



**HAYES**

MICROBIAL CONSULTING  
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Analysis Report prepared for

## MichiganPro.com llc

Serving all of Michigaan

**Job Number: Number**  
**Job Name: Name**

**Date Sampled: 01-31-2019**  
**Date Analyzed: 02-04-2019**  
**Report Date: 02-04-2019**

EPA Laboratory ID# VA01419



AIHA EMPAT Lab ID# 188863



Mold License: LAB1021



License: #PH-0198



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HMC #19004605

**MichiganPro.com llc**  
**5632 E Blue Gill Bend Avenue**  
**Ellsworth, MI 49729 USA**

February 4, 2019

Client Job Number:  
Client Job Name:

Dear MichiganPro.com llc,

We would like to thank you for trusting Hayes Microbial for your analytical needs. On February 4, 2019 we received 5 samples by FedEx for the job referenced above. 5 samples were received in good condition.

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 Consulting. In no event, shall Hayes Microbial Consulting or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of your use of the test results.

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



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Phone: (800) 470-7938

Spore Trap Analysis  
SOP #HMC101


## HMC #Sample

Job Number:	Job Name:	Date Collected:	01/31/2019
Collected by:		Date Received:	02/04/2019
Email:		Date Reported:	02/04/2019

HMC ID Number	19004605 - 1	19004605 - 2		
Sample ID#	3442	3441		
Sample Name	Control	Main Floor		
Sample Volume	150 liters	150 liters		
Reporting Limit	7 spores/M3	7 spores/M3		
Background	2	2		
Fragments	ND	53/M3		

Organism	Raw Count	Count / M3	% of Total	Raw Count	Count / M3	% of Total		
Alternaria								
Ascospores	2	13	32.5%	4	27	3.2%		
Aspergillus Penicillium	4	27	67.5%	110	733	85.9%		
Basidiospores								
Bipolaris Drechslera								
Chaetomium				6	40	4.7%		
Cladosporium								
Curvularia								
Epicoccum								
Fusarium								
Memnoniella								
Myxomycetes				2	13	1.5%		
Pithomyces								
Stachybotrys				6	40	4.7%		
Stemphylium								
Torula								
Ulocladium								
Unspecified Spore								
Total	6	40		128	853			

Water Damage Indicator    Common Allergen    Slightly Higher than Outside Air    Significantly Higher than Outside Air    Ratio Abnormality

Signature: 

Date: 02/04/2019

Reviewed by: 

Date: 02/04/2019



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Direct ID Analysis  
SOP #HMC102

Job Number:	Job Name:	Date Collected:	01/31/2019
Collected by:		Date Received:	02/04/2019
Email:		Date Reported:	02/04/2019

<b>HMC ID Number: 19004605 - 3</b>		<b>Sample Media: Swab</b>	
<b>Sample ID Number: 101</b>		<b>Sample Name: Crawl Under Toilet Green</b>	
<b>Organism</b>	<b>Spore Estimate</b>	<b>Mycelial Estimate</b>	<b>Note</b>
Aspergillus Penicillium	Light	Trace	
Chaetomium	Very Heavy	Many	

<b>HMC ID Number: 19004605 - 4</b>		<b>Sample Media: Swab</b>	
<b>Sample ID Number: 102</b>		<b>Sample Name: Crawl Bond Plate</b>	
<b>Organism</b>	<b>Spore Estimate</b>	<b>Mycelial Estimate</b>	<b>Note</b>
Ascospores	Moderate	Trace	
Chaetomium	Light	Trace	

<b>HMC ID Number: 19004605 - 5</b>		<b>Sample Media: Swab</b>	
<b>Sample ID Number: 103</b>		<b>Sample Name: Attic</b>	
<b>Organism</b>	<b>Spore Estimate</b>	<b>Mycelial Estimate</b>	<b>Note</b>
Cladosporium	Light	Trace	
Pithomyces	Rare	ND	

Signature: 

Date: 02/04/2019

Reviewed by: 

Date: 02/04/2019



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## Spore Trap Information

### HMC #Sample

**Reporting Limit** The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.

**Blanks** Results have not been corrected for field or laboratory blanks.

**Background** 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 4 and each level is determined as follows:  
**ND** : No background detected. (Pump or cassette malfunction.) Recollect sample.  
**1** : <5% of field occluded. No spores will be uncountable.  
**2** : 5-25% of field occluded.  
**3** : 25-75% of field occluded.  
**4** : 75-90% of field occluded.  
**5** : >90% of field occluded. Suggest recollection of sample.

**Fragments** Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.

**Indoor/Outdoor Comparisons** There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.

- Water Damage Indicators** These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.
- Common Allergens** Although all molds are potential allergens, these are the most common allergens that may be found indoors.
- Slightly Higher than Outside Air** The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.
- Significantly Higher than Outside Air** The spore count is significantly higher than the outdoor count and probably indicates a source of contamination.
- Ratio Abnormality** The types of spores found indoors should be similar to the ones that were identified in the outdoor 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.

**Color Note** 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.



## Additional Information for Direct Identification Analysis

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



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#### Ascospores

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

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

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#### Aspergillus|Penicillium

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

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

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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.

**Health 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.

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

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#### Myxomycetes

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

**Health 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.

**Health Effects:** Allergenic properties are poorly studied. No cases of infection in humans.

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#### Stachybotrys

**Habitat:** Commonly found in soil and on decaying plant material. It is cellulolytic, and can be found indoors on wet materials containing cellulose, such as wallboard, ceiling tile, and other paper-based materials. It is found outdoors on decaying plant material although it is rarely detected on outdoor air samples.

**Health Effects:** Allergenic properties are poorly studied and no cases of infection have been reported in humans. They are capable of producing potent tricothecene mycotoxins. The toxins produced by this fungus can suppress the immune system affecting the lymphoid tissue and the bone marrow. The mycotoxin is also reported to be a liver and kidney carcinogen.

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