/m ³ Cladosporium – 80 C/m ³ Myxomycetes – 27 C/m ³

Notes: - Additional information on species types is provided in the Laboratory Analysis results.
- Aspergillus/penicillium spores are two different species but cannot be differentiated at the level of magnification used during analysis.

B. Discussion

1. **Hallways** (Samples 02, 04, and 05): The analysis results for each of the hallway samples indicate normal levels of mold spores when compared to the outdoor sample. The indoor airborne mold spore levels in these locations sampled are considered generally low and acceptable. The airborne spore levels in the hallways sampled on the assessment date are not representative of an amplified airborne mold spore condition.
2. **Classroom 225**: The analysis results for classroom 225 indicates an overall elevated level of airborne fungal spores (3,600 C/m³). Additionally, the analysis indicates an elevated level of Aspergillus/Penicillium (Asp/Pen) and Cladosporium spores. Asp/Pen fungal growth is often associated with wet building materials and within areas of long term high humidity. The long term high humidity conditions in the summer season may allow microbial growth to occur on porous surfaces (paper, ceiling tiles, carpeting, wallboard, etc.) The presence of Cladosporium spores is often associated with condensation moisture from HVAC systems. The Aspergillus/Penicillium and Cladosporium species may be of concern for immunocompromised individuals.
3. **Classroom 245/250**: The analysis results for the sample collected in the back doorway of classroom 245/250 indicate generally normal levels of mold spores. However, 10 spores of Asp/Pen species were identified. Although not excessive, their presence is noted and is higher than the hallways and outdoor sample.

6.0 Background Mold Information

- A. Currently, there are no standards or regulations to indicate acceptable numerical levels of airborne fungal spores derived from indoor environments. Results are also assessed for specific target species that may induce allergic reactions. Specific species are reviewed for their known potential to cause allergic reactions or as an indicator of potential water damage and moisture issues. In general, indoor mold levels should be equivalent to or lower than outdoor levels or non-complaint areas with similar types and percentages of mold species. Please note that airborne mold spores are present in most indoor environments at low levels.
- B. There are no regulations for acceptable levels of mold in the indoor environment; therefore, exact numerical limits are not supported at this time. Specific fungal species of concern are recommended to have much lower levels in the indoor environment. Existing conditions and symptoms are unique to each season, building and occupant. Airborne mold spore levels may vary greatly by location, time of day and weather conditions. However, health impacts cannot be

predicted based on this information; individuals experience varying levels of allergic and non-allergic response to mold. Controlling moisture is critical to the prevention of indoor mold growth issues. Moisture sources include high humidity, water leaks, and condensation issues.

7.0 IAQ Standards Background

- A. The most commonly cited indoor air quality standards are those established by the *American Society of Heating and Air Conditioning Engineers (ASHRAE)*, and particularly those presented in the standard: *Ventilation for Acceptable Indoor Air Quality (ASHRAE 62.1-2010)* and its current version. Additional standards are provided by the Federal Occupational Safety and Health Administration (OSHA) for occupational work place settings. The Federal Environmental Protection Agency (EPA) also provides guidance documents managing IAQ within occupied facilities.
- B. The following Table 2 summarizes the IAQ standards and guidance levels commonly referenced in the IAQ industry:

Table 2 Common IAQ Standards & Guidelines			
Constituent	OSHA	ASHRAE	Other
Carbon monoxide (CO)	50 ppm	9 ppm	NIOSH* – 35 ppm
Carbon Dioxide (CO ₂)	5,000 ppm	1,000 ppm or 700 ppm over ambient	800 ppm - Mass Dept. of Public Health (DPH)**
Temperature	-	~68.0° –76.0°F (winter) ~72.0°–78.0°F (summer)	-
Relative humidity	-	~30-60%	-

Notes* - NIOSH = National Institute for Occupational Safety & Health

****** - Recommended standard by Mass DPH for optimal IAQ

8.0 Indoor Air Quality Measurements

- A. As part of the assessment, PMEC collected interior direct reading measurements for carbon dioxide (CO₂), carbon monoxide (CO), relative humidity (RH%), and temperature (Temp. °F) using a Fluke 975 Airmeter®. The following background information and measurement results are provided in accordance with IAQ industry guidelines and ASHRAE recommended standards:

1. Carbon Dioxide (CO₂)

- **Background:** Carbon dioxide gas is produced by all humans and will accumulate in an indoor environment if proper amounts of fresh outside air are not introduced into enclosed areas. Guidelines for maximum indoor carbon dioxide concentrations vary but a general consensus suggests maintaining CO₂ levels below 1,000 parts per million in air (**ppm**). ASHRAE recommends a maximum concentration that is no more than 700 ppm above ambient levels (~400 ppm).
- **Results:** On the assessment date, the CO₂ levels were within recommended ASHRAE and Mass DPH guidelines, ranging from approximately 485 - 655 ppm. The CO₂ levels measured indicate that the rooms measured (although unoccupied) were well within recommended guidelines.

2. Carbon Monoxide (CO)

- **Background:** Carbon monoxide (CO), a colorless, odorless, tasteless gas, is a by-product of incomplete combustion commonly emitted by carbon-based fuel (gas, oil, natural gas, wood, etc.) burning engines or furnaces. The most common symptoms of CO poisoning are headache, dizziness, weakness, nausea, vomiting, chest pain, and confusion. CO symptoms are often described as “flu-like.” Any measurable indoor CO level above ambient levels suggests a source that should be investigated.
- **Results:** No CO was detected (0.0 ppm = none detected) throughout the rooms and hallways during the measurement period. The results indicate CO levels were at normal, background outdoor/ambient levels during the sampling period.

3. Temperature

- **Background:** ASHRAE recommends that occupied indoor temperatures be maintained between approximately ~68°F-75°F in winter months and approximately ~72°F-79°F during the summer months. However, temperatures may be maintained at lower settings (where programmable) to satisfy the comfort levels of the majority of occupants.
- **Results:** The temperature levels measured were within acceptable winter levels, ranging from 71.6 -72.5 °F. The indoor temperatures measured are typical for a warmer late summer day with outdoor temperatures in the low to mid 70's.

4. Relative Humidity

- **Background:** Relative humidity (RH%) is a measurement of water vapor in the air compared to the percentage total quantity that can be present. RH% levels should be kept between 30-60 percent (30%-60%) year-round for optimal thermal comfort. High levels of indoor relative humidity (>60%) may be perceived as “sticky” or “damp” and will promote the growth of microorganisms (mold). Low levels of RH% below 20% can cause drying of the eyes, skin, and sinus tissue.
- **Results:** basement relative humidity levels were within recommended levels, ranging from 55-59%. Overall, the RH% measurements are typical for an interior space but were approaching the upper recommended limit of 60%.

5. The specific results of the sampling measurements by room are provided in Table 2 below.

Table 2 Baseline Indoor Air Quality Measurements								
Sample Location (#)	#	Time Sampled	Temp (°F)	RH (%)	CO ₂ (ppm)	CO (ppm)	Occ.	Comments
Classroom 225 at front desk	1	3:30 pm	72.5	56.6	655	0.0	0	-
Hallway at 225	2	3:35 pm	72.5	55.9	638	0.0	0	-
Art Wing – Hallway at 263	3	3:43 pm	71.6	57.6	632	0.0	0	-
Outside ambient air	4	3:50 pm	71.6	52.4	<400	0.0	0	-
Hallway at #150	5	3:57 pm	72.5	59.2	594	0.0	0	-
Room #250 at back desk	6	4:11 pm	72.5	55.8	496	0.0	0	-
Room #245 at desk	7	4:15 pm	72.5	55.0	485	0.0	0	Window open

Notes: Occ. = occupants; ppm = parts per million in air

9.0 Summary Discussion

- A. The carbon monoxide, carbon dioxide, relative humidity, and temperature levels in the suite were within ASHRAE guidelines, Massachusetts DPH, and general IAQ industry recommended levels during the sampling period. The relative humidity levels were slightly higher than exterior levels (56-59%) and were approaching the upper recommended 60% limit.
- B. Building surfaces were found to be generally dry, clean, and free of current water stains, exposed mold growth, and musty odors.
- C. Airborne mold spore levels on the assessment date were analyzed to be acceptable in the central hallways sampled. However, Classroom #225 results indicate an elevated level of Asp/Pen and cladosporium spores. Classroom #245/250 sample results were acceptable but had Asp/Pen spores present greater than the hallways and outdoor sample.
- D. The current conditions suggest that additional inspection and sampling may be required to further assess conditions resulting from long term high humidity.

10.0 Recommendations

- A. PMEC recommends that a remedial response be conducted for Classroom #225 and adjacent rooms. The response actions should include extensive HEPA fan air filtration, surface disinfection, ceiling diffuser cleaning, and carpet HEPA vacuuming. Additionally, an inspection of the HVAC system and ductwork may be conducted to further assess interior surfaces. Further inspection of classroom surfaces (ceiling plenums, interior walls, etc.) should be conducted to identify potential areas of microbial growth.
- B. Indoor relative humidity (RH%) levels should be controlled to maintain levels below 60%, and preferably below 50%. A detailed plan involving various engineering controls and proper HVAC operation should be developed to assist in controlling indoor RH% levels.
- C. All response actions should be conducted in accordance with the guidelines and standard established the US EPA & OSHA, and Institute of Inspection, Cleaning and Restoration Certification (IICRC) S520 mold remediation methods and industry standards.
- D. Stained ceiling tiles should be replaced when feasible. Additionally, HVAC piping and ducting should be properly insulated to prevent and limit condensation issues.

11.0 Limitations

- A. The assessment provided herein is based on the professional judgment of PMEC using approved industry standards and guidelines. Assessment findings are based on the investigator's careful consideration of field observations and interpretation of analysis results in accordance with industry standards, including, but not limited to, IICRC S520 guidelines for Condition 1 – normal fungal ecology, 2008 AIHA publication "Recognition, Evaluation, and Control of Indoor Mold", and the ACGIH 1999 book "Bioaerosols – Assessment and Control".
- B. PMEC did not conduct destructive testing and inspection within enclosed wall and flooring spaces. Additionally, the building exterior, HVAC systems, and ceiling plenum spaces were not inspected. The analysis results are only representative of the conditions of the date and time of sample collection and are considered a "snapshot in time". PMEC's results listed herein represent the conditions present at the time of inspection and sampling.

Should you have any additional questions regarding this assessment report or the results, please do not hesitate to contact me at 617-893-4476 or email at pmatuszko@pmecsolutions.com. PMEC appreciates the opportunity to provide our services to the Pembroke Public Schools for this project.

Respectively submitted,



Paul Matuszko, CIH, CIEC
Project Manager/Principal



CIH - Certified Industrial Hygienist (American Board of Industrial Hygiene)

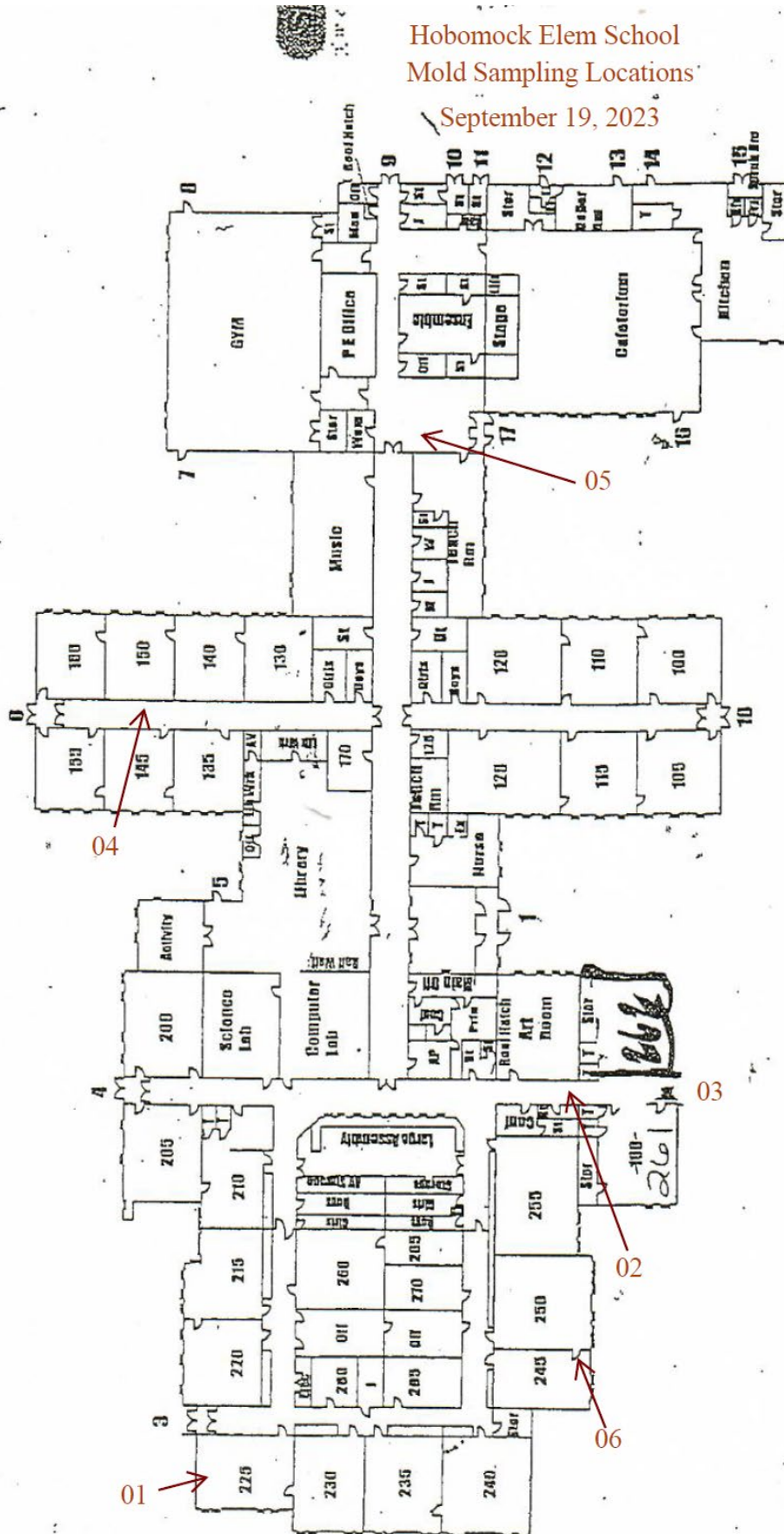
CIEC - Certified Indoor Environmental Consultant (American Council for Accredited Certification)

ATTACHMENTS

Attachment A – Sampling Floor Plan (page 1)

Attachment B – Sample photographs (page 1)

Attachment C – Hayes Microbial - Sample Analysis Results (pages 1-6)



Attachment B – Sample photographs



Photograph 1 - Spore trap sample collected at back door of classrooms # 245/250. IAQ measurements collected at desk.



Photograph 2 - Spore trap sample collected at Art Room Hallway.
Note: lower wall/cove base previously cleaned.

**Attachment C –
Laboratory Analysis Results**

(Hayes Microbial Lab pages 1-6)

Analysis Report prepared for

Paul Matuszko Environmental Consulting

79 Cedar Street
Walpole, MA 02081

Phone: (617) 893-4476

23-184
Pembroke Public Schools
Hobomock Elementary School
81 Learning Lanes
Pembroke, MA

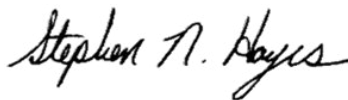
Collected: **September 19, 2023**
Received: **September 21, 2023**
Reported: **September 21, 2023**

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 21st, 2023.

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. Information supplied by the customer can affect the validity of results. These results apply only to the samples as received. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

All information provided to Hayes Microbial is confidential information relating to our customers and their clients. We will not disclose, copy, or distribute any information verbally or written, except to those designated by the customer(s). We take confidentiality very seriously. No changes to the distribution list will be made without the express consent of the customer.

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



DPH License: #PH-0198

Sample Number*	1	3590 2807		2	3590 2809		3	3590 2795		4	3590 2811	
Sample Name*	Classroom 225			Art Hallway At 263			Outside Ambient Air			Hallway At Room 150		
Sample Volume*	75 L			75 L			75 L			75 L		
Reporting Limit	13 spores/m³			13 spores/m³			13 spores/m³			13 spores/m³		
Background	3			2			2			2		
Fragments	ND			ND			13/m³			ND		
Organism	Raw Count	Count / m³	% of Total	Raw Count	Count / m³	% of Total	Raw Count	Count / m³	% of Total	Raw Count	Count / m³	% of Total
Alternaria												
Ascospores	5	67	1.2%	2	27	100.0%	62	830	24.4%	18	240	32.1%
Aspergillus Penicillium	292	3900	69.9%							3	40	5.4%
Basidiospores							34	450	13.4%	7	93	12.5%
Bipolaris Drechslera												
Chaetomium												
Cladosporium	95	1300	22.7%				65	870	25.6%	27	360	48.2%
Curvularia	3	40	<1%									
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes	22	290	5.3%				93	1200	36.6%			
Pestalotiopsis										1	13	1.8%
Pithomyces	1	13	<1%									
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	418	5610	100%	2	27	100%	254	3350	100%	56	746	100%

Water Damage Indicator

Common Allergen

Slightly Higher than Baseline

Significantly Higher than Baseline

Ratio Abnormality

* indicates data provided by the customer

Collected: **Sep 19, 2023**

Received: **Sep 21, 2023**

Reported: **Sep 21, 2023**



Project Analyst:
Joseph Lape,

Joseph Lape

Date:
09 - 21 - 2023

Reviewed By:
Steve Hayes, BSMT

Stephen N. Hayes

Date:
09 - 21 - 2023

Sample Number*	5	3590 2796	6	3590 2812		
Sample Name*	Vestibule At Cafeteria			Classroom 245 / 250 Back Doorway		
Sample Volume*	75 L			75 L		
Reporting Limit	13 spores/m ³			13 spores/m ³		
Background	2			2		
Fragments	ND			ND		
Organism	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total
Alternaria						
Ascospores						
Aspergillus Penicillium				10	130	55.6%
Basidiospores						
Bipolaris Drechslera						
Chaetomium						
Cladosporium	5	67	100.0%	6	80	33.3%
Curvularia						
Epicoccum						
Fusarium						
Memnoniella						
Myxomycetes				2	27	11.1%
Pestalotiopsis						
Pithomyces						
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
Total	5	67	100%	18	237	100%

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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* indicates data provided by the customer



Collected: **Sep 19, 2023**

Received: **Sep 21, 2023**

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Project Analyst:
Joseph Lape, *Joseph Lape*

Date:
09 - 21 - 2023

Reviewed By:
Steve Hayes, BSMT *Stephen N. Hayes*

Date:
09 - 21 - 2023

Spore Trap Information

Reporting Limit	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.
Blanks	Results have not been corrected for field or laboratory blanks.
Background	<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>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.</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 : >90% of field occluded. Suggested recollection of sample.</p>
Fragments	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.
Control Comparisons	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.
<div>Water Damage Indicator</div> <div>Common Allergen</div> <div>Slightly Higher than Baseline</div> <div>Significantly Higher than Baseline</div> <div>Ratio Abnormality</div>	<p>Blue: These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</p> <p>Green: Although all molds are potential allergens, these are the most common allergens that may be found indoors.</p> <p>Orange: The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</p> <p>Red: The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</p> <p>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>
Color Coding	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.
Significant Figures	Raw counts and column totals may reflect more than 2 significant figures, but results should only be considered significant to 2 figures.

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.
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.
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.

Pestalotiopsis	Habitat: Found in soil and occasionally on plants. Some species can break down plastics.
	Effects: No known health effects. Allergenic properties are poorly studied.
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.