



# HOME MOLD LABORATORY

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# Laboratory Report

## Prepared Exclusively For:

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LAB # 172958

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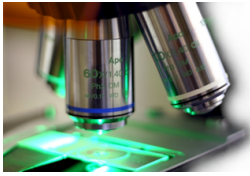
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# HOME MOLD LABORATORY

Report Prepared For: Southern Fulton School District  
Project Name: Will, Tara  
Report Date: 10/21/2016  
Lab Number: H17422

## 1 - Laboratory Results

### Location: Outside of Nurses Office

Sample # H17422 - 1	Sample Identification	Raw Count	Spores/cu. m	Percent(%)
Medium Type: Air-O-Cell	- Fungi -			
Serial # 23302143	Basidiospores	384	20,500	97.96%
Exposure: 15.00 l/min. for 5.00 min.	Ascospores	4	213	1.02%
Reporting Limit: 53 Spores/cu. m	Ganoderma	3	160	0.76%
	Cladosporium	1	53	0.25%
	Total Fungi	392	20,900	100.00%
<i>NOTE: Estimated raw count on Basidiospores.</i>				
	Background Item	Level		
	Dust / Debris	Very Low		
	Opaque Particles	Very Low		

### Location: Cafeteria

Sample # H17422 - 2	Sample Identification	Raw Count	Spores/cu. m	Percent(%)
Medium Type: Air-O-Cell	- Fungi -			
Serial # 23302357	Basidiospores	44	2,350	86.30%
Exposure: 15.00 l/min. for 5.00 min.	Cladosporium	4	213	7.82%
Reporting Limit: 53 Spores/cu. m	Ascospores	2	107	3.93%
	Smuts/Periconia/Myxomycetes	1	53	1.95%
	Total Fungi	51	2,720	100.00%
	Background Item	Level		
	Dust / Debris	High		
	Opaque Particles	Low		

### Location: Library

Sample # H17422 - 3	Sample Identification	Raw Count	Spores/cu. m	Percent(%)
Medium Type: Air-O-Cell	- Fungi -			
Serial # 23303941	Basidiospores	18	960	85.71%
Exposure: 15.00 l/min. for 5.00 min.	Ascospores	3	160	14.29%
Reporting Limit: 53 Spores/cu. m	Total Fungi	21	1,120	100.00%
	Background Item	Level		
	Dust / Debris	Low		
	Opaque Particles	Very Low		



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## Location: Room A208 Angie Booth

Sample # H17422 - 4	Sample Identification	Raw Count	Spores/cu. m	Percent(%)
Medium Type: Air-O-Cell Serial # 23302241 Exposure: 15.00 l/min. for 5.00 min. Reporting Limit: 53 Spores/cu. m	- Fungi - Basidiospores	11	587	100.00%
	Background Item	Level		
	Dust / Debris	Very Low		
	Opaque Particles	Very Low		

### Analytic Methods and Formulas:

IMS Laboratory Analytical Method: 2.2 (method for analyzing spore trap)  
Results are rounded to appropriate significant figures per AIHA-LAP, LLC policy module 2A.5.10.5  
Spores per cubic meter is determined by: Total Spore Count x 4000 / (sampling rate x sampling time)

Note that this report may use mold-specific units, such as Spores/cu. m and CFU/cu. m for Sample Identifications such as pollen, fiberglass fibers, and bacteria, which are not molds.

IMS Laboratory, LLC is accredited through the AIHA-LAP, LLC and participates in Environmental Microbiology Proficiency Testing, EMPAT #172958. Data is provided in compliance with AIHA-LAP, LLC policy modules and ISO/IEC 17025 guidelines.

Analyst

10/21/2016

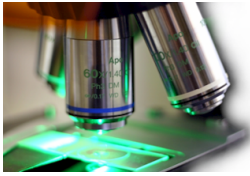
Brittney Holtz, Lab Analyst



Reviewer

10/21/2016

Maria Iley, Lab Analyst



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## 2 - Spore Trap Comparison Chart

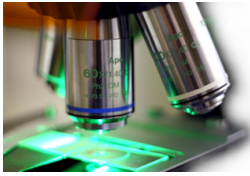
### SAMPLING LOCATIONS

- 1: Outside of Nurses Office
- 2: Cafeteria
- 3: Library
- 4: Room A208 Angie Booth

### Spores per Cubic Meter

Mold Name \ Location #	1	2	3	4
<i>Alternaria</i>				
<i>Arthrinium</i>				
Ascospores	213	107	160	
Basidiospores	20,500	2,350	960	587
<i>Bipolaris / Drechslera group</i>				
<i>Chaetomium</i>				
<i>Cladosporium</i>	53	213		
<i>Curvularia</i>				
<i>Erysiphe/Oidium</i>				
<i>Fusarium</i>				
<i>Ganoderma</i>	160			
Mitospores				
Pen/Asp group				
<i>Pithomyces</i>				
<i>Polythrincium</i>				
Rust				
<i>Smuts/Periconia/Myxomycetes</i>		53		
<i>Stachybotrys</i>				
<i>Stemphylium</i>				
<i>Torula</i>				
Unknown Fungi				
<b>FUNGAL TOTAL</b>	<b>20,900</b>	<b>2,720</b>	<b>1,120</b>	<b>587</b>
Pollen				

Please refer to the Laboratory Results section for additional details.



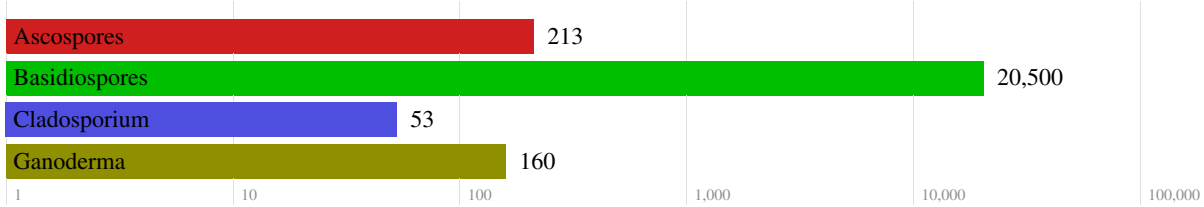
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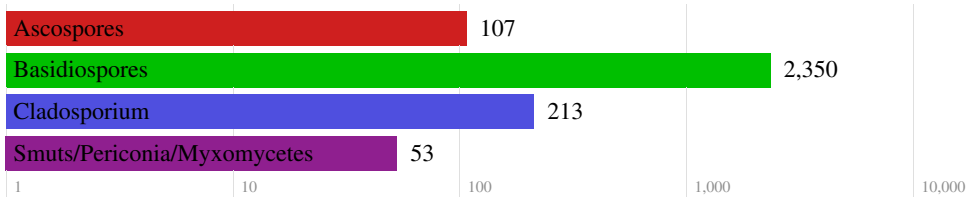
## 3 - Sample Comparison Graph

### Spore Trap Samples - Spores per Cubic Meter

#### Outside of Nurses Office



#### Cafeteria

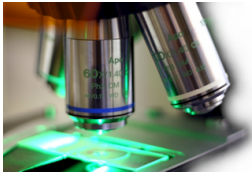


#### Library



#### Room A208 Angie Booth





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## 4 - Understanding Laboratory Results

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**These guidelines are not intended, nor should they be used, for health evaluation purposes or to evaluate the safety of an occupied space. A physician should be consulted regarding health and/or safety questions.**

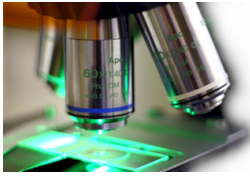
### Air Check Test Kit:

RESULT	INTERPRETATION
< 2,000 total mold spores/cu. m	Low
2,000 - 5,000 total mold spores/cu. m	Moderately Low
5,000 - 10,000 total mold spores/cu. m	Moderately High
> 10,000 total mold spores/cu. m	High

**The above numerical guidelines cannot be used as the primary determinant as to whether a mold problem may exist. There are no government standards for "safe" levels of microbial contamination. Concentrations of mold in the air will vary depending on weather conditions, building air flow, time of day and time of year. Comparisons between indoor and outdoor mold levels, types of mold found, visual information and environmental conditions are more important in interpreting results than reliance on specific numeric thresholds.**

In *Indoor Air Quality in Office Buildings: A Technical Guide, Health Canada, Revised 1995* (Pages 49-50), Health Canada set forth guidelines which can be used to better understand air testing results. The guidelines included these general principles:

1. Significant numbers of certain pathogenic fungi should not be present in indoor air (e.g. *Aspergillus fumigatus*, *Histoplasma*, and *Cryptococcus*). Bird or bat droppings in air intakes, ducts or rooms should be assumed to contain these pathogens.
2. The persistent presence of significant numbers of toxigenic fungi (e.g. *Stachybotrys atra*, toxigenic *Aspergillus*, *Penicillium* and *Fusarium* species) indicate that further investigation and action should be taken.
3. The confirmed presence of one or more fungal species occurring as a significant percentage of a sample in indoor air samples and not similarly present in concurrent outdoor samples is evidence of a fungal amplifier.
4. The "normal" air mycoflora is qualitatively similar and quantitatively lower than that of outdoor air.
5. The significant presence of fungi in humidifiers and diffuser ducts and on moldy



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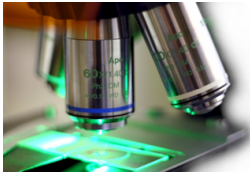
ceiling tiles and other surfaces requires investigation and remedial action regardless of the airborne mold concentrations.

Generally, mold spores are present everywhere. As a general rule, "normal" air mycoflora is qualitatively similar and quantitatively lower than that of outdoor air. When the converse is true, it is likely that an indoor source of mold may exist. However, even this most basic rule may produce misleading results. Airborne mold spore levels vary widely due to factors such as weather conditions and activity levels. For example, in a "normal" home, indoor mold spore levels may be elevated above outdoor spore levels after vacuuming (when airborne indoor levels could be unusually high) or after a heavy snow (when outdoor levels could be unusually low). Surface Sampling primarily identifies the types and relative proportions of mold on a surface. Viable surface sampling will identify living mold, while nonviable surface sampling will identify all mold (but cannot distinguish between living or dead mold). Surface sampling may confirm that a substance is mold or identify the types of mold present on the surface. Because mold is everywhere, there is a high probability that a surface sample from a "clean" surface will still identify mold on that surface.

Laboratory findings must only be considered as part of an overall mold investigation. The interpretation of the findings must only be made by a qualified individual after reviewing all relevant data. Visual information and environmental conditions measured during the site assessment are crucial to any final interpretation of the results. A very good reference book which covers sampling and data interpretation has been published by The American Conference of Governmental and Industrial Hygienists and is entitled *Bioaerosols: Assessment and Control*, 1999.

There are currently no state or federal standards or guidelines regarding results of fungal samples. There are no levels, which are typical or permissible. There are no recommended exposure limits, no permissible exposure limits, no threshold limit values and no short term exposure limits.





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## 5 - Sample Identification Definitions

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### **Ascospores**

A large group of spores that are very ubiquitous in nature. They are frequently found in the air after a rain. Most ascospores are plant pathogens; a small portion have been known to cause infection in humans but are identified separately.

*Found in these Sample Locations: (1) Outside of Nurses Office (2) Cafeteria (3) Library*

### **Basidiospores**

A large group of spores that are very ubiquitous in nature. They are released from mushrooms, shelf fungi, puffballs, and a variety of other macro fungi. Basidiospores may be allergenic to those with seasonal allergies.

*Found in these Sample Locations: (1) Outside of Nurses Office (2) Cafeteria (3) Library (4) Room A208  
Angie Booth*

### **Cladosporium**

One of the most commonly identified outdoor fungi. It is often found indoors in numbers less than outdoors. Cladosporium is also found on decaying plants and food, straw, paint, and textiles. It is generally regarded to be allergenic and can be a cause of extrinsic asthma (immediate type hypersensitivity: Type I). Cladosporium has been reported in cases of skin lesions, keratitis, onychomycosis, sinusitis, and pulmonary infections.

*Found in these Sample Locations: (1) Outside of Nurses Office (2) Cafeteria*

### **Ganoderma**

A type of basidiospore from a genus of mushrooms known as shelf mushrooms or bracket fungi, which grow on wood. These spores may be allergenic to those with seasonal allergies.

*Found in these Sample Locations: (1) Outside of Nurses Office*

### **Smuts/Periconia/Myxomycetes**

A group of plant pathogens with similar morphology. They are commonly found in the outdoor environment in soil and on wood, grasses, cereal crops, and flowering plants. Myxomycete spores are considered to cause Type 1 allergies (hay fever and asthma).

*Found in these Sample Locations: (2) Cafeteria*



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## 6 - Glossary of Terms

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### **Agar ~**

A gelatinous medium used for growing microorganisms (e.g. mold, yeast, and bacteria).

### **Colony ~**

A group of hyphae (filaments) of the same type of microorganism growing together. A colony can be seen with the naked eye.

### **Colony Forming Unit (CFU) ~**

A unit of measure describing the number of colonies present in or on a surface of a sample.

### **Exposure ~**

The exposure refers to the quantity of a sample collected for laboratory analysis. With reference to air tests, the exposure is determined by multiplying the flow rate of the collection device by the length of time the device was operating.

### **Fungus (fungi, pl) ~**

Fungi are a form of life (eukaryotic) which can range from unicellular to filamentous. Fungi lack chlorophyll and absorb nutrients. Fungi can reproduce by sexual, asexual, or both means. Mold is a type of fungi.

### **Hypha (hyphae, pl) / hyphal fragment ~**

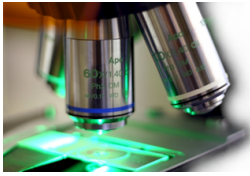
Hypha is the tubular filament which is the vegetative, nutrient absorbing portion of the fungus.

### **Isolate (verb, Microbiology) ~**

To obtain or extract a microorganism from an environment or mixed culture.

### **Mold ~**

A very large group of microscopic fungi. Most are filamentous organisms and produce spores that can be air-, water-, or insect-borne. Mold can be a common trigger for allergies. For people who are sensitive to mold, exposure can cause symptoms such as nasal stuffiness, eye irritation, or wheezing. People with serious allergies to mold may have more severe reactions. Severe reactions may occur among workers exposed to large amounts of molds in occupational settings. People with chronic illnesses, such as obstructive lung disease, may develop mold infections in their lungs. Mold growth in the home can be slowed by keeping humidity levels below 50% and ventilating showers and cooking areas.



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## **Mycotoxin ~**

A substance produced by fungi which can be toxic to man and/or animals.

## **Opaque particle ~**

Opaque particles are dark, non-biological, debris through which light will not pass.

## **Petri Dish ~**

A dish containing agar for the culturing of microorganisms (e.g. fungi or bacteria).

## **Raw Count ~**

The number of particles counted by an analyst during the examination of specimen.

## **Reporting Limit (RL) ~**

The reporting limit (RL) is the limit of detection for an analyte that can be reliably reported by using a given analytical method. The RL is dependent on the time and volume of sampling.

## **Sample Medium ~**

The sample medium refers to the type of test conducted (e.g. swab, spore trap air test, tape lift, etc.).

## **Serial Number ~**

A manufacturer's specific identification code on a test medium (e.g. spore trap or tape lift).

## **Spore ~**

A propagule/structure produced by fungi as a means of reproduction, survival, and dissemination. Spores can be single cellular or multicellular.

## **Spore Trap ~**

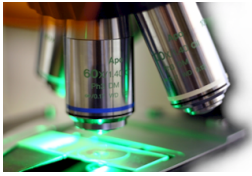
A Spore trap is a collection device (or media) used to capture airborne spores and other airborne particulates. Spore traps are analyzed by microscopic means and do not distinguish between viable and non-viable cells.

## **Too Numerous To Count (TNTC) ~**

TNTC is used to denote specimens in which a type of organism is present at an extremely high level or has grown together so that individual colonies cannot be distinguished.

## **Toxigenic fungi ~**

Toxigenic fungi are fungi capable of producing toxic substances.



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# 7 - Warranties, Legal Disclaimers, and Limitations

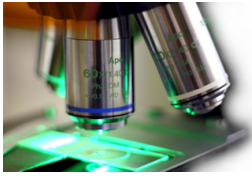
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IMS's scope of accreditation through the AIHA-LAP, LLC is for the following FoT(s)/Method(s): Fungal Air - Culturable (SOP 2.4 Cultured Air Sample Reporting); Fungal Bulk - Culturable (SOP 2.5); Fungal Surface - Culturable (SOP 2.5); Fungal Air - Direct Examination (SOP 2.2 and 2.3); Fungal Bulk - Direct Examination (SOP 2.6); and Fungal Surface - Direct Examination (SOP 2.1).

The study and understanding of molds is a progressing science. Because different methods of sampling, collection and analysis exist within the indoor air quality industry, different inspectors or analysts may not always agree on the mold concentrations present in a given environment. Additionally, the airborne levels of mold change frequently and by large amounts due to many factors including activity levels, weather, air exchange rates (indoors), and disturbance of growth sites. It is possible for report interpretations and ranges of accuracy to vary since comprehensive, generally accepted industry standards do not currently exist for indoor air quality inspections of mold in residential indoor environments. This report is intended to provide an analysis based upon samples taken at the site at the time of the inspection. Mold levels can and do change rapidly, especially if home building materials or contents remain wet for more than 24 hours, or if they are wet frequently. This report is not intended to provide medical or healthcare advice. All allergy or medical-related questions and concerns, including health concerns relating to possible mold exposure, should be directed to a qualified physician. If this report indicates indoor mold levels that are higher than in typical indoor living spaces relative to the outdoor environment, or indicates any findings that are of concern to you, further evaluation by a trained mold professional or a Certified Industrial Hygienist (CIH) may be advisable.

Results pertain only to the items tested. Unless otherwise noted in the body of this report, the condition of samples upon receipt was acceptable. Blank samples are reported in the same manner as all other samples. The results are not corrected for contamination.

This report is generated by IMS at the request of, and for the exclusive use of, the IMS client named on this report. The analysis of the test samples is performed by IMS. This report applies only to the samples taken at the time, place and location referenced in the report and received by IMS, and to the property and weather conditions existing at that time only. Please be aware, however, that property conditions, inspection findings and laboratory results can and do change over time relative to the original sampling due to changing conditions, the normal fluctuation of airborne mold, and many other factors. IMS does not furnish, and has no responsibility for, the inspector or inspection service that performs the inspection or collects the test samples. It is the responsibility of the end-user of this report to select a properly trained professional to conduct the inspection and collect appropriate samples for analysis and interpretation. Neither IMS, nor its



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Samples analyzed by IMS are disposed the day that they are analyzed. Storage may be available for a fee with written request at the time the samples are submitted for analysis.

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- End of Lab Report Number H17422 -