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October 30, 2020

Mr. Tim Grossi, Director of Facilities  
School Administrative Unit #1, Contoocook Valley Regional School District  
106 Hancock Road  
Peterborough, New Hampshire 03458

Re: IAQ Consulting- SAU #1 Ventilation Assessment Fall 2020  
TLG Job Number 20-18358

Dear Mr. Grossi:

Please find the results from the Ventilation Assessment attached to this report. The Assessment was conducted for the Contoocook Valley Regional School District between the dates of October 16, 2020 and October 22, 2020.

Thank you for utilizing the services of The Lawson Group. We enjoyed working with you on this project and would welcome the opportunity to work with you on future projects. We trust you will find that everything in order; however, should you have any questions or comments, please feel free to contact our office at your earliest convenience.

Sincerely,

The Lawson Group

Taylor Smith  
Supervisor of Health and Safety Consulting Services

Enclosures



Mr. Tim Grossi, Director of Facilities

School Administrative Unit #1  
Contoocook Valley Regional School District  
106 Hancock Road  
Peterborough, New Hampshire 03458

Re: IAQ Consulting- SAU #1 Ventilation Assessment Fall 2020

TLG Job Number: 20-18358

Prepared By: Taylor Smith

Report Date: October 30, 2020

## **Introduction:**

On October 16, 2020, The Lawson Group (TLG) began a Ventilation Assessment, for the Contoocook Valley Regional School District, School Administrative Unit #1 (SAU #1). The assessment took place across all 11 schools within the district and was completed on October 22, 2020.

## **Executive Summary:**

TLGs Ventilation Assessment of the 11 schools included a combination of analytical testing, direct read instrumentation, and visual inspections.

All Air handling units (AHUs) were visually inspected, while noting any conditions requiring adjustments to meet the Center for Disease Control (CDC) guidelines that have been set forth during the COVID-19 pandemic. The overall intention of the guidelines is to make sure that schools are doing “the best they can” to introduce outside air without introducing outside contaminants while at the same time, maintaining thermal comfort and addressing Relative Humidity (RH) guidelines. Based on visual observations alone, TLG feels that SAU #1 has adequately met the CDC guidelines as they have put effort into upgrading systems with Ionizers to help collect and kill airborne particles and viruses. They have also upgraded filters and opened dampers on outside air intakes (OAIs) as much as feasible.

To obtain objective data to supplement TLGs observations during the inspection of AHUs, direct reading devices were utilized to collect spot readings for Carbon Monoxide (CO), Carbon Dioxide (CO<sub>2</sub>), Temperature, and Relative Humidity (RH) at each school. The data collected is primarily to evaluate the performance of the ventilation system. The levels of CO<sub>2</sub>, (what we all exhale), throughout each school were all below the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) guideline that recommends indoor CO<sub>2</sub> levels are no more than 700 ppm greater than the outside concentration. There was essentially no CO found, Temperature levels were mostly within the optimal range with only a few outliers falling on the low end of the range, and RH levels were dependent on outdoor RH levels with a handful of the measurements exceeding the recommended range.

Spore Trap Air samples were collected to document background levels of Airborne Mold spores in multiple areas within each school building. The results indicate that Airborne Mold spores were at very low levels in all tested locations, and therefore Mold spores are not currently a concern. In addition, this data shows that building ventilation systems are functioning as designed to filter out Mold spores and other particulates of comparable sizes.

With all things considered, TLG found the ventilation systems throughout SAU #1 to be in adequate operating condition with only minor recommended adjustments.



## **Discussion:**

On October 16, 2020, TLG began an assessment of the following SAU #1 schools: Antrim Elementary School, ConVal Regional High School, Dublin Consolidated School, Frankestown Elementary School, Great Brook School, Greenfield Elementary School, Hancock Elementary School, Peterborough Elementary School, Pierce School, South Meadow School and Temple Elementary School. The Assessment was conducted to evaluate the current condition of the ventilation systems and to ensure that specified Indoor Air Quality (IAQ) parameters set forth by the CDC are being maintained within recommended guidelines for proper ventilation in buildings. All sample results are delineated in Appendix A.

### Visual Inspection:

The first portion of the assessment involved a general inspection of the buildings' Heating, Ventilation and Air Conditioning (HVAC) systems. During each inspection, TLG checked the following criteria so that the findings could be compared to the guidelines set by the CDC for ventilation in schools: type, placement, and condition of filters in the AHUs; the set operating level of the outside air intakes to ensure they are 100% open (or as open as deemed feasible by an HVAC engineer); the cleanliness inside and around the AHUs; and the cleanliness of the supply and return vents inside the buildings.

TLG found that most of the ventilation systems in SAU #1's schools met the guidelines set by the CDC. The few conditions that did not meet the CDC criteria or that could eventually impact the indoor air quality were communicated with SAU #1 so they could be addressed as soon as possible. The types of deficiencies that TLG found were filters that surpassed the scheduled change date, inadequate filter ratings, no documented filter change date, improperly installed filters, a decommissioned unit, closed OAI, and blocked supply vents inside.

The full list of deficiencies the correlated units is located in Appendix B. As noted in the table, many of the deficiencies were corrected while TLG was onsite.

### Indoor Air Quality Direct Readings:

To further evaluate ventilation throughout SAU #1, TLG used a GrayWolf AdvancedSenseBE Environmental Test Meter to collect spot readings in designated areas of each school building. Given the various operating conditions of the HVAC system, the number and density of people in the building, and even outside weather conditions, there can be a significant difference in the data obtained from day-to-day.



The benefits of collecting this data include determining “occupant comfort” issues, namely Temperature and Humidity, but more importantly, to assess the performance of the HVAC system in terms of fresh air introduction, which ultimately leads to dilution of all contaminants that may be present.

If fresh air introduction is inadequate, there could be a significant increase in contaminants that could affect the comfort and wellbeing of the occupants of the building.

### **Carbon Dioxide (CO<sub>2</sub>):**

CO<sub>2</sub> levels can be an excellent indicator of indoor air quality. Since we all exhale CO<sub>2</sub> when breathing, the level of CO<sub>2</sub> in the air is a good indicator of the performance of the HVAC system at introducing fresh, outside air into the space and removing stale, indoor air. Since “normal” outdoor air contains approximately 350-400 ppm of CO<sub>2</sub>, the level inside a building should be the same if there was enough fresh air constantly brought into the building. This would require a significant amount of fresh air to be brought into the space to dilute any increased levels of CO<sub>2</sub>. In many climates, especially New England in the Winter, this is very unrealistic to expect. Therefore, a buildings’ HVAC system must be controlled to run at an “optimum” performance level so that all conditions are met, energy efficiency, proper fresh air introduction, Temperature, and Humidity.

It is not necessarily the increased concentration of CO<sub>2</sub> in a building that is a concern, but rather if the levels of CO<sub>2</sub> increase, any other “contaminants” in the buildings’ air increase as well. Anecdotally, TLG has seen complaints of “poor air quality” routinely in buildings with CO<sub>2</sub> levels over 800 ppm. When unoccupied, as was the case during the survey, adequate air exchange will cause the levels to drop down to approximately 400 ppm, or outdoor levels.

The American National Standards Institute/American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ANSI/ASHRAE) standard 62.1 recommends that maintaining CO<sub>2</sub> levels at 700 ppm above the outside levels be a “guideline” level used as an indicator of “good” indoor air quality. So, if the CO<sub>2</sub> levels outside are 400 ppm, then the ASHRAE guideline would be set at 700 ppm greater than that, 1,100 ppm. Limiting CO<sub>2</sub> to levels no more than 700 ppm above outside levels should ensure adequate fresh/outdoor air introduction into the space, which in turn would dilute any other pollutants that may be present. It should be noted that not all buildings have ventilation systems that are designed to, or are capable of, supplying adequate fresh, outdoor air to meet current standards, especially in older buildings that do not have modern HVAC systems, or any HVAC system at all.



The data collected from the readings across the district showed that the **CO<sub>2</sub> levels ranged from 345 ppm to 621 ppm** in the tested indoor locations, which is well within the recommended range. It should be noted however, the buildings were not occupied at normal capacity during the testing period. SAU #1 should periodically monitor CO<sub>2</sub> levels when the buildings are fully occupied to ensure that the levels remain within the ASHRAE guideline. Extra attention should be given to areas with recorded CO<sub>2</sub> levels that exceeded about 500 ppm. All sample results are delineated in Appendix A.

### **Carbon Monoxide (CO):**

CO is a by-product of incomplete combustion. It can come from any Carbon-based fuel, including wood, gasoline, diesel fuel, natural Gas and propane that does not completely burn. A poorly tuned heating system, oil burner, water heater or forklift can produce CO at varying levels and if not properly exhausted or ventilated, can end up contaminating occupied spaces.

Unlike CO<sub>2</sub> that can be used as an indicator of poor ventilation in a building, CO is a toxic Gas and is not a natural component of indoor air and is considered an indoor air pollutant.

CO is colorless, odorless, tasteless, and highly toxic. It combines with Hemoglobin in the blood to form Carboxyhemoglobin, which is ineffective for delivering Oxygen to bodily tissues. Overexposure to CO can deprive the body of Oxygen-carrying Hemoglobin and can cause immediate or chronic health effects to those individuals exposed to elevated levels. In the United States, the Occupational Safety and Health Administration (OSHA) limits full shift workplace exposure levels to 50 ppm, while the American Conference of Governmental Industrial Hygienists (ACGIH) has established a “safe” Threshold Limit Value (TLV) of 25 ppm.

Since the ACGIH adjusts its TLVs yearly and OSHA has not adjusted many of their Permissible Exposure Limits (PELs) since 1969, we always suggest using the TLVs as a guide provides a much better margin of safety for employee exposure than using the OSHA PELs.

The most common symptoms of CO poisoning are headache, nausea, vomiting, dizziness, fatigue, and a feeling of weakness.

CO should NOT be present in office occupancies other than trace or background amounts, and even those should only be found in highly urban office environments or in buildings that employ large fleets of vehicles with poorly placed fresh air intakes. The maximum indoor CO level recommended by ASHRAE in a voluntary building industry standard (ASHRAE 62.2) is nine (9) ppm.



During the surveys, **indoor CO levels ranged from 0 ppm to 3.6 ppm**. Based on this data, CO should not be a concern for building occupants and requires no further attention. All sample results are delineated in Appendix A.

### **Relative Humidity (RH):**

For an environment in which occupants are engaged in light, primarily sedentary activity, ANSI/ASHRAE standards have recommended that RH be controlled to a range of 30% to 60%. This recommendation is largely based on occupant comfort and is based on considerations of dry skin, eye irritation, respiratory health, Microbial growth, and moisture-related phenomena.

When RH levels are below 30%, the mucous membranes of the upper respiratory system begin to dry out, rendering nasal passages and the throat, as well as the eyes, more susceptible to irritation and/or infection from indoor air pollutants. RH levels exceeding 60% may cause condensation problems, and as a result, Microbial infestations can occur.

The measured levels of RH are typically a function from weather more than anything else. Most of the HVAC systems in SAU #1, however, are equipped with Humidity controls which have been proven to be effective with average RH levels measured in all the tested areas **in the range of 36.4% to 79%**. The variability of the RH across the surveys was largely dependent on outdoor RH because of the current CDC recommendation for introducing as much outdoor air as possible. As we approach the Winter season, RH levels should be expected to drop below the comfort range, which is inevitable when introducing the amount of outside air that the CDC is recommending and even under “normal” operating conditions before the COVID-19 pandemic.

Note: Buildings in this region that are not designed to be artificially humidified should not be, as adding extra moisture to the interior of the building can contribute to Mold growth and conditions that could make the indoor environment even worse. About the only effective “control” that can be implemented for “dry” conditions is to have occupants adequately hydrate to offset the drying effect of the low RH. Issuing water bottles and having properly operating water fountains or water dispensers to make it easy for occupants to hydrate is the best solution.

### **Temperature:**

ANSI/ASHRAE standards have recommended that an optimum operating temperature of 71 degrees Fahrenheit (71°F) be maintained during the Winter months, with a comfort range of 68°F to 75°F. During the Summer, it is recommended that an optimum operative temperature of 76°F be maintained, with a comfort range of 73°F to 78°F.



The temperature should be set toward the lower end in the Winter when people wear heavier clothing, and toward the upper end in the Summer when people wear lighter clothing.

The temperatures recorded across all locations **ranged from 66.8°F to 78°F**. Only one (1) school, Hancock Elementary School, had temperatures recorded below the occupant comfort range, with most recordings falling just below the range.

The issue with Temperature control/stability is identical to that of RH. The larger the volume of outside air that is brought into the building, the more difficult it is to temper and humidify/dehumidify that air. In fact, TLG has found in the past that most buildings are not equipped with a system capable of consistently maintaining Temperature and RH within the occupant comfort range when high volumes of outside air are being introduced.

So, with extremes of Temperature and Humidity from Summer to Winter, the use of effective controls on the HVAC become more critical to ensure that the optimum volume of outside air is brought into the space to address both energy efficiency and occupant comfort issues. This is an issue that will likely need to be addressed by the CDC and/or ASHRAE as Winter approaches and schools and other business look for guidance so they can continue to operate within recommended guidelines.

#### Mold Sampling:

To further evaluate the quality of the supply air, TLG collected 146 Spore Trap Air samples throughout the 11 schools for Airborne Mold spores in locations throughout each school that, when combined, can be used to represent each building as a whole. It is routine to also collect samples outside the building as a “control” or “reference” to see what would normally be in the air and then to compare the inside samples against those to see if there is the same “finger print” of spore types and fewer of them which should be the case with an effective air filtration system. If different spore types or higher concentrations of spores are found inside, it may be indicative of an indoor source of the Mold opposed to ineffective filtration.

In this case, the background samples outside showed a range from 346 to 7,013 spores per cubic meter (Spores/m<sup>3</sup>) of air. When using the outside concentrations as a reference for interpretation of indoor samples, it is important to compare indoor sample results to the outdoor sample results associated with that building and on that same day. This is because outside spore concentrations can vary significantly depending on factors such as the time of day, wind speed/direction, precipitation, landscape, etc. as demonstrated by the range of the results.

The analytical results indicate that all indoor spore concentrations were below outdoor spore concentrations, an ideal result.





The highest ratio was at Frankestown Elementary School where outdoor spore activity was abnormally low, which skews the ratio. **Indoor spore concentrations at that location, along with all other sampled locations were consistent with what TLG has come to expect in a school with effective air filtration this time of year.**

The only abnormalities found indoors throughout the sampled locations were both at Antrim Elementary School in rooms 16 and a room without a number, across from room 31. Both rooms had a concentration of 13 Chaetomium spores per cubic meter, which means that one (1) spore was observed on the sample. Although a raw count of one (1) is very low, the presence of any Chaetomium can be an indicator of water damaged materials. While onsite, TLG took note of any conditions that could support indoor Mold growth, but none of those conditions were noted in either of the rooms with Chaetomium spores.

Based on the visual observations documented, TLG feels the spores are likely a product of outside growth, but it is recommended that the two (2) rooms be more thoroughly inspected for signs of water damage and Mold growth.

All Lab results are delineated in Appendix C.

### **Conclusions:**

All on-site work for the Ventilation Assessment conducted at SAU #1 was completed on October 22, 2020.

The Assessment included a visual inspection and an assortment of IAQ testing measurements to assess the performance of the HVAC systems throughout the district, specifically with regards to the guidelines for schools set forth by the CDC and ASHRAE.

With all aspects of the Assessment considered, it is TLG's opinion that SAU #1's HVAC systems are, for the most part, maintained in a condition that either meets or exceeds the guidelines for ventilating schools during the COVID-19 pandemic. Some of the units did need minor adjustments, which are noted in Appendix B.

### **Recommendations:**

1. HVAC system settings will likely need to be adjusted in the coming Winter months. When doing so, SAU #1 should look to the CDC and/or ASHRAE for guidance and should evaluate the effectiveness of the changes if significant adjustments are made.



2. While all CO<sub>2</sub> levels measured throughout the district were well below the guideline, TLG recommends periodic spot checks to evaluate CO<sub>2</sub> levels while the buildings are occupied.
3. TLG noted that multiple low-flow supply vents were blocked by items such as furniture, posters, etc. Those items are currently impairing the efficiency of the ventilation system and so should be relocated to allow for optimal performance of the system.
4. All deficiencies noted during the inspection of air handling units are noted in Appendix B. Many of the deficiencies were addressed while TLG was onsite. Any lingering issues should be addressed to maximize the performance of the system.

#### **WARRANTY**

The conclusions and recommendations contained in this report are based on information available to TLG as of October 22, 2020. TLG provides no warranties on information provided by third parties and contained herein. Data compiled were in accordance with TLG's approved scope of services and should not be construed beyond their limitations. Any interpretations or use of this report other than those expressed herein are not warranted. The use, partial use, or duplication of this report without the expressed written consent of The Lawson Group is strictly prohibited.



## APPENDIX A

### RESULTS/TABLES

## Antrim Elementary School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Back of School Outside	346	431	1,131	0	9	41.6	30%-60%	65.9	68°F to 78°F
Room 16	40	433				37.7		72.3	
Room 29	67	490				40.1		70.7	
Gym	40	429				36.4		71.9	
Room 27	13	477				40		70.8	
Room 12	120	463				38.5		72.5	
Room 24	53	467				40.5		70.9	
Library	26	415				0.1		72.4	
Nurses Office	27	517				39.3		72.7	
Room 1	53	504				0		71.8	
Room 32	53	518				40.3		71.1	

## ConVal Regional High School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Outside Left Side Roof	1,920	350	1,051	7.1	9	77	30%-60%	61.2	68°F to 78°F
Outside Back Roof	2,614	350		7.5		80.4		62.7	
Outdoor East	2,680	353		5.3		80.4		62.3	
Outside Front	1,853	353		5.5		76.1		61.9	
Main Office	26	402		3.6		55.6		71.8	
Room 407	40	448		3.5		55.1		72	
Room 552	26	393		3.4		53.9		71.8	
Room 410A	13	395		3.3		54.4		71.2	
Room 416	40	463		3.4		52.5		71.8	
Room 216	13	385		3.3		53.3		71.7	
Room 215B	27	382		3.2		53.8		71.6	
Room 212	40	391		3.3		54		71.5	
Room 209	13	374		3.2		53.9		71.4	

ConVal Regional High School Continued

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Room 108	26	388	1,051	3.3	9	53.6	30%-60%	71.5	68°F to 78°F
Room 111	13	402		3.3		51.3		70.9	
Room 160	26	383		3.2		44.9		69.1	
Room 158	13	385		3.2		55.5		69.5	
Room 116	40	378		3.3		50.9		69.8	
Cafe	13	372		3.1		55.8		69.5	
Room 301	26	378		3.1		55.8		70.4	
Room 309	26	373		2.9		56.3		71.1	
Room 651	40	400		2.7		52.1		72.2	
Room 652	26	415		2.8		51.3		70.3	
Basement Locker Room	26	549		2.6		53.6		71.9	
Room 463	53	385		2.5		50.7		72	
Room 480	26	401		2.6		49.2		71	
Gym	13	368		2.8		56.4		70.7	

## Dublin Consolidated School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Outside Front	4,025	365	1,065	2.3	9	59.8	30%-60%	68.2	68°F to 78°F
Outside Back	3,440	N/A		N/A		N/A			
Room 125	27	490		2.4		52.8		70.1	
Room 104	53	431		2		53		70.4	
Room 112	40	440		2.2		53.5		69.4	
Room 133	66	448		2.2		52.5		70.2	
Room 121	26	461		2.4		52.4		70.5	
Room 129	27	430		2.2		52.1		70.3	
Room 126	40	455		2.3		52.7		70.1	

Fracestown Elementary School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Outside Front	533	321	1,028	2.7	9	79	30%-60%	67	68°F to 78°F
Outside Back	374	335		3.1		79		66	
Room 132	66	399		2.6		79		68	
Nurses Office	93	480		0		62		72.1	
Room 109	133	475		0		66.4		70.3	
Library	27	480		0		63.8		70.1	
Room 127	40	472		0		60.9		72.3	
Multi-Purpose	133	418		0		70.7		69	
Room 112	147	453		0		68		69	



## Great Brook School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Outside Front	1,840	316	1,027	2.1	9	45	30%-60%	65	68°F to 78°F
Outside Back	2,680	339		1.9		54		61	
Kitchen	27	459		0		39.8		71.4	
Room 111	26	490		0		39.9		71.5	
Room 307	13	468		0.2		40		70.8	
Room 104	40	492		0		39.3		71.4	
Hall Near 113	26	460		0		41.3		70.9	
Room 109	53	507		0		40.2		71.5	
Room 100	93	584		0		40.3		71.7	
Room 209	53	450		0		40.3		70.9	
Gym	27	477		0		37.6		70.9	

Great Brook School Continued

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Library	40	472	1,027	0	9	38.4	30%-60%	71.2	68°F to 78°F
Room 302	26	489		0		40.2		71	
Room 312	40	490		0.2		40.6		71.3	
Main Office	27	518		0		38.8		72.2	

## Greenfield Elementary School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Outside Front	3,906	405	1,090	0	9	61.2	30%-60%	69.9	68°F to 78°F
Outside Back	6,241	375		1.9		58		72	
Library	53	419		1.8		56.6		73.5	
Room 132	53	465		0		56		72.6	
Room 110	80	428		2		54		78	
Room 112	66	418		1.9		59		72.5	
Nurse	106	492		0		54		73.4	
Room 126	53	476		0		55.1		73	
Multi-Purpose	120	488		0		57.4		72.6	

## Hancock Elementary School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Outside Front	2,373	419	1,114	0	9	46.3	30%-60%	64.3	68°F to 78°F
Outside Back	1,907	410				46.6		64.9	
Room 112	39	409				41.6		68	
Room 109	26	345				41.9		68	
Café/Gym	13	405				46.5		66.8	
Nurse Office	27	401				43.4		67.9	
Room 132	66	379				43.4		67.6	
Room 126	13	401				43.1		67.8	
Room 105	26	407				43		68	

## Peterborough Elementary School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)	
Outside Front	5,000	367	1,087	0	9	54.9	30%-60%	71	68°F to 78°F	
Outside Back	3,614	408				54.4		70.9		
Room 51	53	560				50.5		72.8		
Room 52	27	586				50.4		72.4		
Gym	67	446				51.7		72.9		
Room 255	40	429				54.3		72.2		
Room 150	13	437				0.2		72.8		
Room 143	26	435				0		53.3		73.3
Room 145	39	423						53		73.3
Room 140	173	422						53		73.1
Room 53	39	621	50	72.5						

Peterborough Elementary School Continued

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Library	13	456	1,087	0	9	53.2	30%-60%	73.2	68°F to 78°F
Room 155	40	436	1,087	0.1		54.6		72.4	
Art	27	437	1,087	0		52.9		72.8	
Nurse Office	13	413	1,087			52.9		72.4	
Room 250	26	417	1,087			53.8		72.1	
Main Office	N/A	438	1,087			53.1		72.7	
Sick Bay	40	N/A	1,087	N/A		N/A		N/A	

Pierce School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Back of School Outside	1,146	387	1,114	2.1	9	39.1	30%-60%	69.2	68°F to 78°F
Front of School Outside	1,786	442		1.8		41.3		65.5	
Room 113	106	415		1.7		39.7		73.2	
Library	226	409		1.9		36		73.9	
Room 114	107	411		1.8		36.6		73.3	
Room 108	54	411		1.7		37.9		73.5	
Room 100	159	407		1.8		36.6		74.5	
Gym	54	379		1.5		39.4		71.4	
Small Group Room 2 <sup>nd</sup> Floor	160	426		1.7		36.4		74.3	

## South Meadow School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Back of School Outside	7,013	433	1,133	0.3	9	54.2	30%-60%	70.8	68°F to 78°F
Front of School Outside	3,160	433		0.2		55.5		71.5	
Gym	53	447		0.2		53.1		71.9	
Library	40	431		1.1		53.4		72.2	
Music	27	469		0.2		53.7		72	
Room 35	13	429		0.9		54.5		72.2	
Room 8	26	545		0.7		53.2		72.1	
Room 28	40	508		0.9		53.8		72.3	
Room 11	40	523		0.7		51.7		71.6	
Nurses Office	26	481		0.4		63.3		68.7	
Room 13	66	436		1.2		54.5		72.1	



South Meadow School Continued

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Room 5	53	498	1,133	0.8	9	52.6	30%-60%	72.1	68°F to 78°F
Room 1	13	454		0.6		53		71.9	
Room 37	40	437		0.8		53.8		72.4	
Room 4	27	467		0.7		59.7		70.1	
Main Office	53	587		0.5		65.4		67.9	
Room 30	40	466		0.3		51.9		72.8	
SAU Office	53	500		0.3		54		72.4	
Room 61	13	488		0.4		52.5		72.9	
Room 58	26	480		0.5		52.2		72.7	
Room 55	161	478		0.4		53.7		72.6	

## Temple Elementary School

Location	Total Spore Count (Spores/m <sup>3</sup> )	CO <sub>2</sub> Results (PPM)	CO <sub>2</sub> Guideline (PPM)	CO Results (PPM)	CO Guideline (PPM)	RH Results (%)	RH Guideline (%)	Temp Range (°F)	Temp Guideline (°F)
Outside Front	5,532	412	1,112	1.7	9	57	30%-60%	69.3	68°F to 78°F
Outside Back	5,467	N/A		N/A		N/A			
Room 110	53	415		1.6		49.9		74.4	
Room 141	215	470		1.8		47.6		75	
Room 127	146	434		2		47.8		74.8	
Multi-Purpose	120	435		1.8		47.4		74.6	
Room 132	106	435		2		48.2		74.7	
Room 105	26	405		1.7		49.2		74.7	
Room 126	93	450		2		47.6		75	

## APPENDIX B

### AHU DEFICIENCIES

School ID	Unit ID	Deficiencies	Corrected
AES	RTU-2	No Visible Filter Change Date	NO
	RTU-3	Louvers Not as Wide Open	
	ERV-7	Filters Installed Backwards	YES
BES	ERV-2(McQuay)	Not Changed to MERV 11	
CVHS	RTU-9	Damper Motor Needs Maintenance	NO
	RTU-14	No Dates Listed	YES
	RTU-35		
	RTU-34		NO
	RTU-17	MERV 8 in use, MERV 11 is Needed	YES
	RTU-33	No Dates Listed	
DCS	AHU-1		
FES	AHU-3	MERV 8 in use, MERV 11 is Needed	
GBS	RTU-1	No Dates Listed	
	AHU-2		
	AHU-1		
GES	AHU-3	MERV 8 in use, MERV 11 is Needed	NO
PES	AHU-6	No Dates Listed	
	RTU-2	Louvers Closed	
	AHU-1	No Dates Listed	
	RTU-5		
	RTU-6		
	RTU-7		
SMS	RTU-12	MERV 8 in use, MERV 11 is Needed	YES
	RTU-8		
	RTU-19	New Unit, Not Running	NO
	RTU-4	Louvers Closed	
	RTU-9	No Dates Listed	
TES	HRU-1		
	HRU-2		
	AHU-3		

## APPENDIX C

### LAB RESULTS

Analysis Report prepared for

## The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Antrim Elementary

Collected: **October 19, 2020**  
Received: **October 21, 2020**  
Reported: **October 21, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 12 samples by FedEx in good condition for this project on October 21st, 2020.

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



DPH License: #PH-0198

Sample Number	1	A01			2	A02			3	A03			4	A04		
Sample Name	Outside			Rm 16			29			Gym						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>						
Background	2			2			2			2						
Fragments	ND			ND			ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria																
Ascospores	2	27	7.7%				1	13	20.0%	2	27	66.7%				
Aspergillus Penicillium																
Basidiospores	1	13	3.8%													
Bipolaris Drechslera																
Chaetomium				1	13	33.3%										
Cladosporium	21	280	80.8%	2	27	66.7%	2	27	40.0%	1	13	33.3%				
Curvularia	1	13	3.8%													
Epicoccum																
Fusarium																
Memnoniella																
Myxomycetes	1	13	3.8%				2	27	40.0%							
Pithomyces																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Total	26	346	100%	3	40	100%	5	67	100%	3	40	100%				

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



Collected: Oct 19, 2020

Received: Oct 21, 2020

Reported: Oct 21, 2020

Project Analyst:  
 Shareef Abdelgadir, MS *Shareef Abdelgadir*

Date:  
**10 - 21 - 2020**

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

Date:  
**10 - 21 - 2020**

Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	Donovans Across 31			27			12			24		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			ND			13/m <sup>3</sup>		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria										1	13	25.0%
Ascospores							1	13	11.1%	1	13	25.0%
Aspergillus Penicillium												
Basidiospores												
Bipolaris Drechslera												
Chaetomium	1	13	25.0%									
Cladosporium	1	13	25.0%				2	27	22.2%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes	2	27	50.0%	1	13	100.0%	6	80	66.7%	2	27	50.0%
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	4	53	100%	1	13	100%	9	120	100%	4	53	100%

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 19, 2020      Received: Oct 21, 2020      Reported: Oct 21, 2020

Project Analyst: Shareef Abdelgadir, MS *Shareef Abdelgadir*      Date: 10 - 21 - 2020      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: 10 - 21 - 2020



Sample Number	9	A09			10	A10			11	A11			12	A12		
Sample Name	Library			Nurse			Rm 1			Blank						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			0.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>						
Background	2			2			2			NBD						
Fragments	ND			ND			ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria							1	13	25.0%							
Ascospores																
Aspergillus Penicillium																
Basidiospores																
Bipolaris Drechslera																
Chaetomium																
Cladosporium				2	27	100.0%	2	27	50.0%							
Curvularia																
Epicoccum																
Fusarium																
Memnoniella																
Myxomycetes	1	13	50.0%				1	13	25.0%							
Pithomyces	1	13	50.0%													
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Total	2	26	100%	2	27	100%	4	53	100%	ND	ND					

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



Collected: Oct 19, 2020      Received: Oct 21, 2020      Reported: Oct 21, 2020

Project Analyst: Shareef Abdelgadir, MS *Shareef Abdelgadir*      Date: 10 - 21 - 2020      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: 10 - 21 - 2020

**Spore Trap Information**

<b>Reporting Limit</b>	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.										
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.										
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>										
<b>Fragments</b>	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.										
<b>Control Comparisons</b>	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.										
<table border="1"> <tr> <td style="background-color: #ADD8E6;">Water Damage Indicator</td> <td><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</td> </tr> <tr> <td style="background-color: #90EE90;">Common Allergen</td> <td><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</td> </tr> <tr> <td style="background-color: #FFDAB9;">Slightly Higher than Baseline</td> <td><b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</td> </tr> <tr> <td style="background-color: #FFB6C1;">Significantly Higher than Baseline</td> <td><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</td> </tr> <tr> <td style="background-color: #DDA0DD;">Ratio Abnormality</td> <td><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.</td> </tr> </table>	Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.	Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.	Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.	Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.	Ratio Abnormality	<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.	
Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.										
Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.										
Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.										
Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.										
Ratio Abnormality	<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.										
<b>Color Coding</b>	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.										

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<b>Alternaria</b>	<b>Habitat:</b> Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces. <b>Effects:</b> A common allergen and has been associated with hypersensitivity pneumonitis. <i>Alternaria</i> 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.
<b>Ascospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.
<b>Basidiospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.
<b>Chaetomium</b>	<b>Habitat:</b> Ascomycete fungus, commonly isolated from soil and decaying plant materials. It is cellulolytic and grows well indoors on damp sheetrock and other paper substrates. It is often found growing with <i>Stachybotrys</i> . <b>Effects:</b> It is reported to be allergenic and may produce toxins.
<b>Cladosporium</b>	<b>Habitat:</b> 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. <b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.
<b>Curvularia</b>	<b>Habitat:</b> They exist in soil and plant debris, and are plant pathogens. <b>Effects:</b> 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.

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**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.

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**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.

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Analysis Report prepared for

## The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

ConVal High School

Collected: **October 16, 2020**  
Received: **October 19, 2020**  
Reported: **October 19, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 28 samples by FedEx in good condition for this project on October 19th, 2020.

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



DPH License: #PH-0198

Sample Number	1 A01			2 A02			3 A03			4 A04		
Sample Name	Outdoor - Left Sim Roof			Outdoor Backside Roof			Outdoor East			Outdoor Front		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	112	1493	77.8%	140	1867	71.4%	152	2027	75.6%	120	1600	86.3%
Aspergillus Penicillium				2	27	1.0%						
Basidiospores	30	400	20.8%	48	640	24.5%	48	640	23.9%	16	213	11.5%
Bipolaris Drechslera												
Chaetomium												
Cladosporium	2	27	1.4%	6	80	3.1%	1	13	<1%	3	40	2.2%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>144</b>	<b>1920</b>	<b>100%</b>	<b>196</b>	<b>2614</b>	<b>100%</b>	<b>201</b>	<b>2680</b>	<b>100%</b>	<b>139</b>	<b>1853</b>	<b>100%</b>

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



Collected: **Oct 16, 2020**      Received: **Oct 19, 2020**      Reported: **Oct 19, 2020**

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: **10 - 19 - 2020**      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: **10 - 19 - 2020**

Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	Main Office			407			410 A			552		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	1	13	50.0%	2	27	66.7%	1	13	100.0%	1	13	50.0%
Aspergillus Penicillium												
Basidiospores										1	13	50.0%
Bipolaris Drechslera												
Chaetomium												
Cladosporium	1	13	50.0%									
Curvularia				1	13	33.3%						
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	2	26	100%	3	40	100%	1	13	100%	2	26	100%

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



Collected: Oct 16, 2020      Received: Oct 19, 2020      Reported: Oct 19, 2020

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: 10 - 19 - 2020      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: 10 - 19 - 2020

Sample Number	9	A09			10	A10			11	A11			12	A12		
Sample Name	Library 416			216			215B			212						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>						
Background	2			1			1			2						
Fragments	ND			ND			ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria																
Ascospores	2	27	66.7%	1	13	100.0%	2	27	100.0%	2	27	66.7%				
Aspergillus Penicillium																
Basidiospores	1	13	33.3%							1	13	33.3%				
Bipolaris Drechslera																
Chaetomium																
Cladosporium																
Curvularia																
Epicoccum																
Fusarium																
Memnoniella																
Myxomycetes																
Pithomyces																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
<b>Total</b>	<b>3</b>	<b>40</b>	<b>100%</b>	<b>1</b>	<b>13</b>	<b>100%</b>	<b>2</b>	<b>27</b>	<b>100%</b>	<b>3</b>	<b>40</b>	<b>100%</b>				

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

Collected: Oct 16, 2020

Received: Oct 19, 2020

Reported: Oct 19, 2020



Project Analyst:  
 Ramesh Poluri, PhD

*P. Ramesh*

Date:  
 10 - 19 - 2020

Reviewed By:  
 Steve Hayes, BSMT

*Stephen N. Hayes*

Date:  
 10 - 19 - 2020



Sample Number	13	A13		14	A14		15	A15		16	A16	
Sample Name	<b>209</b>			<b>108</b>			<b>111</b>			<b>160</b>		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			1			1			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	1	13	100.0%	1	13	50.0%	1	13	100.0%	1	13	50.0%
Aspergillus Penicillium												
Basidiospores				1	13	50.0%						
Bipolaris Drechslera												
Chaetomium												
Cladosporium										1	13	50.0%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	2	26	100%	1	13	100%	2	26	100%

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

Collected: Oct 16, 2020

Received: Oct 19, 2020

Reported: Oct 19, 2020



Project Analyst:  
 Ramesh Poluri, PhD *P. Ramesh*

Date:  
**10 - 19 - 2020**

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

Date:  
**10 - 19 - 2020**

Sample Number	17	A17		18	A18		19	A19		20	A20	
Sample Name	<b>Woodshop 158</b>			<b>116</b>			<b>Cafe</b>			<b>301</b>		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	1			2			1			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	1	13	100.0%	2	27	66.7%	1	13	100.0%	1	13	50.0%
Aspergillus Penicillium												
Basidiospores				1	13	33.3%				1	13	50.0%
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>1</b>	<b>13</b>	<b>100%</b>	<b>3</b>	<b>40</b>	<b>100%</b>	<b>1</b>	<b>13</b>	<b>100%</b>	<b>2</b>	<b>26</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: **Oct 16, 2020**      Received: **Oct 19, 2020**      Reported: **Oct 19, 2020**

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: **10 - 19 - 2020**      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: **10 - 19 - 2020**

Sample Number	21	A21		22	A22		23	A23		24	A24	
Sample Name	<b>309</b>			<b>651</b>			<b>652</b>			<b>Locker Rm</b>		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	1			2			2			2		
Fragments	13/m <sup>3</sup>			ND			ND			ND		
<b>Organism</b>	<b>Raw Count</b>	<b>Count / m<sup>3</sup></b>	<b>% of Total</b>	<b>Raw Count</b>	<b>Count / m<sup>3</sup></b>	<b>% of Total</b>	<b>Raw Count</b>	<b>Count / m<sup>3</sup></b>	<b>% of Total</b>	<b>Raw Count</b>	<b>Count / m<sup>3</sup></b>	<b>% of Total</b>
Alternaria												
Ascospores	1	13	50.0%	2	27	66.7%	1	13	50.0%	1	13	50.0%
Aspergillus Penicillium												
Basidiospores	1	13	50.0%	1	13	33.3%				1	13	50.0%
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes							1	13	50.0%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>2</b>	<b>26</b>	<b>100%</b>	<b>3</b>	<b>40</b>	<b>100%</b>	<b>2</b>	<b>26</b>	<b>100%</b>	<b>2</b>	<b>26</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: **Oct 16, 2020**      Received: **Oct 19, 2020**      Reported: **Oct 19, 2020**

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: **10 - 19 - 2020**      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: **10 - 19 - 2020**

Sample Number	25 A25			26 A26			27 A27			28 A28		
Sample Name	Gym			Blank			Rm 463			Rm 480		
Sample Volume	75.00 liter			0.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			NBD			2			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	1	13	100.0%				3	40	75.0%	1	13	50.0%
Aspergillus Penicillium												
Basidiospores												
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum							1	13	25.0%			
Fusarium												
Memnoniella												
Myxomycetes										1	13	50.0%
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	1	13	100%	ND	ND		4	53	100%	2	26	100%

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



Collected: Oct 16, 2020

Received: Oct 19, 2020

Reported: Oct 19, 2020

Project Analyst:  
Ramesh Poluri, PhD *P. Ramesh*

Date:  
**10 - 19 - 2020**

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

Date:  
**10 - 19 - 2020**

**Spore Trap Information**

<b>Reporting Limit</b>	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.										
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.										
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>										
<b>Fragments</b>	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.										
<b>Control Comparisons</b>	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.										
<table border="1"> <tr> <td style="background-color: #ADD8E6;">Water Damage Indicator</td> <td><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</td> </tr> <tr> <td style="background-color: #90EE90;">Common Allergen</td> <td><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</td> </tr> <tr> <td style="background-color: #FFDAB9;">Slightly Higher than Baseline</td> <td><b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</td> </tr> <tr> <td style="background-color: #FFB6C1;">Significantly Higher than Baseline</td> <td><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</td> </tr> <tr> <td style="background-color: #DDA0DD;">Ratio Abnormality</td> <td><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.</td> </tr> </table>	Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.	Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.	Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.	Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.	Ratio Abnormality	<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.	
Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.										
Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.										
Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.										
Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.										
Ratio Abnormality	<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.										
<b>Color Coding</b>	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.										

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<b>Ascospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.

---

<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> 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.

---

<b>Basidiospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.

---

<b>Cladosporium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

---

<b>Curvularia</b>	<b>Habitat:</b> They exist in soil and plant debris, and are plant pathogens.
	<b>Effects:</b> 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.

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<b>Epicoccum</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> It is a common allergen. No cases of infection have been reported in humans.

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**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.

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Analysis Report prepared for

## The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Dublin Consolidated School

Collected: **October 20, 2020**  
Received: **October 22, 2020**  
Reported: **October 22, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 10 samples by FedEx in good condition for this project on October 22nd, 2020.

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



DPH License: #PH-0198



Sample Number	1 A01			2 A02			3 A03			4 A04		
Sample Name	Outside Front			Outside Back			125			104 Office		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria	1	13	<1%									
Ascospores	164	2187	54.3%	144	1920	55.8%	2	27	100.0%	1	13	25.0%
Aspergillus Penicillium	4	53	1.3%	2	27	<1%						
Basidiospores	112	1493	37.1%	96	1280	37.2%						
Bipolaris Drechslera												
Chaetomium												
Cladosporium	13	173	4.3%	16	213	6.2%				2	27	50.0%
Curvularia												
Epicoccum	1	13	<1%									
Fusarium												
Memnoniella												
Myxomycetes	7	93	2.3%							1	13	25.0%
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>302</b>	<b>4025</b>	<b>100%</b>	<b>258</b>	<b>3440</b>	<b>100%</b>	<b>2</b>	<b>27</b>	<b>100%</b>	<b>4</b>	<b>53</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 20, 2020

Received: Oct 22, 2020

Reported: Oct 22, 2020



Project Analyst:  
Ramesh Poluri, PhD

*P. Ramesh*

Date:  
**10 - 22 - 2020**

Reviewed By:  
Steve Hayes, BSMT

*Stephen N. Hayes*

Date:  
**10 - 22 - 2020**

Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	MP 112			133			121			129		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	13/m <sup>3</sup>			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	2	27	66.7%	3	40	60.0%	1	13	50.0%	2	27	100.0%
Aspergillus Penicillium												
Basidiospores	1	13	33.3%	1	13	20.0%	1	13	50.0%			
Bipolaris Drechslera												
Chaetomium												
Cladosporium				1	13	20.0%						
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	3	40	100%	5	66	100%	2	26	100%	2	27	100%

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 20, 2020      Received: Oct 22, 2020      Reported: Oct 22, 2020

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: 10 - 22 - 2020      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: 10 - 22 - 2020

Sample Number	9 A09			10 A10				
Sample Name	126 Library			Blank				
Sample Volume	75.00 liter			0.00 liter				
Reporting Limit	13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>				
Background	2			NBD				
Fragments	ND			ND				
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total		
Alternaria	1	13	33.3%					
Ascospores	2	27	66.7%					
Aspergillus Penicillium								
Basidiospores								
Bipolaris Drechslera								
Chaetomium								
Cladosporium								
Curvularia								
Epicoccum								
Fusarium								
Memnoniella								
Myxomycetes								
Pithomyces								
Stachybotrys								
Stemphylium								
Torula								
Ulocladium								
Total	3	40	100%	ND	ND			

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



Collected: **Oct 20, 2020**      Received: **Oct 22, 2020**      Reported: **Oct 22, 2020**

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: **10 - 22 - 2020**      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: **10 - 22 - 2020**

**Spore Trap Information**

<b>Reporting Limit</b>	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.										
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.										
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>										
<b>Fragments</b>	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.										
<b>Control Comparisons</b>	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.										
<table border="1"> <tr> <td style="background-color: #ADD8E6;">Water Damage Indicator</td> <td><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</td> </tr> <tr> <td style="background-color: #90EE90;">Common Allergen</td> <td><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</td> </tr> <tr> <td style="background-color: #FFDAB9;">Slightly Higher than Baseline</td> <td><b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</td> </tr> <tr> <td style="background-color: #FFB6C1;">Significantly Higher than Baseline</td> <td><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</td> </tr> <tr> <td style="background-color: #DDA0DD;">Ratio Abnormality</td> <td><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.</td> </tr> </table>	Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.	Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.	Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.	Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.	Ratio Abnormality	<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.	
Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.										
Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.										
Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.										
Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.										
Ratio Abnormality	<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.										
<b>Color Coding</b>	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.										

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<b>Alternaria</b>	<b>Habitat:</b> Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces. <b>Effects:</b> A common allergen and has been associated with hypersensitivity pneumonitis. <i>Alternaria</i> 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.
<b>Ascospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.
<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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. <b>Effects:</b> 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.
<b>Basidiospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.
<b>Cladosporium</b>	<b>Habitat:</b> 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. <b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.
<b>Epicoccum</b>	<b>Habitat:</b> 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. <b>Effects:</b> It is a common allergen. No cases of infection have been reported in humans.

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**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.

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Analysis Report prepared for

## The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Fracestown Elementary

Collected: **October 21, 2020**  
Received: **October 26, 2020**  
Reported: **October 26, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 10 samples by FedEx in good condition for this project on October 26th, 2020.

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



DPH License: #PH-0198

Sample Number	1	A01			2	A02			3	A03			4	A04		
Sample Name	<b>Outside Front</b>			<b>Outside Back</b>			<b>132</b>			<b>Nurse</b>						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>						
Background	2			2			2			2						
Fragments	ND			ND			ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria										2	27	28.6%				
Ascospores	19	253	47.5%	9	120	32.1%	1	13	20.0%	2	27	28.6%				
Aspergillus Penicillium				6	80	21.4%										
Basidiospores	7	93	17.5%	9	120	32.1%	2	27	40.0%							
Bipolaris Drechslera																
Chaetomium																
Cladosporium	14	187	35.0%	2	27	7.1%				1	13	14.3%				
Curvularia																
Epicoccum																
Fusarium																
Memnoniella																
Myxomycetes				2	27	7.1%	1	13	20.0%	1	13	14.3%				
Pithomyces							1	13	20.0%							
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
<b>Total</b>	<b>40</b>	<b>533</b>	<b>100%</b>	<b>28</b>	<b>374</b>	<b>100%</b>	<b>5</b>	<b>66</b>	<b>100%</b>	<b>7</b>	<b>93</b>	<b>100%</b>				

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: **Oct 21, 2020**

Received: **Oct 26, 2020**

Reported: **Oct 26, 2020**



Project Analyst:

Shareef Abdelgadir, MS

*Shareef Abdelgadir*

Date:

**10 - 26 - 2020**

Reviewed By:

Steve Hayes, BSMT

*Stephen N. Hayes*

Date:

**10 - 26 - 2020**



Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	109			Library			127			Multipurpose		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	3	40	30.0%	2	27	100.0%				4	53	40.0%
Aspergillus Penicillium												
Basidiospores	4	53	40.0%				2	27	66.7%	1	13	10.0%
Bipolaris Drechslera												
Chaetomium												
Cladosporium										5	67	50.0%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes	1	13	10.0%									
Pithomyces	2	27	20.0%				1	13	33.3%			
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	10	133	100%	2	27	100%	3	40	100%	10	133	100%

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 21, 2020

Received: Oct 26, 2020

Reported: Oct 26, 2020

Project Analyst:  
 Shareef Abdelgadir, MS *Shareef Abdelgadir*

Date:  
**10 - 26 - 2020**

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

Date:  
**10 - 26 - 2020**

Sample Number	9	A09			10	A10				
Sample Name	112			Blank						
Sample Volume	75.00 liter			0.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>						
Background	2			NBD						
Fragments	ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria										
Ascospores	2	27	18.2%							
Aspergillus Penicillium										
Basidiospores										
Bipolaris Drechslera										
Chaetomium										
Cladosporium	9	120	81.8%							
Curvularia										
Epicoccum										
Fusarium										
Memnoniella										
Myxomycetes										
Pithomyces										
Stachybotrys										
Stemphylium										
Torula										
Ulocladium										
Total	11	147	100%	ND	ND					

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 21, 2020

Received: Oct 26, 2020

Reported: Oct 26, 2020



Project Analyst:  
Shareef Abdelgadir, MS *Shareef Abdelgadir*

Date:  
**10 - 26 - 2020**

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

Date:  
**10 - 26 - 2020**

**Spore Trap Information**

<b>Reporting Limit</b>	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.					
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.					
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>					
<b>Fragments</b>	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.					
<b>Control Comparisons</b>	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.					
<table border="1"> <tr><td data-bbox="44 985 464 1040">Water Damage Indicator</td></tr> <tr><td data-bbox="44 1040 464 1096">Common Allergen</td></tr> <tr><td data-bbox="44 1096 464 1151">Slightly Higher than Baseline</td></tr> <tr><td data-bbox="44 1151 464 1206">Significantly Higher than Baseline</td></tr> <tr><td data-bbox="44 1206 464 1279">Ratio Abnormality</td></tr> </table>	Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality	<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>
Water Damage Indicator						
Common Allergen						
Slightly Higher than Baseline						
Significantly Higher than Baseline						
Ratio Abnormality						
<b>Color Coding</b>	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.					

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<b>Alternaria</b>	<b>Habitat:</b> Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces. <b>Effects:</b> A common allergen and has been associated with hypersensitivity pneumonitis. <i>Alternaria</i> 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.
<b>Ascospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.
<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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. <b>Effects:</b> 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.
<b>Basidiospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.
<b>Cladosporium</b>	<b>Habitat:</b> 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. <b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.
<b>Myxomycetes</b>	<b>Habitat:</b> Found on decaying plant material and as a plant pathogen. <b>Effects:</b> Some allergenic properties reported, but generally pose no health concerns to humans.

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**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.

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Analysis Report prepared for

## The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Great Brook

Collected: **October 19, 2020**  
Received: **October 21, 2020**  
Reported: **October 21, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 16 samples by FedEx in good condition for this project on October 21st, 2020.

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



DPH License: #PH-0198

Sample Number	1 A01			2 A02			3 A03			4 A04		
Sample Name	Outside Front			Outside Back			Main Office			Kitchen		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			27/m <sup>3</sup>			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	100	1333	72.5%	128	1707	63.7%	1	13	25.0%	2	27	100.0%
Aspergillus Penicillium				3	40	1.5%						
Basidiospores	32	427	23.2%	40	533	19.9%						
Bipolaris Drechslera												
Chaetomium												
Cladosporium	5	67	3.6%	14	187	7.0%						
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes	1	13	<1%	16	213	8.0%	3	40	75.0%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	138	1840	100%	201	2680	100%	4	53	100%	2	27	100%

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 19, 2020

Received: Oct 21, 2020

Reported: Oct 21, 2020



Project Analyst:  
 Ramesh Poluri, PhD

*P. Ramesh*

Date:  
 10 - 21 - 2020

Reviewed By:  
 Steve Hayes, BSMT

*Stephen N. Hayes*

Date:  
 10 - 21 - 2020

Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	Rm 111			307			104			Hall Near 113		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	13/m <sup>3</sup>			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	1	13	50.0%	1	13	100.0%	2	27	66.7%	1	13	50.0%
Aspergillus Penicillium												
Basidiospores	1	13	50.0%				1	13	33.3%			
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes										1	13	50.0%
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>2</b>	<b>26</b>	<b>100%</b>	<b>1</b>	<b>13</b>	<b>100%</b>	<b>3</b>	<b>40</b>	<b>100%</b>	<b>2</b>	<b>26</b>	<b>100%</b>

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

Collected: Oct 19, 2020

Received: Oct 21, 2020

Reported: Oct 21, 2020



Project Analyst:  
 Ramesh Poluri, PhD

*P. Ramesh*

Date:  
 10 - 21 - 2020

Reviewed By:  
 Steve Hayes, BSMT

*Stephen N. Hayes*

Date:  
 10 - 21 - 2020



Sample Number	9	A09		10	A10		11	A11		12	A12	
Sample Name	<b>a09</b>			<b>100</b>			<b>209</b>			<b>Gym</b>		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			27/m <sup>3</sup>			ND			13/m <sup>3</sup>		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	2	27	50.0%	4	53	57.1%	2	27	50.0%	2	27	100.0%
Aspergillus Penicillium	1	13	25.0%									
Basidiospores				1	13	14.3%						
Bipolaris Drechslera												
Chaetomium												
Cladosporium	1	13	25.0%	2	27	28.6%	1	13	25.0%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes							1	13	25.0%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>4</b>	<b>53</b>	<b>100%</b>	<b>7</b>	<b>93</b>	<b>100%</b>	<b>4</b>	<b>53</b>	<b>100%</b>	<b>2</b>	<b>27</b>	<b>100%</b>

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



Collected: **Oct 19, 2020**      Received: **Oct 21, 2020**      Reported: **Oct 21, 2020**

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: **10 - 21 - 2020**      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: **10 - 21 - 2020**

Sample Number	13	A13			14	A14			15	A15			16	A16		
Sample Name	Library			302			312			Blank						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			0.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>						
Background	2			2			2			NBD						
Fragments	ND			ND			13/m <sup>3</sup>			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria																
Ascospores	2	27	66.7%	1	13	50.0%	2	27	66.7%							
Aspergillus Penicillium																
Basidiospores																
Bipolaris Drechslera																
Chaetomium																
Cladosporium																
Curvularia							1	13	33.3%							
Epicoccum	1	13	33.3%													
Fusarium																
Memnoniella																
Myxomycetes				1	13	50.0%										
Pithomyces																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Total	3	40	100%	2	26	100%	3	40	100%	ND	ND					

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



Collected: Oct 19, 2020      Received: Oct 21, 2020      Reported: Oct 21, 2020

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: 10 - 21 - 2020      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: 10 - 21 - 2020

<b>Reporting Limit</b>	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.					
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.					
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>					
<b>Fragments</b>	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.					
<b>Control Comparisons</b>	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.					
<table border="1"> <tr><td>Water Damage Indicator</td></tr> <tr><td>Common Allergen</td></tr> <tr><td>Slightly Higher than Baseline</td></tr> <tr><td>Significantly Higher than Baseline</td></tr> <tr><td>Ratio Abnormality</td></tr> </table>	Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality	<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>
Water Damage Indicator						
Common Allergen						
Slightly Higher than Baseline						
Significantly Higher than Baseline						
Ratio Abnormality						
<b>Color Coding</b>	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.					

---

<b>Ascospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.

---

<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> 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.

---

<b>Basidiospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.

---

<b>Cladosporium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

---

<b>Curvularia</b>	<b>Habitat:</b> They exist in soil and plant debris, and are plant pathogens.
	<b>Effects:</b> 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.

---

<b>Epicoccum</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> It is a common allergen. No cases of infection have been reported in humans.

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**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.

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Analysis Report prepared for

# The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Greenfield Elementary

Collected:  
Received: **October 26, 2020**  
Reported: **October 26, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 10 samples by FedEx in good condition for this project on October 26th, 2020.

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



DPH License: #PH-0198

Sample Number	1 A-1			2 A-2			3 A-3			4 A-4		
Sample Name	Outside Back			Outside Front			Library			132		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			13/m <sup>3</sup>			ND			13/m <sup>3</sup>		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	192	2560	41.0%	196	2613	66.9%	2	27	50.0%	2	27	50.0%
Aspergillus Penicillium	3	40	<1%	2	27	<1%						
Basidiospores	128	1707	27.4%	88	1173	30.0%				1	13	25.0%
Bipolaris Drechslera												
Chaetomium												
Cladosporium	140	1867	29.9%	7	93	2.4%	1	13	25.0%			
Curvularia							1	13	25.0%			
Epicoccum	2	27	<1%									
Fusarium												
Memnoniella												
Myxomycetes	3	40	<1%									
Pithomyces										1	13	25.0%
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>468</b>	<b>6241</b>	<b>100%</b>	<b>293</b>	<b>3906</b>	<b>100%</b>	<b>4</b>	<b>53</b>	<b>100%</b>	<b>4</b>	<b>53</b>	<b>100%</b>

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



Collected:      Received: **Oct 26, 2020**      Reported: **Oct 26, 2020**

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: **10 - 26 - 2020**      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: **10 - 26 - 2020**

Sample Number	5 A-5			6 A-6			7 A-7			8 A-8		
Sample Name	110			112			Nurse			126		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria										1	13	25.0%
Ascospores	2	27	33.3%	1	13	20.0%	4	53	50.0%	2	27	50.0%
Aspergillus Penicillium												
Basidiospores	2	27	33.3%	3	40	60.0%	2	27	25.0%			
Bipolaris Drechslera												
Chaetomium												
Cladosporium	1	13	16.7%	1	13	20.0%	1	13	12.5%	1	13	25.0%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes	1	13	16.7%				1	13	12.5%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	6	80	100%	5	66	100%	8	106	100%	4	53	100%

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



Collected:      Received: **Oct 26, 2020**      Reported: **Oct 26, 2020**

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: **10 - 26 - 2020**      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: **10 - 26 - 2020**



Sample Number	9	A-9			10	A-10				
Sample Name	<b>Multipurpose</b>			<b>Blank</b>						
Sample Volume	75.00 liter			0.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>						
Background	2			NBD						
Fragments	ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria										
Ascospores	6	80	66.7%							
Aspergillus Penicillium										
Basidiospores	1	13	11.1%							
Bipolaris Drechslera										
Chaetomium										
Cladosporium										
Curvularia										
Epicoccum										
Fusarium										
Memnoniella										
Myxomycetes	2	27	22.2%							
Pithomyces										
Stachybotrys										
Stemphylium										
Torula										
Ulocladium										
<b>Total</b>	<b>9</b>	<b>120</b>	<b>100%</b>	<b>ND</b>	<b>ND</b>					

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



Collected:	Received: <b>Oct 26, 2020</b>	Reported: <b>Oct 26, 2020</b>
Project Analyst: Ramesh Poluri, PhD <i>P. Ramesh</i>	Date: <b>10 - 26 - 2020</b>	Reviewed By: Steve Hayes, BSMT <i>Stephen N. Hayes</i>
	Date: <b>10 - 26 - 2020</b>	

**Spore Trap Information**

<b>Reporting Limit</b>	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.										
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.										
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>										
<b>Fragments</b>	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.										
<b>Control Comparisons</b>	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.										
<table border="1"> <tr> <td style="background-color: #ADD8E6;">Water Damage Indicator</td> <td><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</td> </tr> <tr> <td style="background-color: #90EE90;">Common Allergen</td> <td><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</td> </tr> <tr> <td style="background-color: #FFDAB9;">Slightly Higher than Baseline</td> <td><b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</td> </tr> <tr> <td style="background-color: #FFB6C1;">Significantly Higher than Baseline</td> <td><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</td> </tr> <tr> <td style="background-color: #DDA0DD;">Ratio Abnormality</td> <td><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.</td> </tr> </table>	Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.	Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.	Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.	Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.	Ratio Abnormality	<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.	
Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.										
Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.										
Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.										
Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.										
Ratio Abnormality	<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.										
<b>Color Coding</b>	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.										

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<b>Alternaria</b>	<b>Habitat:</b> Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces.
	<b>Effects:</b> A common allergen and has been associated with hypersensitivity pneumonitis. <i>Alternaria</i> 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.

---

<b>Ascospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.

---

<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> 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.

---

<b>Basidiospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.

---

<b>Cladosporium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

---

<b>Curvularia</b>	<b>Habitat:</b> They exist in soil and plant debris, and are plant pathogens.
	<b>Effects:</b> 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.

---

**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.

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**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.

---

Analysis Report prepared for

## The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Hancock Elementary

Collected: **October 19, 2020**  
Received: **October 21, 2020**  
Reported: **October 21, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 10 samples by FedEx in good condition for this project on October 21st, 2020.

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



DPH License: #PH-0198

Sample Number	1	A01		2	A02		3	A03		4	A04	
Sample Name	<b>Outside Front</b>			<b>Outside Back</b>			<b>112</b>			<b>109</b>		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			1		
Fragments	13/m <sup>3</sup>			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria							1	13	33.3%			
Ascospores	120	1600	67.4%	96	1280	67.1%	1	13	33.3%	1	13	50.0%
Aspergillus Penicillium				2	27	1.4%						
Basidiospores	48	640	27.0%	24	320	16.8%				1	13	50.0%
Bipolaris Drechslera												
Chaetomium												
Cladosporium	5	67	2.8%	16	213	11.2%						
Curvularia												
Epicoccum	3	40	1.7%									
Fusarium												
Memnoniella												
Myxomycetes	1	13	<1%	5	67	3.5%	1	13	33.3%			
Pithomyces	1	13	<1%									
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>178</b>	<b>2373</b>	<b>100%</b>	<b>143</b>	<b>1907</b>	<b>100%</b>	<b>3</b>	<b>39</b>	<b>100%</b>	<b>2</b>	<b>26</b>	<b>100%</b>

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

Collected: Oct 19, 2020

Received: Oct 21, 2020

Reported: Oct 21, 2020



Project Analyst:  
 Ramesh Poluri, PhD

*P. Ramesh*

Date:  
 10 - 21 - 2020

Reviewed By:  
 Steve Hayes, BSMT

*Stephen N. Hayes*

Date:  
 10 - 21 - 2020

Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	<b>Cafetorium</b>			<b>Nurse</b>			<b>132</b>			<b>126</b>		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			13/m <sup>3</sup>			13/m <sup>3</sup>			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	1	13	100.0%	2	27	100.0%	1	13	20.0%	1	13	100.0%
Aspergillus Penicillium												
Basidiospores												
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia							1	13	20.0%			
Epicoccum							2	27	40.0%			
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces							1	13	20.0%			
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>1</b>	<b>13</b>	<b>100%</b>	<b>2</b>	<b>27</b>	<b>100%</b>	<b>5</b>	<b>66</b>	<b>100%</b>	<b>1</b>	<b>13</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 19, 2020

Received: Oct 21, 2020

Reported: Oct 21, 2020

Project Analyst:  
 Ramesh Poluri, PhD *P. Ramesh*

Date:  
**10 - 21 - 2020**

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

Date:  
**10 - 21 - 2020**

Sample Number	9	A09			10	A10				
Sample Name	105			Blank						
Sample Volume	75.00 liter			0.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>						
Background	1			NBD						
Fragments	ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria										
Ascospores	1	13	50.0%							
Aspergillus Penicillium										
Basidiospores										
Bipolaris Drechslera										
Chaetomium										
Cladosporium	1	13	50.0%							
Curvularia										
Epicoccum										
Fusarium										
Memnoniella										
Myxomycetes										
Pithomyces										
Stachybotrys										
Stemphylium										
Torula										
Ulocladium										
Total	2	26	100%	ND	ND					

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



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 Steve Hayes, BSMT *Stephen N. Hayes*

Date:  
**10 - 21 - 2020**



**Spore Trap Information**

<b>Reporting Limit</b>	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.										
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.										
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>										
<b>Fragments</b>	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.										
<b>Control Comparisons</b>	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.										
<table border="1"> <tr> <td style="background-color: #ADD8E6;">Water Damage Indicator</td> <td><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</td> </tr> <tr> <td style="background-color: #90EE90;">Common Allergen</td> <td><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</td> </tr> <tr> <td style="background-color: #FFDAB9;">Slightly Higher than Baseline</td> <td><b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</td> </tr> <tr> <td style="background-color: #FFB6C1;">Significantly Higher than Baseline</td> <td><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</td> </tr> <tr> <td style="background-color: #DDA0DD;">Ratio Abnormality</td> <td><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.</td> </tr> </table>	Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.	Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.	Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.	Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.	Ratio Abnormality	<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.	
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Ratio Abnormality	<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.										
<b>Color Coding</b>	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.										

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<b>Alternaria</b>	<b>Habitat:</b> Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces. <b>Effects:</b> A common allergen and has been associated with hypersensitivity pneumonitis. <i>Alternaria</i> 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.
<b>Ascospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.
<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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. <b>Effects:</b> 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.
<b>Basidiospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.
<b>Cladosporium</b>	<b>Habitat:</b> 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. <b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.
<b>Curvularia</b>	<b>Habitat:</b> They exist in soil and plant debris, and are plant pathogens. <b>Effects:</b> 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.

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**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.

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**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.

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**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.

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Analysis Report prepared for

## The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Peterborough Elementary

Collected: **October 20, 2020**  
Received: **October 22, 2020**  
Reported: **October 22, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 18 samples by FedEx in good condition for this project on October 22nd, 2020.

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



DPH License: #PH-0198

Sample Number	1 A01			2 A02			3 A03			4 A04		
Sample Name	Outside Front Entrance			Outside Back			S1			52		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			13/m <sup>3</sup>			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	192	2560	51.2%	140	1867	51.7%	2	27	50.0%	2	27	100.0%
Aspergillus Penicillium	3	40	<1%									
Basidiospores	176	2347	46.9%	128	1707	47.2%						
Bipolaris Drechslera												
Chaetomium												
Cladosporium	4	53	1.1%	2	27	<1%	1	13	25.0%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes				1	13	<1%	1	13	25.0%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	375	5000	100%	271	3614	100%	4	53	100%	2	27	100%

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: **Oct 20, 2020**      Received: **Oct 22, 2020**      Reported: **Oct 22, 2020**

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: **10 - 22 - 2020**      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: **10 - 22 - 2020**

Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	<b>Gym 136</b>			<b>255</b>			<b>150</b>			<b>143</b>		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			1			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	2	27	40.0%	1	13	33.3%	1	13	100.0%	1	13	50.0%
Aspergillus Penicillium												
Basidiospores												
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes	2	27	40.0%	2	27	66.7%				1	13	50.0%
Pithomyces	1	13	20.0%									
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>5</b>	<b>67</b>	<b>100%</b>	<b>3</b>	<b>40</b>	<b>100%</b>	<b>1</b>	<b>13</b>	<b>100%</b>	<b>2</b>	<b>26</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 20, 2020

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Project Analyst:  
Ramesh Poluri, PhD

*P. Ramesh*

Date:  
**10 - 22 - 2020**

Reviewed By:  
Steve Hayes, BSMT

*Stephen N. Hayes*

Date:  
**10 - 22 - 2020**

Sample Number	9	A09		10	A10		11	A11		12	A12	
Sample Name	<b>145</b>			<b>140</b>			<b>53</b>			<b>138 Library</b>		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			1		
Fragments	ND			ND			ND			ND		
<b>Organism</b>	<b>Raw Count</b>	<b>Count / m<sup>3</sup></b>	<b>% of Total</b>	<b>Raw Count</b>	<b>Count / m<sup>3</sup></b>	<b>% of Total</b>	<b>Raw Count</b>	<b>Count / m<sup>3</sup></b>	<b>% of Total</b>	<b>Raw Count</b>	<b>Count / m<sup>3</sup></b>	<b>% of Total</b>
Alternaria												
Ascospores	1	13	33.3%	2	27	15.4%	1	13	33.3%	1	13	100.0%
Aspergillus Penicillium												
Basidiospores												
Bipolaris Drechslera												
Chaetomium												
Cladosporium				10	133	76.9%						
Curvularia												
Epicoccum	1	13	33.3%				1	13	33.3%			
Fusarium												
Memnoniella												
Myxomycetes	1	13	33.3%	1	13	7.7%						
Pithomyces							1	13	33.3%			
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>3</b>	<b>39</b>	<b>100%</b>	<b>13</b>	<b>173</b>	<b>100%</b>	<b>3</b>	<b>39</b>	<b>100%</b>	<b>1</b>	<b>13</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Steve Hayes, BSMT

*Stephen N. Hayes*

Date:  
**10 - 22 - 2020**

Sample Number	13	A13		14	A14		15	A15		16	A16	
Sample Name	<b>155</b>			<b>Art</b>			<b>Nurse</b>			<b>Sick Bay</b>		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			ND			13/m <sup>3</sup>		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	2	27	66.7%	2	27	100.0%	1	13	100.0%	2	27	66.7%
Aspergillus Penicillium												
Basidiospores										1	13	33.3%
Bipolaris Drechslera												
Chaetomium												
Cladosporium												
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes	1	13	33.3%									
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>3</b>	<b>40</b>	<b>100%</b>	<b>2</b>	<b>27</b>	<b>100%</b>	<b>1</b>	<b>13</b>	<b>100%</b>	<b>3</b>	<b>40</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Project Analyst:  
Ramesh Poluri, PhD

*P. Ramesh*

Date:  
**10 - 22 - 2020**

Reviewed By:  
Steve Hayes, BSMT

*Stephen N. Hayes*

Date:  
**10 - 22 - 2020**



Sample Number	17	A17			18	A18				
Sample Name	<b>250</b>			<b>Blank</b>						
Sample Volume	75.00 liter			0.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>						
Background	2			NBD						
Fragments	13/m <sup>3</sup>			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria										
Ascospores	1	13	50.0%							
Aspergillus Penicillium										
Basidiospores	1	13	50.0%							
Bipolaris Drechslera										
Chaetomium										
Cladosporium										
Curvularia										
Epicoccum										
Fusarium										
Memnoniella										
Myxomycetes										
Pithomyces										
Stachybotrys										
Stemphylium										
Torula										
Ulocladium										
<b>Total</b>	<b>2</b>	<b>26</b>	<b>100%</b>	<b>ND</b>	<b>ND</b>					

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Project Analyst:  
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Date:  
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Reviewed By:  
 Steve Hayes, BSMT *Stephen N. Hayes*

Date:  
**10 - 22 - 2020**

**Spore Trap Information**

<b>Reporting Limit</b>	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.										
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.										
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>										
<b>Fragments</b>	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.										
<b>Control Comparisons</b>	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.										
<table border="1"> <tr> <td style="background-color: #ADD8E6;">Water Damage Indicator</td> <td><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</td> </tr> <tr> <td style="background-color: #90EE90;">Common Allergen</td> <td><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</td> </tr> <tr> <td style="background-color: #FFDAB9;">Slightly Higher than Baseline</td> <td><b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</td> </tr> <tr> <td style="background-color: #FFB6C1;">Significantly Higher than Baseline</td> <td><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</td> </tr> <tr> <td style="background-color: #DDA0DD;">Ratio Abnormality</td> <td><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.</td> </tr> </table>	Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.	Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.	Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.	Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.	Ratio Abnormality	<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.	
Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.										
Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.										
Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.										
Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.										
Ratio Abnormality	<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.										
<b>Color Coding</b>	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.										

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<b>Ascospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.

---

<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> 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.

---

<b>Basidiospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.

---

<b>Cladosporium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

---

<b>Epicoccum</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> It is a common allergen. No cases of infection have been reported in humans.

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<b>Myxomycetes</b>	<b>Habitat:</b> Found on decaying plant material and as a plant pathogen.
	<b>Effects:</b> 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.

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Analysis Report prepared for

# The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Bennington Elementary

Collected: **October 19, 2020**  
Received: **October 21, 2020**  
Reported: **October 21, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 10 samples by FedEx in good condition for this project on October 21st, 2020.

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



DPH License: #PH-0198

Sample Number	1 A01			2 A02			3 A03			4 A04		
Sample Name	Outside SE Facing Corner			Parking Outside			Rm 113			Library		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			3		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	24	320	27.9%	30	400	22.4%						
Aspergillus Penicillium												
Basidiospores	9	120	10.5%	96	1280	71.6%	4	53	50.0%	9	120	52.9%
Bipolaris Drechslera												
Chaetomium												
Cladosporium	34	453	39.5%	7	93	5.2%				1	13	5.9%
Curvularia	1	13	1.2%									
Epicoccum	10	133	11.6%							1	13	5.9%
Fusarium												
Memnoniella												
Myxomycetes				1	13	<1%	4	53	50.0%	4	53	23.5%
Pithomyces	8	107	9.3%							2	27	11.8%
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>86</b>	<b>1146</b>	<b>100%</b>	<b>134</b>	<b>1786</b>	<b>100%</b>	<b>8</b>	<b>106</b>	<b>100%</b>	<b>17</b>	<b>226</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 19, 2020

Received: Oct 21, 2020

Reported: Oct 21, 2020

Project Analyst:  
 Connor Gailliot, BS

Date:  
**10 - 21 - 2020**

Reviewed By:  
 Steve Hayes, BSMT

Date:  
**10 - 21 - 2020**

Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	114			108			100			Gym		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores				2	27	50.0%	1	13	8.3%			
Aspergillus Penicillium	2	27	25.0%				5	67	41.7%			
Basidiospores	3	40	37.5%	2	27	50.0%	1	13	8.3%	2	27	50.0%
Bipolaris Drechslera												
Chaetomium												
Cladosporium	3	40	37.5%				1	13	8.3%	2	27	50.0%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes							4	53	33.3%			
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>8</b>	<b>107</b>	<b>100%</b>	<b>4</b>	<b>54</b>	<b>100%</b>	<b>12</b>	<b>159</b>	<b>100%</b>	<b>4</b>	<b>54</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: **Oct 19, 2020**      Received: **Oct 21, 2020**      Reported: **Oct 21, 2020**

Project Analyst: Connor Gailliot, BS *[Signature]*      Date: **10 - 21 - 2020**      Reviewed By: Steve Hayes, BSMT *[Signature]*      Date: **10 - 21 - 2020**

Sample Number	9 A09			10 A10				
Sample Name	Small Group Room 2nd FL			Blank				
Sample Volume	75.00 liter			0.00 liter				
Reporting Limit	13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>				
Background	2			NBD				
Fragments	ND			ND				
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total		
Alternaria								
Ascospores	4	53	33.3%					
Aspergillus Penicillium								
Basidiospores	1	13	8.3%					
Bipolaris Drechslera								
Chaetomium								
Cladosporium	2	27	16.7%					
Curvularia								
Epicoccum	2	27	16.7%					
Fusarium								
Memnoniella								
Myxomycetes	3	40	25.0%					
Pithomyces								
Stachybotrys								
Stemphylium								
Torula								
Ulocladium								
Total	12	160	100%	ND	ND			

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



Collected: Oct 19, 2020

Received: Oct 21, 2020

Reported: Oct 21, 2020

Project Analyst:  
 Connor Gailliot, BS

Date:  
 10 - 21 - 2020

Reviewed By:  
 Steve Hayes, BSMT

Date:  
 10 - 21 - 2020



<b>Reporting Limit</b>	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.					
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.					
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>					
<b>Fragments</b>	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.					
<b>Control Comparisons</b>	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.					
<table border="1"> <tr><td data-bbox="44 976 464 1040">Water Damage Indicator</td></tr> <tr><td data-bbox="44 1040 464 1105">Common Allergen</td></tr> <tr><td data-bbox="44 1105 464 1170">Slightly Higher than Baseline</td></tr> <tr><td data-bbox="44 1170 464 1235">Significantly Higher than Baseline</td></tr> <tr><td data-bbox="44 1235 464 1276">Ratio Abnormality</td></tr> </table>	Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality	<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>
Water Damage Indicator						
Common Allergen						
Slightly Higher than Baseline						
Significantly Higher than Baseline						
Ratio Abnormality						
<b>Color Coding</b>	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.					

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<b>Ascospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.

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<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> 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.

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<b>Basidiospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.

---

<b>Cladosporium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

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<b>Curvularia</b>	<b>Habitat:</b> They exist in soil and plant debris, and are plant pathogens.
	<b>Effects:</b> 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.

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<b>Epicoccum</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> It is a common allergen. No cases of infection have been reported in humans.

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**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.

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Analysis Report prepared for

## The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Peterborough Middle School

Collected: **October 20, 2020**  
Received: **October 22, 2020**  
Reported: **October 22, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 22 samples by FedEx in good condition for this project on October 22nd, 2020.

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



DPH License: #PH-0198

Sample Number	1 A01			2 A02			3 A03			4 A04		
Sample Name	Outside - Near Intake			Outside - Front Entry			Gym			Music		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	13/m <sup>3</sup>			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria	1	13	<1%									
Ascospores	96	1280	18.3%	132	1760	55.7%	3	40	75.0%	2	27	100.0%
Aspergillus Penicillium	5	67	<1%									
Basidiospores	40	533	7.6%	80	1067	33.8%	1	13	25.0%			
Bipolaris Drechslera												
Chaetomium												
Cladosporium	200	2667	38.0%	18	240	7.6%						
Curvularia												
Epicoccum	20	267	3.8%	1	13	<1%						
Fusarium												
Memnoniella												
Myxomycetes	160	2133	30.4%	2	27	<1%						
Pithomyces	4	53	<1%									
Stachybotrys												
Stemphylium												
Torula				4	53	1.7%						
Ulocladium												
Total	526	7013	100%	237	3160	100%	4	53	100%	2	27	100%

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 20, 2020

Received: Oct 22, 2020

Reported: Oct 22, 2020



Project Analyst:  
Ramesh Poluri, PhD

*P. Ramesh*

Date:  
10 - 22 - 2020

Reviewed By:  
Steve Hayes, BSMT

*Stephen N. Hayes*

Date:  
10 - 22 - 2020

Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	Library			35			82			8		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	13/m <sup>3</sup>			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	2	27	66.7%	1	13	100.0%	1	13	33.3%	1	13	50.0%
Aspergillus Penicillium												
Basidiospores	1	13	33.3%									
Bipolaris Drechslera												
Chaetomium												
Cladosporium							2	27	66.7%			
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces										1	13	50.0%
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	3	40	100%	1	13	100%	3	40	100%	2	26	100%

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



Collected: Oct 20, 2020

Received: Oct 22, 2020

Reported: Oct 22, 2020

Project Analyst:  
 Ramesh Poluri, PhD *P. Ramesh*

Date:  
**10 - 22 - 2020**

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

Date:  
**10 - 22 - 2020**

Sample Number	9	A09			10	A10			11	A11			12	A12		
Sample Name	<b>11</b>			<b>NU 4</b>			<b>13</b>			<b>5</b>						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>						
Background	2			2			2			2						
Fragments	13/m <sup>3</sup>			13/m <sup>3</sup>			ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria																
Ascospores	2	27	66.7%	1	13	50.0%	1	13	20.0%	2	27	50.0%				
Aspergillus Penicillium																
Basidiospores							4	53	80.0%	1	13	25.0%				
Bipolaris Drechslera																
Chaetomium																
Cladosporium										1	13	25.0%				
Curvularia																
Epicoccum	1	13	33.3%													
Fusarium																
Memnoniella																
Myxomycetes				1	13	50.0%										
Pithomyces																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
<b>Total</b>	<b>3</b>	<b>40</b>	<b>100%</b>	<b>2</b>	<b>26</b>	<b>100%</b>	<b>5</b>	<b>66</b>	<b>100%</b>	<b>4</b>	<b>53</b>	<b>100%</b>				

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



Collected: **Oct 20, 2020**      Received: **Oct 22, 2020**      Reported: **Oct 22, 2020**

Project Analyst: Ramesh Poluri, PhD *P. Ramesh*      Date: **10 - 22 - 2020**      Reviewed By: Steve Hayes, BSMT *Stephen N. Hayes*      Date: **10 - 22 - 2020**

Sample Number	13	A13			14	A14			15	A15			16	A16		
Sample Name	1			37			4			Main						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>						
Background	2			2			2			2						
Fragments	ND			ND			ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria										1	13	25.0%				
Ascospores	1	13	100.0%	1	13	33.3%	2	27	100.0%	2	27	50.0%				
Aspergillus Penicillium																
Basidiospores										1	13	25.0%				
Bipolaris Drechslera																
Chaetomium																
Cladosporium																
Curvularia																
Epicoccum																
Fusarium																
Memnoniella																
Myxomycetes				2	27	66.7%										
Pithomyces																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Total	1	13	100%	3	40	100%	2	27	100%	4	53	100%				

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

Collected: Oct 20, 2020

Received: Oct 22, 2020

Reported: Oct 22, 2020



Project Analyst:  
Ramesh Poluri, PhD *P. Ramesh*

Date:  
**10 - 22 - 2020**

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

Date:  
**10 - 22 - 2020**



Sample Number	17	A17			18	A18			19	A19			20	A20		
Sample Name	<b>Rm 30</b>			<b>SAU Office</b>			<b>Rm 61</b>			<b>58</b>						
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter						
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>						
Background	2			2			1			2						
Fragments	ND			ND			ND			ND						
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total				
Alternaria																
Ascospores	2	27	66.7%	1	13	25.0%	1	13	100.0%	1	13	50.0%				
Aspergillus Penicillium																
Basidiospores	1	13	33.3%													
Bipolaris Drechslera																
Chaetomium																
Cladosporium										1	13	50.0%				
Curvularia																
Epicoccum																
Fusarium																
Memnoniella																
Myxomycetes				3	40	75.0%										
Pithomyces																
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
<b>Total</b>	<b>3</b>	<b>40</b>	<b>100%</b>	<b>4</b>	<b>53</b>	<b>100%</b>	<b>1</b>	<b>13</b>	<b>100%</b>	<b>2</b>	<b>26</b>	<b>100%</b>				

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: Oct 20, 2020

Received: Oct 22, 2020

Reported: Oct 22, 2020

Project Analyst:  
Ramesh Poluri, PhD *P. Ramesh*

Date:  
**10 - 22 - 2020**

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

Date:  
**10 - 22 - 2020**

Sample Number	21	A21		22	A22				
Sample Name	<b>21</b>			<b>Blank</b>					
Sample Volume	75.00 liter			0.00 liter					
Reporting Limit	13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>					
Background	2			NBD					
Fragments	13/m <sup>3</sup>			ND					
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total			
Alternaria	2	27	16.7%						
Ascospores	2	27	16.7%						
Aspergillus Penicillium									
Basidiospores									
Bipolaris Drechslera									
Chaetomium									
Cladosporium									
Curvularia									
Epicoccum									
Fusarium									
Memnoniella									
Myxomycetes	8	107	66.7%						
Pithomyces									
Stachybotrys									
Stemphylium									
Torula									
Ulocladium									
<b>Total</b>	<b>12</b>	<b>161</b>	<b>100%</b>	<b>ND</b>	<b>ND</b>				

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



Collected: Oct 20, 2020

Received: Oct 22, 2020

Reported: Oct 22, 2020

Project Analyst:  
 Ramesh Poluri, PhD *P. Ramesh*

Date:  
**10 - 22 - 2020**

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

Date:  
**10 - 22 - 2020**

**Spore Trap Information**

<b>Reporting Limit</b>	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.										
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.										
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>										
<b>Fragments</b>	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.										
<b>Control Comparisons</b>	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.										
<table border="1"> <tr> <td style="background-color: #ADD8E6;">Water Damage Indicator</td> <td><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</td> </tr> <tr> <td style="background-color: #90EE90;">Common Allergen</td> <td><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</td> </tr> <tr> <td style="background-color: #FFDAB9;">Slightly Higher than Baseline</td> <td><b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</td> </tr> <tr> <td style="background-color: #FFB6C1;">Significantly Higher than Baseline</td> <td><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</td> </tr> <tr> <td style="background-color: #DDA0DD;">Ratio Abnormality</td> <td><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.</td> </tr> </table>	Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.	Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.	Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.	Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.	Ratio Abnormality	<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.	
Water Damage Indicator	<b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.										
Common Allergen	<b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.										
Slightly Higher than Baseline	<b>Orange:</b> The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.										
Significantly Higher than Baseline	<b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.										
Ratio Abnormality	<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.										
<b>Color Coding</b>	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.										

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<b>Alternaria</b>	<b>Habitat:</b> Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces.
	<b>Effects:</b> A common allergen and has been associated with hypersensitivity pneumonitis. <i>Alternaria</i> 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.

---

<b>Ascospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.

---

<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> 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.

---

<b>Basidiospores</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.

---

<b>Cladosporium</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

---

<b>Epicoccum</b>	<b>Habitat:</b> 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.
	<b>Effects:</b> It is a common allergen. No cases of infection have been reported in humans.

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**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.

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**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.

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**Torula**

**Habitat:** Found in soil and on wood and grasses. Occasionally found growing indoors on cellulose containing materials.

**Effects:** A known allergen. No known cases of human infection.

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Analysis Report prepared for

## The Lawson Group

20 Chenell Drive  
Concord, NH 03301

Phone: (603) 228-3610

Temple Elementary

Collected: **October 20, 2020**  
Received: **October 22, 2020**  
Reported: **October 22, 2020**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 10 samples by FedEx in good condition for this project on October 22nd, 2020.

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




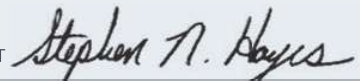
DPH License: #PH-0198

Sample Number	1 A01			2 A02			3 A03			4 A04		
Sample Name	Outside Front			Outside Back			110			141 Office		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	ND			13/m <sup>3</sup>			ND			13/m <sup>3</sup>		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria	1	13	<1%	2	27	<1%				1	13	6.3%
Ascospores	94	1253	22.7%	110	1467	26.8%				2	27	12.5%
Aspergillus Penicillium										5	67	31.3%
Basidiospores	280	3733	67.5%	262	3493	63.9%	4	53	100.0%	2	27	12.5%
Bipolaris Drechslera												
Chaetomium												
Cladosporium	13	173	3.1%	32	427	7.8%				2	27	12.5%
Curvularia												
Epicoccum				1	13	<1%				2	27	12.5%
Fusarium												
Memnoniella												
Myxomycetes	26	347	6.3%	3	40	<1%				2	27	12.5%
Pithomyces	1	13	<1%									
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>415</b>	<b>5532</b>	<b>100%</b>	<b>410</b>	<b>5467</b>	<b>100%</b>	<b>4</b>	<b>53</b>	<b>100%</b>	<b>16</b>	<b>215</b>	<b>100%</b>

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: **Oct 20, 2020**      Received: **Oct 22, 2020**      Reported: **Oct 22, 2020**

Project Analyst: Connor Gailliot, BS       Date: **10 - 22 - 2020**      Reviewed By: Steve Hayes, BSMT       Date: **10 - 22 - 2020**

Sample Number	5 A05			6 A06			7 A07			8 A08		
Sample Name	127			Multi Purpose			132			105		
Sample Volume	75.00 liter			75.00 liter			75.00 liter			75.00 liter		
Reporting Limit	13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>			13 spores/m <sup>3</sup>		
Background	2			2			2			2		
Fragments	13/m <sup>3</sup>			ND			ND			ND		
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total
Alternaria												
Ascospores	1	13	9.1%				2	27	25.0%			
Aspergillus Penicillium				3	40	33.3%						
Basidiospores	5	67	45.5%	2	27	22.2%	4	53	50.0%	1	13	50.0%
Bipolaris Drechslera												
Chaetomium												
Cladosporium	4	53	36.4%	2	27	22.2%	1	13	12.5%	1	13	50.0%
Curvularia				1	13	11.1%						
Epicoccum							1	13	12.5%			
Fusarium												
Memnoniella												
Myxomycetes	1	13	9.1%	1	13	11.1%						
Pithomyces												
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
<b>Total</b>	<b>11</b>	<b>146</b>	<b>100%</b>	<b>9</b>	<b>120</b>	<b>100%</b>	<b>8</b>	<b>106</b>	<b>100%</b>	<b>2</b>	<b>26</b>	<b>100%</b>

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



Collected: Oct 20, 2020

Received: Oct 22, 2020

Reported: Oct 22, 2020

Project Analyst:  
 Connor Gailliot, BS

Date:  
 10 - 22 - 2020

Reviewed By:  
 Steve Hayes, BSMT

Date:  
 10 - 22 - 2020



Sample Number	9 A09			10 A10				
Sample Name	126			Blank				
Sample Volume	75.00 liter			0.00 liter				
Reporting Limit	13 spores/m <sup>3</sup>			1 spore/m <sup>3</sup>				
Background	3			NBD				
Fragments	ND			ND				
Organism	Raw Count	Count / m <sup>3</sup>	% of Total	Raw Count	Count / m <sup>3</sup>	% of Total		
Alternaria								
Ascospores								
Aspergillus Penicillium								
Basidiospores	2	27	28.6%					
Bipolaris Drechslera								
Chaetomium								
Cladosporium	1	13	14.3%					
Curvularia								
Epicoccum	1	13	14.3%					
Fusarium								
Memnoniella								
Myxomycetes	3	40	42.9%					
Pithomyces								
Stachybotrys								
Stemphylium								
Torula								
Ulocladium								
Total	7	93	100%	ND	ND			

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Collected: **Oct 20, 2020**      Received: **Oct 22, 2020**      Reported: **Oct 22, 2020**

Project Analyst: Connor Gailliot, BS	Date: <b>10 - 22 - 2020</b>	Reviewed By: Steve Hayes, BSMT	Date: <b>10 - 22 - 2020</b>
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<b>Reporting Limit</b>	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.					
<b>Blanks</b>	Results have not been corrected for field or laboratory blanks.					
<b>Background</b>	<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><b>1 :</b> &lt;5% of field occluded. No spores will be uncountable.</p> <p><b>2 :</b> 5-25% of field occluded.</p> <p><b>3 :</b> 25-75% of field occluded.</p> <p><b>4 :</b> 75-90% of field occluded.</p> <p><b>5 :</b> &gt;90% of field occluded. Suggested recollection of sample.</p>					
<b>Fragments</b>	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.					
<b>Control Comparisons</b>	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.					
<table border="1"> <tr><td data-bbox="44 985 464 1040">Water Damage Indicator</td></tr> <tr><td data-bbox="44 1040 464 1096">Common Allergen</td></tr> <tr><td data-bbox="44 1096 464 1151">Slightly Higher than Baseline</td></tr> <tr><td data-bbox="44 1151 464 1206">Significantly Higher than Baseline</td></tr> <tr><td data-bbox="44 1206 464 1279">Ratio Abnormality</td></tr> </table>	Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality	<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>
Water Damage Indicator						
Common Allergen						
Slightly Higher than Baseline						
Significantly Higher than Baseline						
Ratio Abnormality						
<b>Color Coding</b>	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.					

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<b>Alternaria</b>	<b>Habitat:</b> Commonly found outdoors in soil and decaying plants. Indoors, it is commonly found on window sills and other horizontal surfaces. <b>Effects:</b> A common allergen and has been associated with hypersensitivity pneumonitis. <i>Alternaria</i> 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.
<b>Ascospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Health affects are poorly studied, but many are likely to be allergenic.
<b>Aspergillus Penicillium</b>	<b>Habitat:</b> 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. <b>Effects:</b> 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.
<b>Basidiospores</b>	<b>Habitat:</b> 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. <b>Effects:</b> Common allergens and are also associated with hypersensitivity pneumonitis.
<b>Cladosporium</b>	<b>Habitat:</b> 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. <b>Effects:</b> A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.
<b>Curvularia</b>	<b>Habitat:</b> They exist in soil and plant debris, and are plant pathogens. <b>Effects:</b> 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.

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**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.

**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.