

Analysis Report prepared for

# Protect Inspect LLC

Fairfax, VA 22032

92919

Collected: **September 29, 2019**  
Received: **October 1, 2019**  
Reported: **October 1, 2019**

We would like to thank you for trusting Hayes Microbial for your analytical needs!  
We received 5 samples by FedEx in good condition for this project on October 1st, 2019.

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

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



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Laboratory Director  
Hayes Microbial Consulting, LLC.



EPA Laboratory ID: VA01419



Lab ID: #188863



NVLAP Lab Code: 500096-0



DPH License: #PH-0198

Sample Number	1	29081838			2	29081751			3	29081623					
Sample Name	Outdoor Control comparison			Basement Family Room			Basement Bathroom								
Sample Volume	150.00 liter			150.00 liter			150.00 liter								
Reporting Limit	7 spores/m <sup>3</sup>			7 spores/m <sup>3</sup>			7 spores/m <sup>3</sup>								
Background	2			3			3								
Fragments	20/m <sup>3</sup>			560/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						
Alternaria	3	20	2.3%												
Ascospores	2	13	1.6%												
Aspergillus Penicillium	10	67	7.8%	560	3733	42.1%	700	4667	51.5%						
Basidiospores	1	7	<1%												
Bipolaris Drechslera	1	7	<1%	1	7	<1%									
Chaetomium				434	2893	32.6%	196	1307	14.4%						
Cladosporium	98	653	76.6%												
Curvularia	1	7	<1%	56	373	4.2%	70	467	5.2%						
Epicoccum	1	7	<1%				1	7	<1%						
Fusarium															
Memnoniella															
Myxomycetes	8	53	6.3%				168	1120	12.4%						
Pithomyces	3	20	2.3%	280	1867	21.0%	224	1493	16.5%						
Stachybotrys															
Stemphylium															
Torula															
Ulocladium															
Total	128	854	100%	1331	8873	100%	1359	9061	100%						

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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Project Analyst:  
Shareef Abdelgadir, MS *Shareef Abdelgadir*

Date:  
10 - 01 - 2019

Reviewed By:  
Ramesh Poluri, PhD *P. Ramesh*

Date:  
10 - 01 - 2019

#4	Bio-Tape (1.00 cm2)	Organism	Spore Estimate	Mycelial Estimate
913984 - Under Stairs - Basement		Aspergillus	Very Heavy	Many

  

#5	Bio-Tape (1.00 cm2)	Organism	Spore Estimate	Mycelial Estimate
913978 - Tack Strip - Basement		Chaetomium	Heavy	Many



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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="54 984 464 1040">Water Damage Indicator</td> <td data-bbox="491 984 2049 1040"><b>Blue:</b> These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</td> </tr> <tr> <td data-bbox="54 1045 464 1102">Common Allergen</td> <td data-bbox="491 1045 2049 1102"><b>Green:</b> Although all molds are potential allergens, these are the most common allergens that may be found indoors.</td> </tr> <tr> <td data-bbox="54 1107 464 1164">Slightly Higher than Baseline</td> <td data-bbox="491 1107 2049 1164"><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 data-bbox="54 1169 464 1226">Significantly Higher than Baseline</td> <td data-bbox="491 1169 2049 1226"><b>Red:</b> The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</td> </tr> <tr> <td data-bbox="54 1230 464 1287">Ratio Abnormality</td> <td data-bbox="491 1230 2049 1287"><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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<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.										

Direct Analysis Information

Spore Estimate		Percentages
ND	None Detected	0%
Rare	Less than 10 spores	< 1%
Light	10 - 99 spores	1-10%
Moderate	100 - 999 spores	11-25%
Heavy	1000 - 9999 spores	26-50%
Very Heavy	10000 or greater spores	51-100%

Mycelial Estimate	
ND	None Detected No active growth at site.
Trace	Very small amount of Mycelium Probably no active growth at site.
Few	Some Mycelium Possible active growth at site.
Many	Large amount of Mycelium Probable active growth at site.

Organism Descriptions

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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. Alternaria is capable of producing toxic metabolites which may be associated with disease in humans or animals. Occasionally an agent of onychomycosis, ulcerated cutaneous infection and chronic sinusitis, principally in the immunocompromised patient.
<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</b>	<b>Habitat:</b> One of the most common fungi isolated from the environment. Found in soil, decomposing plant material, and indoors on a wide variety of cellulose containing materials. <b>Effects:</b> Known to be allergenic and many species also produce mycotoxins. They are a common cause of extrinsic asthma and hypersensitivity pneumonitis. Many species are opportunistic pathogens and are known to cause sinus lesions, ear infections, respiratory infections, and invasive systemic disease.
<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>Bipolaris Drechslera</b>	<b>Habitat:</b> They are found in soil and as plant pathogens. Can grow indoors on a variety of substrates. <b>Effects:</b> They may be allergenic and are very commonly involved in allergic fungal sinusitis. They are opportunistic pathogens but occasionally infect healthy individuals, causing keratitis, sinusitis and osteomyelitis.

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Organism Descriptions

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**Chaetomium** **Habitat:** 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 *Stachybotrys*.  
**Effects:** It is reported to be allergenic and may produce toxins.

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

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**Curvularia** **Habitat:** They exist in soil and plant debris, and are plant pathogens.  
**Effects:** They are allergenic and a common cause of allergic fungal sinusitis. An occasional cause of human infection, including keratitis, sinusitis, onychomycosis, mycetoma, pneumonia, endocarditis and disseminated infection, primarily in the immunocompromised.

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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.