

# Axis Real Estate Inspections

Home Mold Termite Energy

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*Structural Pest Control Technician, TPCL # 0730859*

*Home Energy Score Assessor, DoE # CO-ITNC-0349*

*Commercial Drone Pilot, FAA # 4041717*

*Certified Professional Inspector*

*Infrared Certified*

*Certified Pool Inspector / Certified Pool Operator*

*Certified Septic Inspector*

*Certified Mold Inspector*

*Certified Indoor Air Consultant*

# RESIDENTIAL MOLD ASSESSMENT

Project: 171221A

Date: December 21, 2017

Address: 1234 Happy Lane, Fun City, TX 77777



Prepared for:

John Smith

1234 Happy Lane, Fun City, TX 77777

Ph: 832-888-9999

Email: johnsmith@email.com

Prepared by:

Amandeep (Andy) Punia

Mold Assessment Technician

TDLR # MAT1209

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## STATEMENT OF LIMITATIONS

The following mold assessment is based on findings of the physical inspection and testing. Findings are current and accurate for the date and time of the assessment, but do not reflect expected or predictable mold growth and infestation on and within the property. This inspection is based on a visual inspection of accessible areas of the property that can be accessed without damage to adjacent areas. This report addresses only those areas physically inspected and sampled. The Inspector is not responsible or liable for the non-discovery of any water damage, water problems, mold contamination, or other conditions of the Subject Property which may occur or may become evident after the inspection and testing time and date. Inspector is neither an insurer nor guarantor against water problems, mold problems or other defects in the Subject Property and improvements, systems or components inspected. Inspector makes no warranty, expressed or implied as to the fitness for use of condition of the systems or components inspected. Inspector assumes no responsibility for the cost of repairing any water problems, mold problems or any other defects or conditions. Inspector is not responsible or liable for any future water problems, mold problems or any other future failures or repairs. Remediation recommendations are suggested guidelines, not a detailed remediation protocol. More or less actions may be necessary and will be determined by the remediation company chosen by the property owners or other responsible party. Please refer to Mold Inspection and Testing Agreement for more details.

The inspection report is completed the same day as the inspection but if samples are taken at the site, lab results can take up to a week to be completed.

This report is not intended to provide medical advice or advice concerning the relative safety of an occupied space. Always consult an occupational or environmental health physician who has experience addressing indoor air contaminants if you have any questions.

This inspection report and any verbal information given during the inspection and, at any time after the inspection is CONFIDENTIAL and is for the sole use of the client. This report is not transferable or assignable to any third party.

Please contact our office at 832-297-6328 with any questions.

## ASSESSMENT AND TESTING PROTOCOL

Residential mold assessment and testing was performed by a licensed and certified inspector. The inspector conducted a non-intrusive mold inspection of the property and has prepared this report summarizing the inspection findings and laboratory results.

The purpose of this assessment was to determine the mold level, conditions conducive to mold growth and to determine the indoor air quality as it relates to mold. Information obtained through visual inspection and microscopic analysis of air and surface sampling was used to determine the property's interior conditions.

**Non-Intrusive Visual Inspection:** A visual inspection with the use of infrared thermal imaging, psychrometer, moisture and humidity meter was performed to identify suspect conditions and potential moisture source locations. Digital and infrared photographs are taken to support inspection findings.

**Air Sampling and Analysis:** The air sampling methodology utilized for this project was designed to quantify the respective airborne presence of fungal spores in the interior living spaces in relationship to what is naturally occurring outdoors, commonly referred to as normal fungal ecology. Air samples are collected by utilizing a high volume-sampling pump calibrated to a flow rate of 15 liters per minute. The pump then impacts the drawn air into an "Air-O-Cell" cassette. The cassette is a fully contained microscopic slide and media that collects any airborne fungal spores and hyphae particles by impaction on the media.

A control/baseline air sample was collected outdoors for comparison purposes; an indoor air sample was collected in the living room. After sample collection the cassettes are re-sealed and placed into individual plastic bags and submitted to EMSL Analytical, Inc. for direct microscopic examination. There, a microbiologist will examine the slides to identify the type and determine the airborne concentration of fungal spore's present. Spore identification is to genus level unless otherwise specified.

The following assessment methods and testing protocol represent the most current industry standards and practices. All practices conform to the guidelines and standard operating procedures of the International Association of Certified Indoor Air Consultants.

The following diagnostic tools were used in the investigation:

- Zefon Z-Lite Pump: interior air quality sampling pump calibrated to 15 liters per minute
- Air-O-Cell Cassette: sampling media used to collect air samples
- Extech RH401 Psychrometer & Infrared Thermometer: records ambient temperature and relative humidity of each room, area to establish above normal (greater than 60%) moisture content within ambient air

- Protimeter Surveymaster BLD5365:  
Moisture meter scan measurements indicate relative moisture of building materials up to 3/4 of an inch deep; used along walls, floors, ceilings, and other building materials
  - Green light indicates dry or normal moisture levels
  - Yellow light indicates at risk and warrant further investigation
  - Red light indicates wet or excessive moisture

Moisture meter pin measurement indicates actual percent moisture in the building materials

- FLIR E6 Infrared Camera: detects possible moisture located behind walls under the right conditions
- Canon SX720 Digital Camera: photographically documents the suspect area

Three samples were collected at the subject property. The Zefon Z-Lite sampling pump was calibrated to 15 L/min on-site before samples were collected. All samples were delivered to EMSL Analytical Laboratory for analysis. Table 1 provides descriptions of each sample, including location and sampling time.

Table 1. Location and description of samples collected.

<b>Sample Number</b>	<b>Sample Location</b>	<b>Sample Description</b>	<b>Sample Time</b>
1234 5678	Outdoor - Control	Air	10 minutes
1234 9101	Living Room	Air	5 minutes
1234 1123	Master Bedroom	Air	5 minutes

Outdoor – Control



Living Room



## Master Bedroom



## PROJECT LOCATION AND BACKGROUND

Mold assessment and testing was performed on 07/14/2019 by Amandeep (Andy) Punia, Mold Assessment Technician, TDLR License # MAT1209 of Axis Real Estate Inspections. The subject property is located at 1234 Happy Lane, Fun City, TX 77777. The subject property is a single-family dwelling.

The assessment was requested by the owner, John Smith. The assessment was requested to determine mold level in the property because the property was flooded during tropical storm Imelda and the client/owner is experiencing health issues.

### Climate:

- a. Weather: Partly Cloudy
- b. Temperature: The temperature was 72.9° at the time of the inspection
- c. Humidity: The humidity was 79% at the time of the inspection
- d. Ground Conditions: Soil conditions were wet at the time of the inspection

Occupancy: The property is owner occupied.

Interview: The owner stated the following when interviewed about the property:

- The property was flooded under 13 inches of water for six days during and after tropical storm Imelda
- Partial remediation was performed to remove the damaged drywall and insulation
- Presence of moldy and musty smell in the property
- Presence of visible water damage and roof leaks
- Presence of reappearing stain when cleaned in the master bathroom
- Presence of black, grey black spots and stains on the ceiling of hallway and master bathroom
- Damp and heavy air in the property with air conditioner running
- Residents and visitor experienced allergies and health conditions inside the property

## FINDINGS

Temperature and relative humidity levels were recorded outside and inside the property. The readings are provided in Table 2. The Occupational Safety and Health Administration recommends maintaining relative humidity levels below 60% for healthy indoor environments. **Relative humidity recorded inside the property was above 60%.**

Table 2. Ambient temperature and relative humidity levels on the property.

Location	Temperature (°F)	Humidity (%)
Front Exterior	73	79
Living Room	75	72
Dining Room	75	72
Kitchen	75	72
Drawing Room	75	71
Powder Room	76	71
Master Bedroom	75	70
Master Bathroom	75	72
Back Bedroom	75	70
Middle Bedroom	75	71
Guest Bathroom	75	71

**Odors:** The inspector smelled musty odor inside the property.

**Moisture Intrusion:** Areas of moisture intrusion were observed on the master bathroom ceiling and wall.



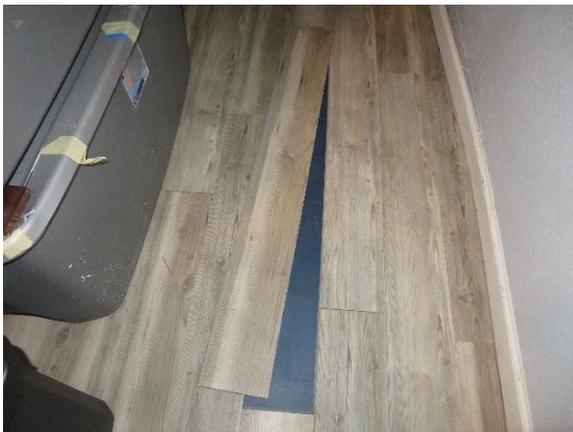
**Water Damage:** Water damage was observed in multiple rooms in the property.



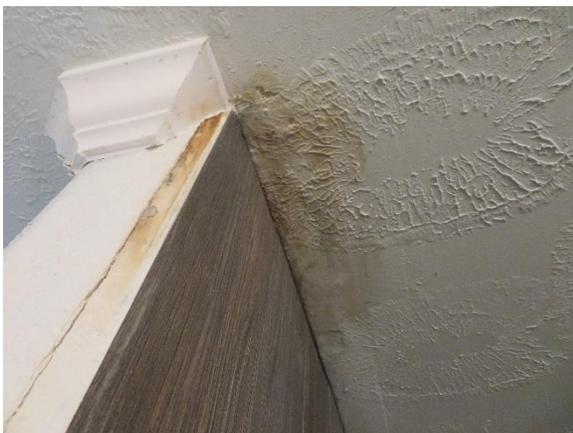
Water Damage (cont.): Water damage was observed in multiple rooms in the property.



Water Damage (cont.): Water damage was observed in multiple rooms in the property.



**Apparent Mold Growth:** Evidence of apparent mold growth was observed on the master bathroom ceiling.

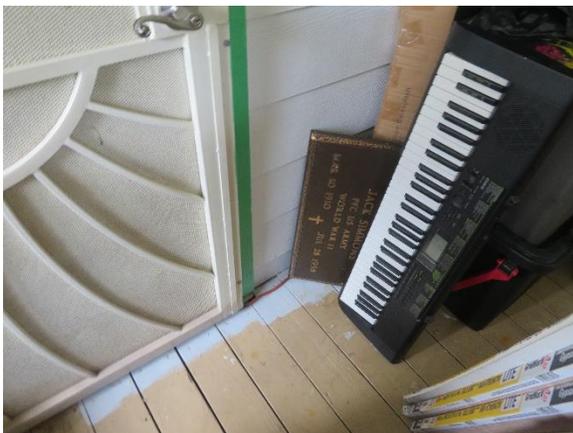
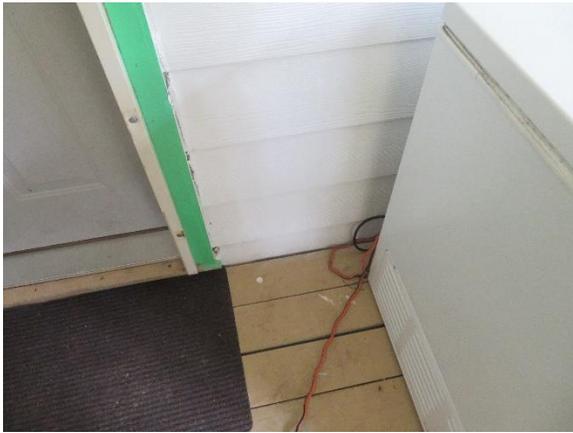


Apparent Mold Growth (cont.): Evidence of apparent mold growth was observed on the hallway ceiling.



**Conditions Conducive to Mold Growth:**

1. Wet siding: Siding in the porch was observed to be wet when tested with the moisture meter.



Conditions Conducive to Mold Growth (cont.):

2. Water intrusion: Wall and ceiling in the master bathroom was observed to have wet areas when tested with a moisture meter.



## SAMPLE RESULTS

**Spore Trap Samples:** Three air samples were taken to establish the concentration of spores in ambient air. The objective of spore trap sampling was:

- To capture and quantify a broad spectrum of fungal spores (both culturable and non-culturable) present in the air.
- To assess whether the levels present or suggest a fungal problem in the indoor area.

The laboratory results are reflective of the indoor air quality conditions as they specifically relate to airborne fungal spores in the home at the time of sample collection. Air sample collection provides a “snapshot” in time as to what is occurring in the air at the time of sample collection. Because different time intervals were used for different sample types and locations, the concentration (**count/m<sup>3</sup>**) is evaluated to determine trends in mold growth. **Under normal and/or optimal conditions, the concentration of spores captured inside should be approximately equal to or less than the concentration of spores captured outside.** The total concentration of mold spores per cubic meter of air from each sample is given in Table 3.

**Table 3. Total concentration of mold spores in air samples.**

Location	Sample Type	Concentration (spores/m <sup>3</sup> )	Elevated Condition
Outdoor - Control	Air	14850	N/A
Living Room	Air	5300	No
Master Bedroom	Air	2780	No

**The laboratory analysis from the collected indoor air samples confirm that the total airborne mold spore concentration inside the property was not elevated as compared to outdoor sample.**

To determine areas of elevated and slightly elevated mold levels, the concentration of individual mold types in the interior sample can be directly compared to the concentration of the same mold type in outdoor control sample.

**Table 4: Total concentration of individual mold spores in living room air sample.**

Fungi	Concentration (Count/m <sup>3</sup> )		Interpretation
	Exterior	Living Room	
Aspergillus/Penicillium	100	<b>1600</b>	<b>Elevated</b>
Bipolaris	0	<b>10</b>	<b>Slightly Elevated</b>
Curvularia	0	<b>40</b>	<b>Slightly Elevated</b>
Fusarium	0	<b>40</b>	<b>Slightly Elevated</b>
Myxomycetes	20	<b>40</b>	<b>Slightly Elevated</b>
Pestalotia/Pestalotiopsis	0	<b>40</b>	<b>Slightly Elevated</b>

**Table 5: Total concentration of individual mold spores in master bedroom air sample.**

Fungi	Concentration (Count/m <sup>3</sup> )		Interpretation
	Exterior	Master Bedroom	
Aspergillus/Penicillium	100	<b>400</b>	<b>Slightly Elevated</b>
Curvularia	0	<b>40</b>	<b>Slightly Elevated</b>
Beltrania	0	<b>40</b>	<b>Slightly Elevated</b>

**Living Room Air Sample:**

**Elevated: Elevated levels of Aspergillus/Penicillium was detected in the air sample collected in the Living Room as compared to the Outdoor control sample.**

**Slightly Elevated: Slightly elevated levels of Bipolaris, Curvularia, Fusarium, Myxomycetes and Pestalotia/Pestalotiopsis was detected in the Living Room as compared to the Outdoor control sample.**

Acceptable: Acceptable levels of Ascospores, Basidiospores and Cladosporium was detected in the air sample collected in the Living Room as compared to the Outdoor control sample.

**Master Bedroom Air Sample:**

**Slightly Elevated: Slightly elevated levels of Aspergillus/Penicillium, Curvularia and Beltrania was detected in the air sample collected in the Master Bedroom as compared to the outdoor control sample.**

Acceptable: Acceptable levels of Ascospores, Basidiospores, Cladosporium and Myxomycetes was detected in the air sample collected in the Master Bedroom as compared to the outdoor control sample.

**Note:**

**Basidiospores, Bipolaris, Curvularia, Fusarium, Myxomycetes, Pestalotia/Pestalotiopsis and Beltrania are not commonly found growing indoors and the spores are more likely to come from outside.**

**Aspergillus/Penicillium, Bipolaris, Basidiospores, Cladosporium, Curvularia, Fusarium and Myxomycetes spores are reported to be able to cause allergies in individuals.**

**Bipolaris and Fusarium have a potential for mycotoxin production.**

Please refer to the laboratory results of samples taken at the subject property in Appendix A and B for details.

## RECOMMENDATIONS

**Based on the laboratory analysis and visual inspection, it is the opinion of the inspector that mold remediation is recommended on the subject property.**

This report only provides an evaluation of the interior substrate conditions and indoor air quality as they relate to mold and moisture. The following recommendations are meant to provide general remediation procedures based on the information obtained by our investigation and nationally accepted standards. These recommendations should not be construed as the only effective methodology for remediation and no warranty is expressed or implied with these recommendations. Axis Real Estate Inspections is independent of any remediation process and we defer to the licensed and qualified remediator for specific repair protocols because the actual remediation process may expose additional areas requiring treatment.

The goal of the remediation process is to correct all existing moisture conditions that promote mold growth and to physically remove all mold contaminated/non-restorable materials in accordance with the EPA/OSHA and IICRC S520 mold remediation standards.

We recommend that state of Texas licensed mold remediators who are experienced with water damage and microbial remediation solutions, should perform all remedial intervention including intrusive investigation.

Intrusive investigation should be performed in areas with water damage and/or elevated moisture content to identify the full extent of areas requiring remedial treatment.

Building materials that have been water damaged to the point that drying and cleaning will not restore them to their pre-water exposure condition or have sustained loss of integrity should be removed and discarded, whether there is visible evidence of fungal growth or not.

**All visible fungi must be physically removed.** Areas that have developed fungal growth should be HEPA vacuumed and cleaned thoroughly with an EPA registered product. However, if the mold growth is imbedded within the material and cannot be cleaned; removal of the contaminated materials plus an additional material beyond the affected area(s) should also be removed. Substrates that cannot be cleaned must be disposed.

Post-remediation assessment and clearance should be performed by a Mold Assessment Consultant prior to any build-back of finish materials. The post-remediation assessment shall determine whether:

- the work area is free from all visible mold and wood rot; and
- all work has been completed in compliance with the remediation protocol and remediation work plan and meets clearance criteria specified in the protocol.

**All conducive conditions should be corrected to reduce the risk of moisture intrusion and subsequent mold growth. Removal of mold without controlling and correcting the conducive condition can cause mold to regrow and reappear on the affected areas.**

## **SIGNATURE OF INSPECTOR**

I certify that the above findings, opinions, and recommendations are true and accurate to the best of my knowledge and represent the most current knowledge of mold assessment methods.



Amandeep Punia  
Mold Assessment Technician  
Axis Real Estate Inspections

### **APPENDIX A**

Laboratory Summary Report

### **APPENDIX B**

Laboratory Detail Report

### **APPENDIX C**

Chain of Custody

### **APPENDIX D**

Mold Inspection Agreement

### **APPENDIX E**

Consumer Mold Information Sheet

# APPENDIX A



## EMSL Analytical, Inc.

5950 Fairbanks N. Houston Rd. Houston, TX 77040

Phone/Fax: (713) 686-3635 / (713) 686-3645  
<http://www.EMSL.com> / [houstonlab@emsl.com](mailto:houstonlab@emsl.com)

Order ID:	AXRE42
Customer ID:	
Customer PO:	
Project ID:	

**Attn:** Andy Punia  
 Axis Real Estate Inspections  
 7457 Harwin Drive  
 Suite 364  
 Houston, TX 77036

**Phone:** (832) 297-6328  
**Fax:**  
**Collected:**  
**Received:**  
**Analyzed:**

**Proj:**

### Spore Trap ASSESSMENT Report™ Air-O-Cell™ Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

	Particle Identification	Raw Count	(Count/m <sup>3</sup> )	% of Total	Interpretation Guideline
151907905-0001	Alternaria (Ulocladium)	-	-	-	
	Ascospores	238	5260	35.4	
<b>Client Sample ID</b>	Aspergillus/Penicillium	6	100	0.7	
28037121	Basidiospores	418	9230	62.2	
	Bipolaris++	-	-	-	
	Chaetomium	-	-	-	
<b>Location</b>	Cladosporium	10	220	1.5	
Outdoor	Curvularia	-	-	-	
	Epicoccum	-	-	-	
<b>Sample Volume (L)</b>	Fusarium	-	-	-	
	Ganoderma	1	20	0.1	
150	Myxomycetes++	1	20	0.1	
	Pithomyces++	-	-	-	
<b>Sample Type</b>	Rust	-	-	-	
	Scopulariopsis/Microascus	-	-	-	
Background	Stachybotrys/Memnoniella	-	-	-	
<b>Comments</b>	Unidentifiable Spores	-	-	-	
	Zygomycetes	-	-	-	
	Beltrania	-	-	-	
	Pestalotia/Pestalotiopsis	-	-	-	
	<b>Total Fungi</b>	<b>674</b>	<b>14850</b>	<b>100</b>	
	Hyphal Fragment	3	70	-	
	Insect Fragment	-	-	-	
	Pollen	-	-	-	

Analytical Sensitivity 600x: **22** counts/cubic meter

Analytical Sensitivity 300x \*: **7\*** counts/cubic meter

Skin Fragments: **1** 1 to 4 (low to high)

Fibrous Particulate: **1** 1 to 4 (low to high)

Background: **1** 1 to 4 (low to high); **5** (overloaded)

- Not commonly found growing indoors, spores likely come from outside.
- Spores reported to be able to cause allergies in individuals.
- Potential for mycotoxin production exists with these fungi.
- These fungi are considered water damage indicators.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category

Terri Lawrence

Terri Lawrence, Lab Manager  
or Other Approved Signatory

Initial report from:

High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.



# EMSL Analytical, Inc.

5950 Fairbanks N. Houston Rd. Houston, TX 77040

Phone/Fax: (713) 686-3635 / (713) 686-3645  
http://www.EMSL.com / houstonlab@emsl.com

Order ID: AXRE42  
Customer ID:  
Customer PO:  
Project ID:

**Attn:** Andy Punia  
Axis Real Estate Inspections  
7457 Harwin Drive  
Suite 364  
Houston, TX 77036

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## Spore Trap ASSESSMENT Report™ Air-O-Cell™ Analysis of Fungal Spores & Particulates (Methods MICRO-SOP-201, ASTM D7391)

Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation Guideline
151907905-0002	Alternaria (Ulocladium)	-	-	
	Ascospores	12	530	10
<b>Client Sample ID</b>	Aspergillus/Penicillium	37	1600	30.2
28038252	Basidiospores	66	2900	54.7
	Bipolaris++	1*	10*	0.2
	Chaetomium	-	-	-
<b>Location</b>	Cladosporium	3	100	1.9
Living Room	Curvularia	3*	40*	0.8
	Epicoccum	-	-	-
<b>Sample Volume (L)</b>	Fusarium	1	40	0.8
	Ganoderma	-	-	-
75	Myxomycetes++	1	40	0.8
	Pithomyces++	-	-	-
<b>Sample Type</b>	Rust	-	-	-
	Scopulariopsis/Microascus	-	-	-
Inside	Stachybotrys/Memnoniella	-	-	-
<b>Comments</b>	Unidentifiable Spores	-	-	-
	Zygomycetes	-	-	-
	Beltrania	-	-	-
	Pestalotia/Pestalotiopsis	1	40	0.8
	<b>Total Fungi</b>	<b>125</b>	<b>5300</b>	<b>100</b>
	Hyphal Fragment	3	100	-
	Insect Fragment	-	-	-
	Pollen	-	-	-

Analytical Sensitivity 600x: **44** counts/cubic meter  
Analytical Sensitivity 300x \*: **13\*** counts/cubic meter

Skin Fragments: **1** 1 to 4 (low to high)  
Fibrous Particulate: **1** 1 to 4 (low to high)  
Background: **2** 1 to 4 (low to high); **5** (overloaded)

- Acceptable** Concentration at or below background
- Slightly Elevated** Concentration above background
- ELEVATED** Concentration 10X or more above background

- Not commonly found growing indoors, spores likely come from outside.
- Spores reported to be able to cause allergies in individuals.
- Potential for mycotoxin production exists with these fungi.
- These fungi are considered water damage indicators.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category

Terri Lawrence, Lab Manager  
or Other Approved Signatory

Initial report from:

High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.

For Information on the fungi listed in this report please visit the Resources section at [www.emsl.com](http://www.emsl.com)



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	Particle Identification	Raw Count	(Count/m³)	% of Total	Interpretation Guideline
151907905-0003	Alternaria (Ulocladium)	-	-	-	
	Ascospores	5	200	7.2	Acceptable
<b>Client Sample ID</b>	Aspergillus/Penicillium	8	400	14.4	Slightly Elevated
28037103	Basidiospores	46	2000	71.9	Acceptable
	Bipolaris++	-	-	-	
	Chaetomium	-	-	-	
<b>Location</b>	Cladosporium	2	90	3.2	Acceptable
Master Bedroom	Curvularia	1	40	1.4	Slightly Elevated
	Epicoccum	-	-	-	
<b>Sample Volume (L)</b>	Fusarium	-	-	-	
75	Ganoderma	-	-	-	
	Myxomycetes++	1*	10*	0.4	Acceptable
	Pithomyces++	-	-	-	
<b>Sample Type</b>	Rust	-	-	-	
Inside	Scopulariopsis/Microascus	-	-	-	
	Stachybotrys/Memnoniella	-	-	-	
<b>Comments</b>	Unidentifiable Spores	-	-	-	
	Zygomycetes	-	-	-	
	Beltrania	1	40	1.4	Slightly Elevated
	Pestalotia/Pestalotiopsis	-	-	-	
	<b>Total Fungi</b>	<b>64</b>	<b>2780</b>	<b>100</b>	<b>Acceptable</b>
	Hyphal Fragment	-	-	-	
	Insect Fragment	-	-	-	
	Pollen	-	-	-	
Analytical Sensitivity 600x: <b>44</b> counts/cubic meter		Skin Fragments: <b>1</b> 1 to 4 (low to high)			
Analytical Sensitivity 300x *: <b>13*</b> counts/cubic meter		Fibrous Particulate: <b>1</b> 1 to 4 (low to high)			
		Background: <b>2</b> 1 to 4 (low to high); <b>5</b> (overloaded)			

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Terri Lawrence, Lab Manager  
or Other Approved Signatory

High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.

For Information on the fungi listed in this report please visit the Resources section at [www.emsl.com](http://www.emsl.com)



# EXPANDED FUNGAL REPORT <sup>TM</sup>

**Prepared Exclusively For**

Axis Real Estate Inspections  
7457 Harwin Drive  
Suite 364  
Houston, TX 77036  
Phone:832-297-6328

**Report Date:**  
**Project:**  
**EMSL Order:**

AIHA-LAP, LLC--EMLAP Accredited  
#102575, Texas Mold LAB0105



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## EMSL Analytical, Inc.

5950 Fairbanks N. Houston Rd. Houston, TX 77040

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**Attn:** Andy Punia  
Axis Real Estate Inspections  
7457 Harwin Drive  
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### 1. Description of Analysis

#### Analytical Laboratory

EMSL Analytical, Inc. (EMSL) is a nationwide, full service, analytical testing laboratory network providing Asbestos, Mold, Indoor Air Quality, Microbiological, Environmental, Chemical, Forensic, Materials, Industrial Hygiene and Mechanical Testing services since 1981. Ranked as the premier independently owned environmental testing laboratory in the nation, EMSL puts analytical quality as its top priority. This quality is recognized by many well-respected federal, state and private accrediting agencies, and assured by our high quality personnel, including many Ph.D. microbiologists and mycologists.

EMSL is an independent laboratory that performed the analysis of these samples. EMSL did not conduct the sampling or site investigation for this report. The samples referenced herein were analyzed under strict quality control procedures using state-of-the-art microbiological methods. The analytical methods used and the data presented are scientifically and legally defensible.

The laboratory data is provided in compliance with ISO-IEC 17025 guidelines for the particular test(s) requested, including any associated limitations for the methods employed. These data are intended for use by professionals having knowledge of the testing methods necessary to interpret them accurately.



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### Air Samples - Spore traps:

Spore traps are commercially available sampling devices that capture airborne particles on an adhesive slide. Air is pulled through the device using a vacuum pump. Spores, as well as other airborne particles, are impacted on the collection adhesive. Using spore trap collection methods has inherent limitations. These collection methods are biased towards larger spore sizes.

The analysis for total spore counts is a direct microscopic examination and does not include culturing or growing the fungi. Therefore, the results include both viable and non-viable spores. Some fungal groups produce similar spore types that cannot be distinguished by direct microscopic examination alone (i.e., *Aspergillus/Penicillium*, and others). Other spore types may lack distinguishing features that aid in their identification. These types are grouped into larger categories such as Ascospores or Basidiospores.

Fungal spores are identified and grouped by morphological characteristics including color, shape, septation, ornamentation, and fruiting structures (if present) which are compared to published mycological identification keys and texts. EMSL reports provide spore counts per cubic meter of air to three significant figures. Please note that each spore category is reported to three significant figures. Due to rounding and the application of three significant figures the sum of the individual spore numbers may not equal the total spore count on the report. EMSL does not maintain responsibility for final volume concentrations (counts/m<sup>3</sup>) since this volume is provided by the field collector and can not be verified by EMSL.

EMSL analyzes spore traps using phase contrast microscopy. There is a wide choice of collection devices (Air-O-Cell, Micro-5, Burkhard, etc.) on the market. Differences in analytical method may exist between spore trap devices.

Spore trap results are reported in spores per cubic meter of air. Due to the other airborne particles collected with the spores, EMSL reports a background particle density. Background density is an indication of overall particulate matter present on the sample (i.e. dust in the air). High background concentrations may obscure spores such as the *Penicillium/Aspergillus* group. The rating system is from 1-5 with 1 = 1 - 25% of the background obscured by material, 2 = 26 - 50%, 3 = 51 - 75%, 4 = 76% - 99%, 5 = 100% or overloaded. A background rating of 4 or higher should be regarded as a minimum count since the actual concentrations may be higher than those reported. EMSL will not be held responsible for overloading of samples. Sample volumes are left to the discretion of the company or persons conducting the fieldwork.

Skin fragment density is the percentage of skin cells making up the total background material, 1 = 1 - 25%, 2 = 26 - 50%, 3 = 51 - 75%, 4 = 76-100%. Skin fragment density is considered an indication of the general cleanliness in the area sampled. It has been estimated that up to 90% of household dust consists of dead skin cells.



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### 2. Analytical Results

See attached data reports and charts.



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## Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

	Particle Identification	Sample Concentration (counts/m³)	Background Concentration (counts/m³)	Background Corrected (counts/m³)
<b>Lab Sample Number</b> 151907905-0001	Alternaria (Ulocladium)	None Detected	N/A	N/A
	Ascospores	5260	N/A	N/A
	Aspergillus/Penicillium	100	N/A	N/A
<b>Client Sample ID</b> 28037121	Basidiospores	9230	N/A	N/A
	Bipolaris++	None Detected	N/A	N/A
	Chaetomium	None Detected	N/A	N/A
	Cladosporium	220	N/A	N/A
<b>Location</b> Outdoor	Curvularia	None Detected	N/A	N/A
	Epicoccum	None Detected	N/A	N/A
	Fusarium	None Detected	N/A	N/A
	Ganoderma	20	N/A	N/A
	Myxomycetes++	20	N/A	N/A
<b>Sample Volume (L)</b> 150	Pithomyces++	None Detected	N/A	N/A
	Rust	None Detected	N/A	N/A
	Scopulariopsis/Microascus	None Detected	N/A	N/A
	Stachybotrys/Memnoniella	None Detected	N/A	N/A
<b>Sample Type</b> Background	Unidentifiable Spores	None Detected	N/A	N/A
	Zygomycetes	None Detected	N/A	N/A
	Beltrania	None Detected	N/A	N/A
<b>Comments</b>	Pestalotia/Pestalotiopsis	None Detected	N/A	N/A
	<b>Total Fungi</b>	<b>14850</b>	<b>N/A</b>	<b>N/A</b>
	<b>Other</b>			
	Hypchal Fragment	70	N/A	N/A
	Insect Fragment	None Detected	N/A	N/A
	Pollen	None Detected	N/A	N/A
	Analytical Sensitivity 600x:		22	counts/cubic meter
Analytical Sensitivity 300x *:		7*	counts/cubic meter	
Skin Fragments:		1	1 to 4 (low to high)	
Fibrous Particulate:		1	1 to 4 (low to high)	
Background:		1	1 to 4 (low to high); 5 (overloaded)	

No discernable field blank was submitted with this group of samples.

Terri Lawrence, Lab Manager  
or Other Approved Signatory

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.  
Samples analyzed by EMSL Analytical, Inc. Houston, TX AIHA-LAP, LLC--EMLAP Accredited #102575, Texas Mold LAB0105

Initial report from: 10/22/2019 17:15:46

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## Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

	Particle Identification	Sample Concentration (counts/m³)	Background Concentration (counts/m³)	Background Corrected (counts/m³)
<b>Lab Sample Number</b> 151907905-0002	Alternaria (Ulocladium)	None Detected	None Detected	Equal To Background
	Ascospores	530	5260	Less than Background
	Aspergillus/Penicillium	1600	100	1500
<b>Client Sample ID</b> 28038252	Basidiospores	2900	9230	Less than Background
	Bipolaris++	10*	None Detected	10
	Chaetomium	None Detected	None Detected	Equal To Background
	Cladosporium	100	220	Less than Background
<b>Location</b> Living Room	Curvularia	40*	None Detected	40
	Epicoccum	None Detected	None Detected	Equal To Background
	Fusarium	40	None Detected	40
	Ganoderma	None Detected	20	Less than Background
<b>Sample Volume (L)</b> 75	Myxomycetes++	40	20	20
	Pithomyces++	None Detected	None Detected	Equal To Background
	Rust	None Detected	None Detected	Equal To Background
	Scopulariopsis/Microascus	None Detected	None Detected	Equal To Background
<b>Sample Type</b> Inside	Stachybotrys/Memnoniella	None Detected	None Detected	Equal To Background
	Unidentifiable Spores	None Detected	None Detected	Equal To Background
	Zygomycetes	None Detected	None Detected	Equal To Background
<b>Comments</b>	Beltrania	None Detected	None Detected	Equal To Background
	Pestalotia/Pestalotiopsis	40	None Detected	40
	<b>Total Fungi</b>	<b>5300</b>	<b>14850</b>	<b>Less than Background</b>
	<b>Other</b>			
	Hypchal Fragment	100	70	30
	Insect Fragment	None Detected	None Detected	Equal To Background
	Pollen	None Detected	None Detected	Equal To Background
	Analytical Sensitivity 600x:	44	counts/cubic meter	
	Analytical Sensitivity 300x *:	13*	counts/cubic meter	
	Skin Fragments:	1	1 to 4 (low to high)	
	Fibrous Particulate:	1	1 to 4 (low to high)	
	Background:	2	1 to 4 (low to high); 5 (overloaded)	

No discernable field blank was submitted with this group of samples.

Terri Lawrence, Lab Manager  
or Other Approved Signatory

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.

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## Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

	Particle Identification	Sample Concentration (counts/m³)	Background Concentration (counts/m³)	Background Corrected (counts/m³)
<b>Lab Sample Number</b> 151907905-0003	Alternaria (Ulocladium)	None Detected	None Detected	Equal To Background
	Ascospores	200	5260	Less than Background
	Aspergillus/Penicillium	400	100	300
<b>Client Sample ID</b> 28037103	Basidiospores	2000	9230	Less than Background
	Bipolaris++	None Detected	None Detected	Equal To Background
	Chaetomium	None Detected	None Detected	Equal To Background
	Cladosporium	90	220	Less than Background
<b>Location</b> Master Bedroom	Curvularia	40	None Detected	40
	Epicoccum	None Detected	None Detected	Equal To Background
	Fusarium	None Detected	None Detected	Equal To Background
	Ganoderma	None Detected	20	Less than Background
	Myxomycetes++	10*	20	Less than Background
<b>Sample Volume (L)</b> 75	Pithomyces++	None Detected	None Detected	Equal To Background
	Rust	None Detected	None Detected	Equal To Background
	Scopulariopsis/Microascus	None Detected	None Detected	Equal To Background
	Stachybotrys/Memnoniella	None Detected	None Detected	Equal To Background
<b>Sample Type</b> Inside	Unidentifiable Spores	None Detected	None Detected	Equal To Background
	Zygomycetes	None Detected	None Detected	Equal To Background
	Beltrania	40	None Detected	40
<b>Comments</b>	Pestalotia/Pestalotiopsis	None Detected	None Detected	Equal To Background
	<b>Total Fungi</b>	<b>2780</b>	<b>14850</b>	<b>Less than Background</b>
	<b>Other</b>			
	Hypchal Fragment	None Detected	70	Less than Background
	Insect Fragment	None Detected	None Detected	Equal To Background
	Pollen	None Detected	None Detected	Equal To Background
	Analytical Sensitivity 600x:	44	counts/cubic meter	
Analytical Sensitivity 300x *:	13*	counts/cubic meter		
Skin Fragments:	1	1 to 4 (low to high)		
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Background:	2	1 to 4 (low to high); 5 (overloaded)		

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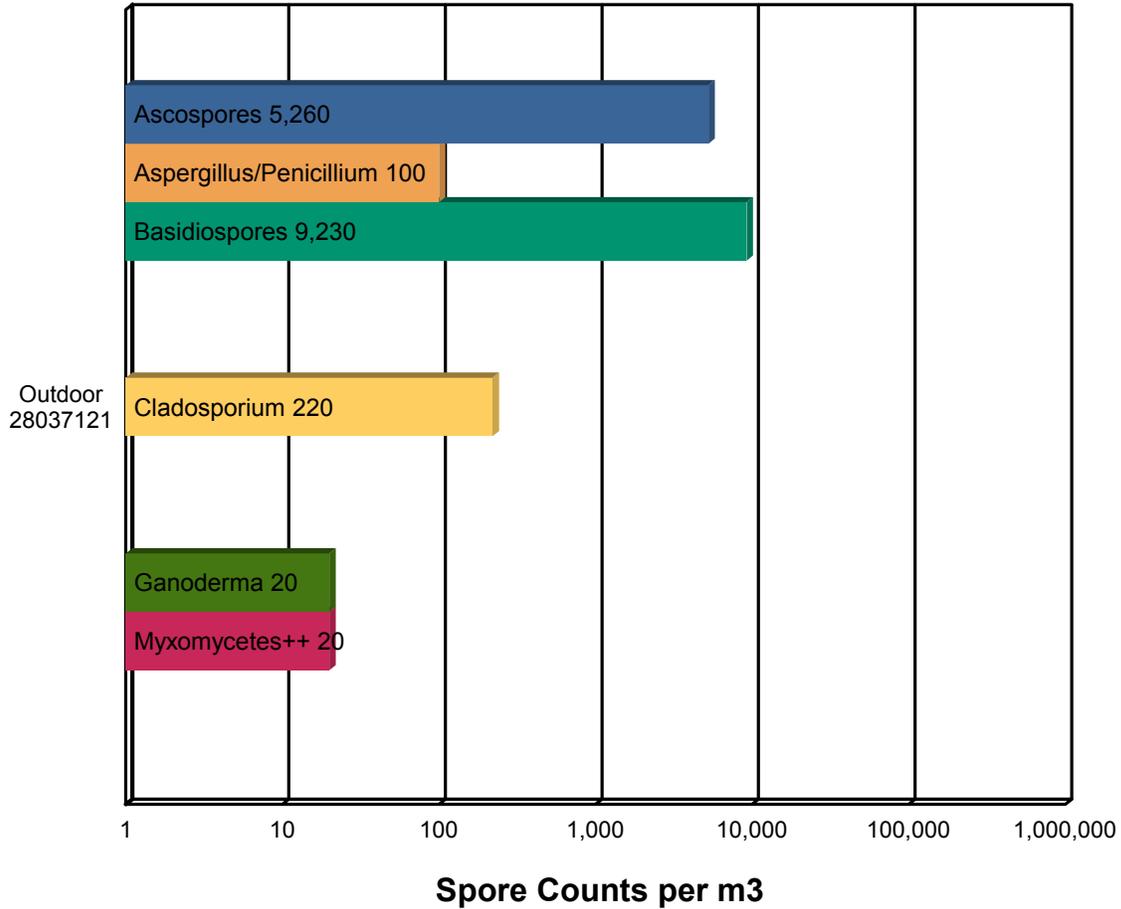
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## Spore Trap Report: Total Counts



Ascospores	Aspergillus/Penicillium	Basidiospores
Beltrania	Bipolaris++	Cladosporium
Curvularia	Fusarium	Ganoderma
Myxomycetes++	Pestalotia/Pestalotiopsis	

\* The chart is displayed using a logarithmic scale. Bar size is not directly proportional to the number of spores.

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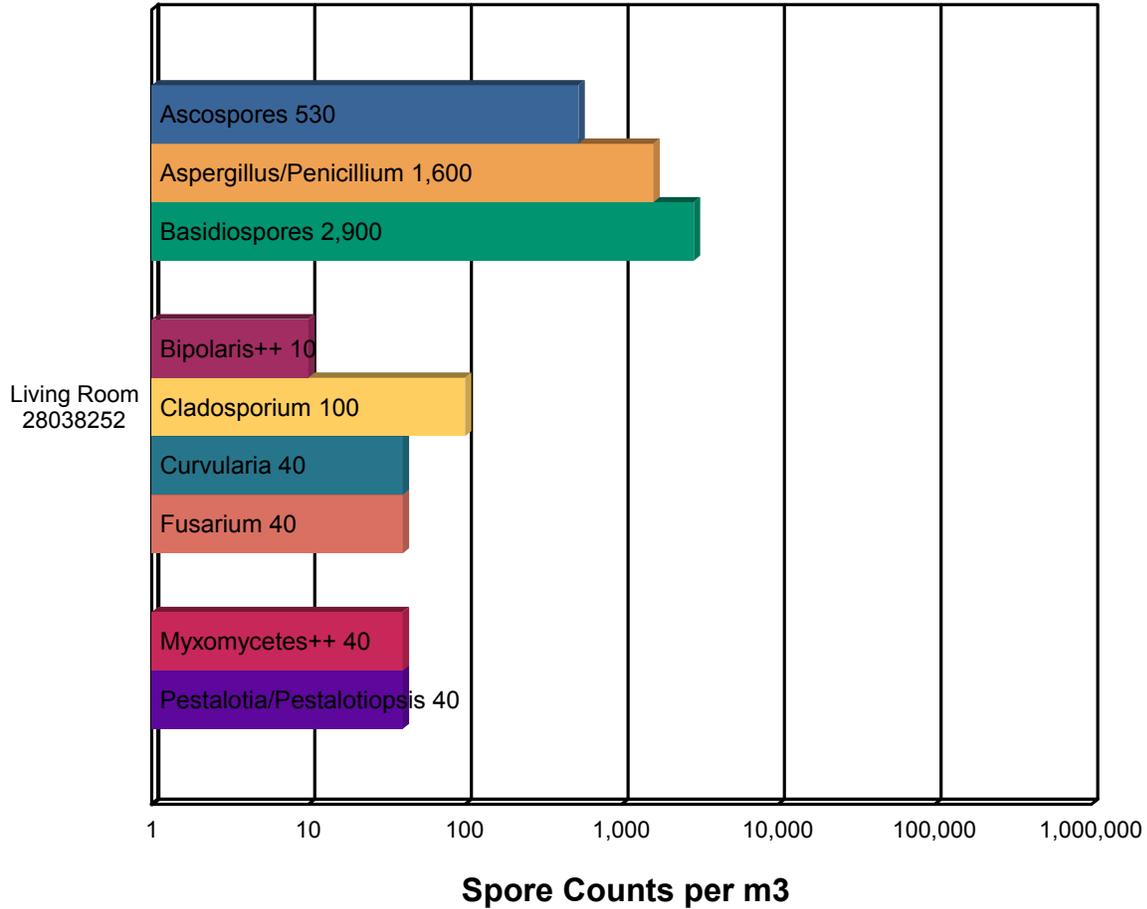
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Beltrania	Bipolaris++	Cladosporium
Curvularia	Fusarium	Ganoderma
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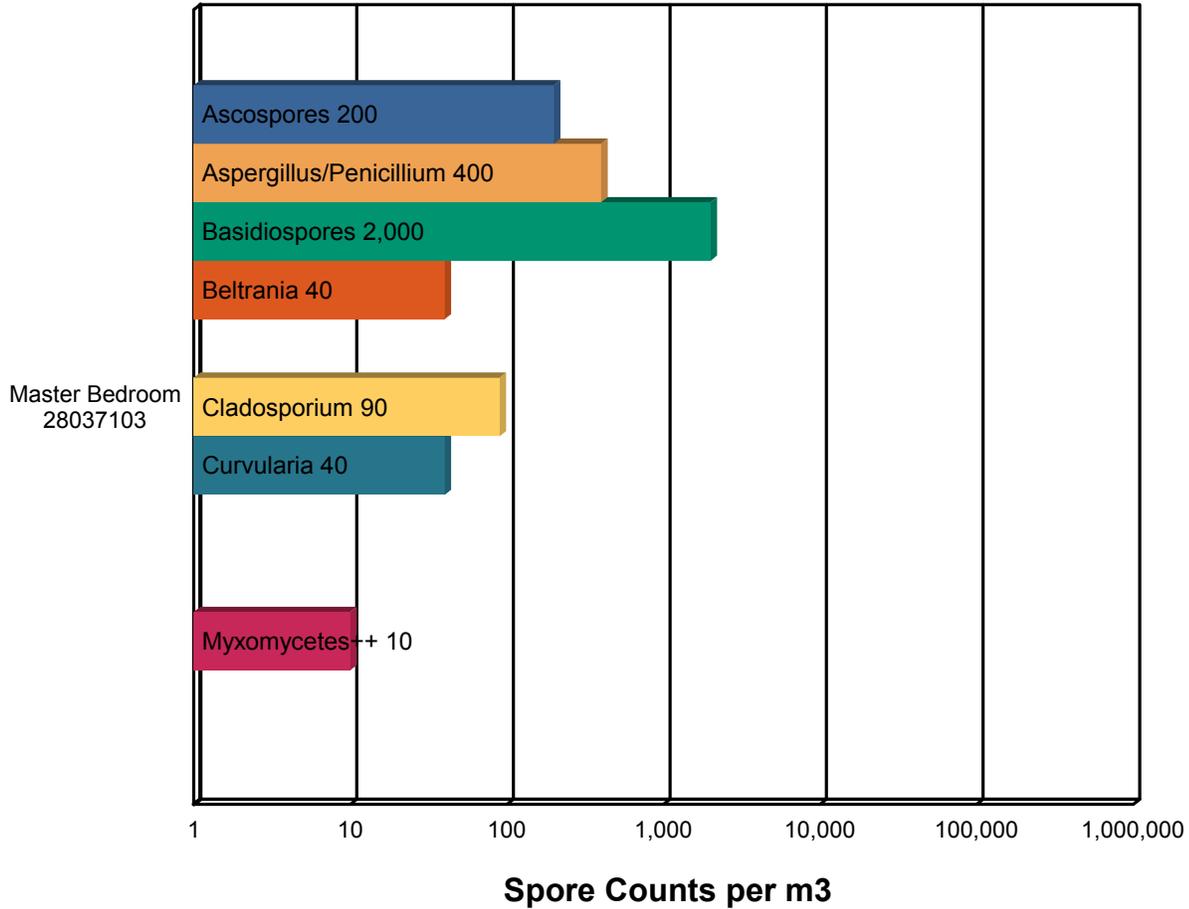
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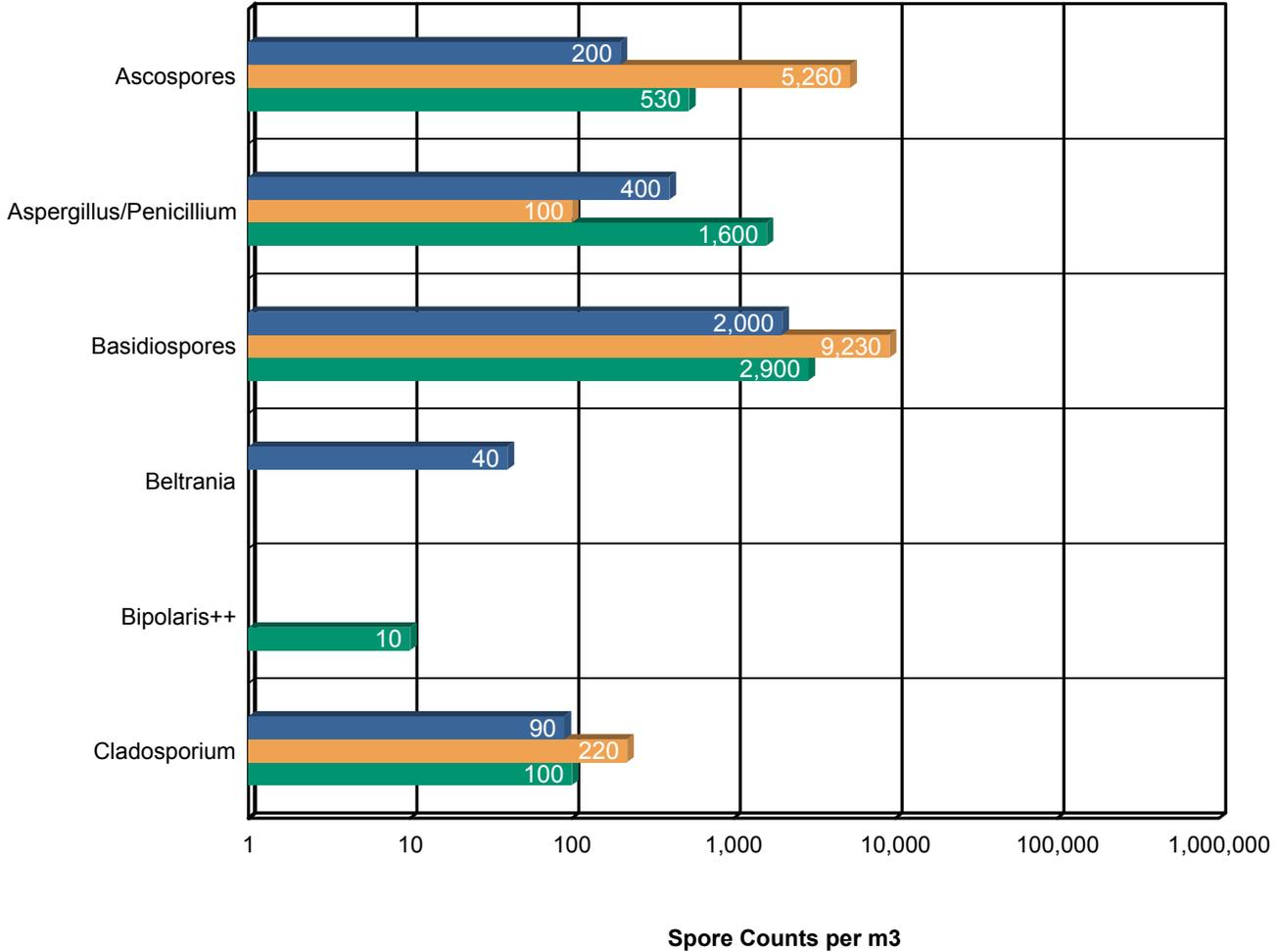
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## Background Comparison Chart



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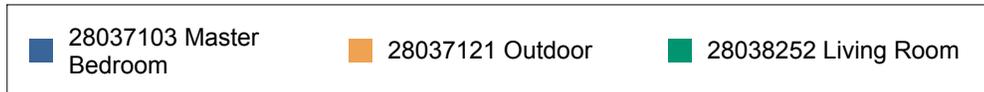
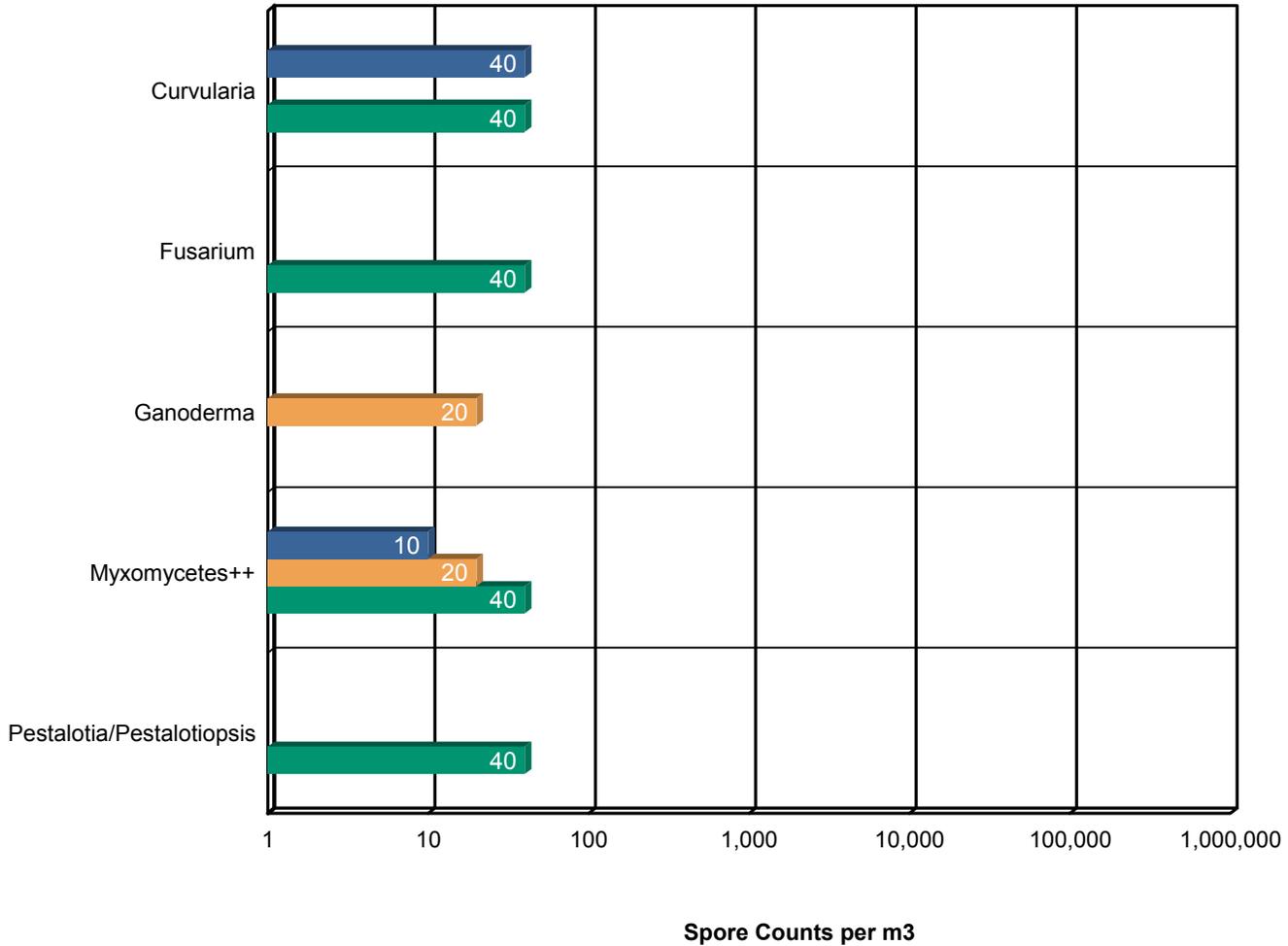
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### 3. Understanding the Results

EMSL Analytical, Inc. is an independent laboratory, providing unbiased and scientifically valid results. These data represent only a portion of an overall IAQ investigation. Visual information and environmental conditions measured during the site assessment (humidity, moisture readings, etc.) are crucial to any final interpretation of the results. Many factors impact the final results; therefore, result interpretation should only be conducted by qualified individuals. The American Conference of Governmental Industrial Hygienists (ACGIH) has published a good reference book covering sampling and data interpretation. It is entitled, Bioaerosols: Assessment and Control, 1999.

Fungal spores are found everywhere. Whether or not symptoms develop in people exposed to fungi depends on the nature of the fungal material (e.g., allergenic, toxic, or infectious), the exposure level, and the susceptibility of exposed persons. Susceptibility varies with the genetic predisposition (e.g., allergic reactions do not always occur in all individuals), age, pre-existing medical conditions (e.g., diabetes, cancer, or chronic lung conditions), use of immunosuppressive drugs, and concurrent exposures. These reasons make it difficult to identify dose/response relationships that are required to establish “safe” or “unsafe” levels (i.e., permissible exposure limits).

It is generally accepted in the industry that indoor fungal growth is undesirable and inappropriate, necessitating removal or other appropriate remedial actions. The New York City guidelines and EPA guidelines for mold remediation in schools and commercial buildings define the conditions warranting mold remediation. Always remember that water is the key. Preventing water damage or water condensation will prevent mold growth.

This report is not intended to provide medical advice or advice concerning the relative safety of an occupied space. Always consult an occupational or environmental health physician who has experience addressing indoor air contaminants if you have any questions.



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## 4. Glossary of Fungi

<b>ASCOSPORES</b>	
<b>Natural Habitat</b>	Everywhere in nature.
<b>Suitable Substrates in the Indoor Environment</b>	Depends on genus and species.
<b>Water Activity</b>	Depends on genus and species.
<b>Mode of Dissemination</b>	Forcible ejection or passive release and dissemination by wind or insects.
<b>Allergic Potential</b>	Depends on genus and species.
<b>Potential or Opportunistic Pathogens</b>	Depends on genus and species.
<b>Industrial Uses</b>	Depends on genus and species.
<b>Potential Toxins Produced</b>	Depends on genus and species.
<b>Other Comments</b>	Ascospores are the result of sexual reproduction and produced in a saclike structure called an ascus. All ascospores belong to members of the Phylum Ascomycota, which encompasses a plethora of genera worldwide.

<b>ASPERGILLUS/PENICILLIUM</b>	
<b>Natural Habitat</b>	Plant debris ·Seed ·Cereal crops
<b>Suitable Substrates in the Indoor Environment</b>	Grows on a wide range of substrates indoors ·Prevalent in water damaged buildings ·Foods (blue mold on cereals, fruits, vegetables, dried foods) ·House dust ·Fabrics ·Leather ·Wallpaper ·Wallpaper glue
<b>Water Activity</b>	Aw=0.75-0.94
<b>Mode of Dissemination</b>	Wind ·Insects
<b>Allergic Potential</b>	Type I (hay fever, asthma) ·Type III (hypersensitivity)
<b>Potential or Opportunistic Pathogens</b>	Possible depending on the species.
<b>Industrial Uses</b>	Many depending on the species
<b>Potential Toxins Produced</b>	Possible depending on the species.
<b>Other Comments</b>	Spores of Aspergillus and Penicillium (including others such as Acremonium, Talaromyces, and Paecilomyces) are small and spherical with few distinguishing characteristics. They cannot be differentiated or speciated by non-viable impaction sampling methods. Some species with very small spores may be undercounted in samples with high background debris.

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<b>BASIDIOSPORES</b>	
<b>Natural Habitat</b>	Forest floors. Lawns .Plants (saprobes or pathogens depending on genus)
<b>Suitable Substrates in the Indoor Environment</b>	Depends on genus. Wood products
<b>Water Activity</b>	Unknown.
<b>Mode of Dissemination</b>	Forcible ejection. Wind currents.
<b>Allergic Potential</b>	Type I allergies (hay fever, asthma) . Type III (hypersensitivity pneumonitis)
<b>Potential or Opportunistic Pathogens</b>	Depends on genus.
<b>Industrial Uses</b>	Edible mushrooms are used in the food industry.
<b>Potential Toxins Produced</b>	Amanitins. monomethyl-hydrazine. muscarine. ibotenic acid. psilocybin.
<b>Other Comments</b>	Basidiospores are the result of sexual reproduction and formed on a structure called the basidium. Basidiospores belong to the members of the Phylum Basidiomycota, which includes mushrooms, shelf fungi, rusts, and smuts.

<b>BELTRANIA</b>	
<b>Natural Habitat</b>	Saprophyte, found on dead leaves of tropical plant. Also found on leaves of Quercus trees.
<b>Suitable Substrates in the Indoor Environment</b>	Houseplants
<b>Water Activity</b>	Unknown
<b>Mode of Dissemination</b>	Unknown
<b>Allergic Potential</b>	Unknown
<b>Potential or Opportunistic Pathogens</b>	Unknown

<b>BIPOLARIS</b>	
<b>Natural Habitat</b>	Plant saprophyte.Plant pathogen of many plants, causing leaf rot, crown rot, and root rot on warm season turf grasses
<b>Suitable Substrates in the Indoor Environment</b>	House plants, Indoor building materials
<b>Free moisture required for mold growth</b>	Unknown
<b>Mode of Dissemination</b>	Wind
<b>Allergic Potential</b>	Hay fever, asthma. Allergic and chronic invasive sinusitis
<b>Potential or Opportunistic Pathogens</b>	Invasive sinusitis, disseminated mycoses, peritonitis, keratitis, phaeohyphomycosis
<b>Potential Toxins</b>	Can potentially produce sterigmatocystin.
<b>Other Comments</b>	Includes Bipolaris, Drechslera, and Exserohilum.



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<b>CLADOSPORIUM</b>	
<b>Natural Habitat</b>	Dead plant matter. Straw. Soil. Woody plants
<b>Suitable Substrates in the Indoor Environment</b>	Fiberglass duct liner. Paint. Textiles. Found in high concentration in water-damaged building materials.
<b>Water Activity</b>	Aw 0.84-0.88
<b>Mode of Dissemination</b>	Air
<b>Allergic Potential</b>	Type I (asthma and hay fever).
<b>Potential or Opportunistic Pathogens</b>	Edema. keratitis. onychomycosis. pulmonary infections. Sinusitis.
<b>Industrial Uses</b>	Produces 10 antigens.
<b>Potential Toxins Produced</b>	Cladosporin and Emodin.

<b>CURVULARIA</b>	
<b>Natural Habitat</b>	A worldwide saprophytic fungi, being isolated from dead plant material and soil.
<b>Suitable Substrates in the Indoor Environment</b>	Paper, wood products
<b>Free moisture required for mold growth</b>	Unknown
<b>Mode of Dissemination</b>	Wind
<b>Allergic Potential</b>	Hay fever, asthma, allergic fungal sinusitis
<b>Potential or Opportunistic Pathogens</b>	In immunocompromised patients can cause cerebral abscess, endocarditis, mycetoma, ocular keratitis, onychomycosis, and pneumonia.

<b>FUSARIUM</b>	
<b>Natural Habitat</b>	Soil. Plant pathogen causing root rot, stem rot, and wilt of many ornamental and crop plants.
<b>Suitable Substrates in the Indoor Environment</b>	Often found in humidifiers. Wet, cellulose-based building materials
<b>Water Activity</b>	Aw=0.86-0.91
<b>Mode of Dissemination</b>	Insects. Water droplets, rain. Wind when spores become dry.
<b>Allergic Potential</b>	Type I allergies (hay fever, asthma).
<b>Potential or Opportunistic Pathogens</b>	Esophageal cancer is believed to happen after consumption of F. moniliforme infected corn. Keratitis. Endophthalmitis. Onychomycosis. Cutaneous infections. Mycetoma. Sinusitis. Pulmonary infections. Endocarditis. Peritonitis. Central venous catheter infections. Septic arthritis. Neurological disease in horses after consumption of F. moniliforme infected corn. Respiratory disease in pigs after consumption of F. moniliforme infected corn.
<b>Industrial Uses</b>	Biological Weapon.
<b>Potential Toxins Produced</b>	Trichothecenes. Zearalenone. Fumonisin.
<b>Other Comments</b>	Major plant pathogen.
<b>Reference</b>	Atlas of Moulds in Europe causing respiratory Allergy, Foundation for Allergy Research in Europe, Edited by Knud Wilken-Jensen and Suzanne Gravesen, ASK Publishing, Denmark, 1984.



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<b>GANODERMA</b>	
<b>Natural Habitat</b>	Grows on conifers and hardwoods worldwide, causing white rot, root rot, and stem rot.
<b>Suitable Substrates in the Indoor Environment</b>	Unknown.
<b>Water Activity</b>	Unknown.
<b>Mode of Dissemination</b>	Wind.
<b>Allergic Potential</b>	Ganoderma species are known to cause allergies in people on a worldwide scale.
<b>Potential or Opportunistic Pathogens</b>	Unknown.
<b>Industrial Uses</b>	Biopulping of wood for the paper industry. Potential medicinal use due to: 1. Inhibition of Ras dependent cell transformation, 2. Antifibrotic activity, 3. Immunomodulating activity, 4. Free-radicle scavenging
<b>Potential Toxins Produced</b>	Unknown.
<b>Other Comments</b>	Used in traditional Chinese medicine as an herbal supplement. It is also known as a "shelf fungus" because the fruiting body forms a stalk-less shelf on the sides of trees and logs. It is sometimes called "artists conk" because when you scratch the white pores of the fruiting body, the white rubs away and exposes the brown hyphae underneath. Thus, pictures can be produced on the fruiting body.
<b>Reference</b>	References: Craig, R.L., Levetin, E. 2000. Multi-year study of Ganoderma aerobiology. <i>Aerobiologia</i> 16: 75-81. <a href="http://www.pfc.forestry.ca/diseases/CTD/Group/Heart/heart6_e.html">http://www.pfc.forestry.ca/diseases/CTD/Group/Heart/heart6_e.html</a>

<b>MYXOMYCETES++</b>	
<b>Natural Habitat</b>	Decaying logs, Dead leaves , Dung , Lawns , Mulched flower beds, Lawns
<b>Suitable Substrates in the Indoor Environment</b>	Rotting lumber
<b>Free moisture required for mold growth</b>	Unknown
<b>Mode of Dissemination</b>	Insects, Water, Wind
<b>Allergic Potential</b>	Type I
<b>Potential or Opportunistic Pathogens</b>	Unknown
<b>Industrial Uses</b>	
<b>Other Comments</b>	Includes Myxomycetes, Smut, and Periconia.

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### PESTALOTIA/PESTALOTIOPSIS

<b>Natural Habitat</b>	Saprophyte on dead leaves of different plants . Some are plant pathogens that attack foliage or fruit of different plant species.
<b>Suitable Substrates in the Indoor Environment</b>	Unknown; some require a living plant host for growth.
<b>Allergic Potential</b>	Unknown
<b>Potential Opportunist or Pathogen</b>	Unknown
<b>Potential Toxins Produced</b>	Unknown
<b>Free moisture required for mold growth</b>	Unknown
<b>Mode of Dissemination</b>	Unknown; air dispersal likely.
<b>Industrial Uses</b>	None known

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### 5. References and Informational Links

#### Books

- Bioaerosols: Assessment and Control. Janet Macher, Ed., American Conference of Governmental Industrial Hygienists, Cincinnati, OH 1999.
- Exposure Guidelines for Residential Indoor Air Quality. Environmental Health Directorate, Health Protection Branch, Health Canada, Ottawa, Ontario, 1989.
- Fungal Contamination in Public Buildings: Health Effects and Investigation Methods. Health Canada, Ottawa, Ontario, 2004.
- IICRC: S500 Standard and Reference Guide for Professional Water Damage Restoration. 3rd Edition, Institute of Inspection, Cleaning, and Restoration Certification, Vancouver, WA, 2006
- IICRC: S520 Standard and Reference Guide for Professional Mold Remediation. 1st Edition, Institute of Inspection, Cleaning, and Restoration Certification, Vancouver, WA, 2004
- Field Guide for the Determination of Biological Contaminants in Environmental Samples. 2nd Edition, American Industrial Hygiene Association, 2005.

#### Consumer Links

Read the full text of AIHA's "The Facts About Mold" consumer brochure.

<http://www.aiha.org/get-involved/VolunteerGroups/Documents/Biosafety/VG-FactsAbout%20MoldDecember2011.pdf>

The Occupational Safety and Health Administration (OSHA)

<http://www.osha.gov/SLTC/molds/index.html>

CDC Mold Facts

<http://www.cdc.gov/mold/faqs.htm>

CDC Stachybotrys - Questions and answers on Stachybotrys chartarum and other molds

<http://www.cdc.gov/mold/stachy.htm>

IOM, NAS: Clearing the Air: Asthma and Indoor Air Exposures

<https://www.epa.gov/indoor-air-quality-iaq/should-you-have-air-ducts-your-home-cleaned>



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National Library of Medicine-Mold website

<http://www.nlm.nih.gov/medlineplus/molds.html>

California Department of Health Services (CADOHS)

<https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Mold.aspx>

Minnesota Department of Health

<http://www.health.state.mn.us/divs/eh/indoorair/mold/index.html>

New York City Department of Health and Mental Hygiene

<https://www1.nyc.gov/site/doh/health/health-topics/mold.page>

H.R.: The United States Toxic Mold Safety and Protection Act

### EPA

"Should You Have the Air Ducts in Your Home Cleaned?"

<http://www.epa.gov/iaq/pubs/airduct.html>

General information about molds and actions that can be taken to clean up or prevent a mold problem.

<http://www.epa.gov/asthma/molds.html>

"A Brief Guide to Mold, Moisture, and Your Home" - Includes basic information on mold, cleanup guidelines, and moisture and mold prevention

<http://www.epa.gov/mold/moldguide.html>

"Mold Remediation in Schools and Commercial Buildings" - Information on remediation in schools and commercial property, references for potential mold and moisture remediators.

<https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide>

### FEMA

"Homes That Were Flooded May Harbor Mold Problems" - Information and tips for cleaning mold.

<http://www.fema.gov/news-release/homes-were-flooded-may-harbor-mold-problems>

"Dealing With Mold & Mildew in Your Flood Damaged Home.

[http://www.fema.gov/pdf/rebuild/recover/fema\\_mold\\_brochure\\_english.pdf](http://www.fema.gov/pdf/rebuild/recover/fema_mold_brochure_english.pdf)



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### 6. Important Terms, Conditions, and Limitations

#### A. Sample Retention

Samples analyzed by EMSL will be retained for 60 days after analysis date. Storage beyond this period is available for a fee with written request prior to the initial 30 day period. Samples containing hazardous/toxic substances which require special handling will be returned to the client immediately. EMSL reserves the right to charge a sample disposal fee or return samples to the client.

#### B. Change Orders and Cancellation

All changes in the scope of work or turnaround time requested by the client after sample acceptance must be made in writing and confirmed in writing by EMSL. If requested changes result in a change in cost the client must accept payment responsibility. In the event work is cancelled by a client, EMSL will complete work in progress and invoice for work completed to the point of cancellation notice. EMSL is not responsible for holding times that are exceeded due to such changes.

#### C. Warranty

EMSL warrants to its clients that all services provided hereunder shall be performed in accordance with established and recognized analytical testing procedures and with reasonable care in accordance with applicable federal, state and local laws. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied. EMSL disclaims any other warranties, express or implied, including a warranty of fitness for particular purpose and warranty of merchantability.

#### D. Limits of Liability

In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. EMSL will not be held responsible for the improper selection of sampling devices even if we supply the device to the user. The user of the sampling device has the sole responsibility to select the proper sampler and sampling conditions to insure that a valid sample is taken for analysis. Any resampling performed will be at the sole discretion of EMSL, the cost of which shall be limited to the reasonable value of the original sample delivery group (SDG) samples. In no event shall EMSL be liable to a client or any third party, whether based upon theories



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of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder.

### E. Indemnification

Client shall indemnify EMSL and its officers, directors and employees and hold each of them harmless for any liability, expense or cost, including reasonable attorney's fees, incurred by reason of any third party claim in connection with EMSL services, the test result data or its use by client



EMSL ANALYTICAL, INC.  
LABORATORY • PRODUCTS • TRAINING

Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

[Empty box for EMSL Order Number]

Houston, TX 77040

PHONE: 1-866-318-3920

FAX: 713-686-3645

Company Name: Axis Real Estate Inspections  
 Street: 7457 Harwin Dr, Ste 364  
 City: Houston State/Province: TX Zip/Postal Code: 77036 Country: US  
 Report To (Name): Amandeep (Andy) Punia Telephone #: 832-297-6328  
 Email Address: andypunia@axisinspections.net Fax #: 832-553-3108 Purchase Order:  
 Project Name/Number: Please Provide Results:  Fax  Email

U.S. State Samples Taken: TX Project Zip Code: Connecticut Samples:  Commercial  Residential  
 \*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements  
 Sterile, Sodium Thiosulfate Preserved Bottle Used:  Biocide Used in Source (specify):   
 Public Water Supply Samples:  Note: All results may automatically be reported to DOH if required by state.

Turnaround Time (TAT) Options \* - Please Check  
 3 Hour  6 Hour  24 Hour  48 Hour  72 Hour  96 Hour  1 Week  2 Week

Microbiology Test Codes			
M001 Air-O-Cell	M174 MoldSnap	M024 Pseudomonas aeruginosa (MFT*)	M115 Sewage Screen - Water (P/A***)
M030 Micro 5	M032 Allergenco-D	M015 Heterotrophic Plate Count	M116 Sewage Screen - Water (MPN**)
M041 Fungal Direct Examination		M017 Total Coliform & E. coli (Colilert P/A***)	M117 Sewage Screen - Swab (P/A***)
M169 Pollen ID & Enumeration		M018 Total Coliform & E. coli (MFT*)	M013 Sewage Screen - Swab (MFT*)
M280 Dust Characterization Level-1		M114 Total Coliform & E. coli Enumeration (Colilert MPN**)	M133 Methicillin-resistant Staph. aureus (MRSA)
M281 Dust Characterization Level-2		M019 Fecal Coliform (MFT*)	M031 Rapid-growing non-TB Mycobacteria Detection & Enumeration
M005 Viable Fungi- Air Samples (Genus ID & Count)		M020 Fecal Streptococcus (MFT*)	M014 Endotoxin Analysis
M006 Viable Fungi- Air Samples (Includes Penicillium, Aspergillus, Cladosporium, Stachybotrys Species ID & Count)		M029 Enterococci (MFT*)	M044 Group Allergen (Cat, Dog, Cockroach, Dust Mite)
M007 Culturable fungi - Surface Samples (Genus ID & Count)		M129 Enterococci (Enterolert P/A***)	<b>Other</b> See Analytical Price Guide
M008 Culturable fungi - Surface Samples (Includes Penicillium, Aspergillus, Cladosporium, Stachybotrys Species ID & Count)		M180 Real Time qPCR-ERMI 36 Panel	Legionella Analysis Please use EMSL Legionella COC
M009 Bacteria Culture Gram Stain & Count		M025 Sewage Screen -Water (MFT*)	
M010 Bacteria Count & ID - 3 Most Prominent			
M011 Bacteria Count & ID - 5 Most Prominent			
M012 Pseudomonas aeruginosa (P/A***)			

\*MFT= Membrane Filtration Technique  
 \*\*MPN= Most Probable Number  
 \*\*\*P/A= Presence/Absence

Name of Sampler: Amandeep Punia Signature of Sampler:

Sample #	Sample Location/Description	Sample Type	Potable/ NonPotable (only for waters)	Test Code	Volume/ Area	Date/Time Collected	Temperature (°C) (Lab Use Only)
Example A1	Kitchen Sink/Tap	Water	<input checked="" type="checkbox"/> P <input type="checkbox"/> NP	M017	100 mL	9/1/13 4:00 PM	
2803 7121	Outdoor	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M001	150		
2803 8252	Living Room	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M001	75		
2803 7103	Master Bedroom	Air	<input type="checkbox"/> P <input type="checkbox"/> NP	M001	75		

Client Sample # (s): Relinquished (Client): Date: Time: Received (Lab): Date: Time: Total # of Samples: 3 Samples Received Chilled? Yes / No

Comments/Special Instructions: WT

# APPENDIX D

## Mold Inspection Agreement

This is an Agreement ("Agreement") between Axis Real Estate Inspections PLLC ("INSPECTION COMPANY") and the undersigned client ("CLIENT"), collectively referred to herein as the "PARTIES." CLIENT agrees to employ the INSPECTION COMPANY to perform a mold inspection as set forth herein.

**1. Address:** The address of the property to be inspected: **1234 Happy Lane, Fun City, Houston, TX 77777**

**2. Fee:** The fee for the inspection service is \$\$\$\$ and is based on a single visit to the property. The inspection is not technically exhaustive. The fee for the mold inspection includes up to **two samples** (air, tape, swab or combination samples). If more samples are required and/or requested, a fee of \$75 per sample is added to the inspection fee.

**3. Purpose:** The purpose of the inspection is to attempt to detect the presence of mold by performing a visual inspection of the property and collecting samples to be analyzed by a laboratory.

**4. Scope:** The scope of the inspection is limited to the readily accessible areas of the property and is based on the condition of the property at the precise time and date of the inspection and on the laboratory analysis of the samples collected. Mold can exist in inaccessible areas such as behind walls and under carpeting. Furthermore, mold grows. As such, the report is not a guarantee that mold does or does not exist. The report is only indicative of the presence or absence of mold. As a courtesy the INSPECTION COMPANY may point out conditions that contribute to mold growth, but such comments are not part of the bargained for report.

**5. Report:** The CLIENT will be provided with a written report of the INSPECTION COMPANY's visual observations and copies of the results of the laboratory analysis of the samples collected. The INSPECTION COMPANY is not able to determine the extent or type of microbial contamination from visual observations alone. The report will be issued only after the laboratory analysis is completed. The report is not intended to comply with any legal obligations of disclosure.

**6. Exclusivity:** The report is intended for the sole, confidential and exclusive use and benefit of the CLIENT and the INSPECTION COMPANY has no obligation or duty to any other party. INSPECTION COMPANY accepts no responsibility for use by third parties. There are no third-party beneficiaries to this agreement. This Agreement is not transferable or assignable. Notwithstanding the foregoing, the CLIENT understands that the INSPECTION COMPANY may notify the homeowner, occupant, or appropriate public agency of any condition(s) discovered that may pose a safety or health concern.

**7. Limitation of Liability:** It is understood that the INSPECTION COMPANY and the laboratory are not insurers, and that the inspection, laboratory analysis and report shall not be construed as a guarantee or warranty of any kind. The CLIENT agrees to hold the INSPECTION

COMPANY and their respective officers, agents and employees harmless from and against any and all liabilities, demands, claims, and expenses incident thereto for injuries to persons and for loss of, damage to, or destruction of property, cost of repairing or replacing, or consequential damage arising out of or in connection with this inspection.

**8. Limitations Period:** Any legal action arising out of this Agreement or its subject matter must be commenced within six months from the date of the Inspection or it shall be forever barred. The CLIENT understands that this limitation period may be shorter than the statute of limitations that would otherwise apply.

**9. Litigation:** The parties agree that any litigation arising out of this Agreement shall be filed only in the Court having jurisdiction in the County where the INSPECTION COMPANY has its principal place of business. If INSPECTION COMPANY is the substantially prevailing party in any such litigation, the CLIENT shall pay all legal costs, expenses and attorney's fees of the INSPECTION COMPANY in defending said claims. The CLIENT further agrees that the International Association of Certified Home Inspectors, Inc. ("Association") is not a party to this Agreement, and any action against it or its officers, agents or employees allegedly arising out of this Agreement or INSPECTION COMPANY's relationship with the Association must be brought only in the District Court of Boulder County, Colorado. If the Association substantially prevails in any such action, the CLIENT shall pay all legal costs, expenses and attorney's fees of the Association in defending said claims.

**10. Severability:** If any court having jurisdiction declares any provision of this Agreement to be invalid or unenforceable, the remaining provisions will remain in effect.

**11. Entire Agreement:** This Agreement represents the entire agreement between the PARTIES. No statement or promise made by the INSPECTION COMPANY or its respective officers, agents or employees shall be binding.

CLIENT has carefully read the foregoing, understands it, agrees to it and acknowledges receipt of a copy of this agreement.

Axis Real Estate Inspections must receive a copy of this agreement signed by the CLIENT before the inspection can begin.

Email: [andyponia@axisinspections.net](mailto:andyponia@axisinspections.net)

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CLIENT SIGNATURE

DATE

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CLIENT NAME



*State rules require licensed mold assessors and remediators to give a copy of this Consumer Mold Information Sheet to each client and to the property owner, if not the same person, before starting any mold-related activity [16 TAC 78.70].*

**How does Texas regulate businesses that do testing for mold or that do mold cleanup?**

The Department of Licensing and Regulation (TDLR) regulates such businesses in accordance with the [Texas Occupations Code, Chapter 1958](#). Under the **Texas Mold Assessment and Remediation Rules (rules)** ([16 Tex. Admin. Code, Chapter 78](#)), all companies and individuals who perform mold-related activities in Texas must be licensed by TDLR unless exempt. (See Page 2 regarding owner exemptions.) Individuals must meet certain qualifications, have required training, and pass a state exam and criminal history background check in order to be issued a license. Applicants for a mold remediation worker registration must have training and pass a criminal history background in order to be registered by TDLR. Laboratories that analyze mold samples must also be licensed and meet certain qualifications. The rules set minimum work practices and procedures and also require licensees to follow a code of ethics. To prevent conflicts of interest, the rules also prohibit a licensee from conducting both mold assessment and mold remediation on the same project. While the rules regulate the activities of mold licensees when they are doing mold-related activities, the rules do not require any property owner or occupant to clean up mold or to have it cleaned up.

**How can I know if someone is licensed?**

A licensed individual is required to carry a current TDLR license certificate with the license number on it. A search tool and listings of currently licensed companies and individuals can be found at: <https://www.tdlr.texas.gov/LicenseSearch/>.

**What is “mold assessment?”**

**Mold assessment** is an inspection of a building by a **mold assessment consultant** or **technician** to evaluate whether mold growth is present and to what extent. Samples may be taken to determine the amount and types of mold that are present; however, sampling is not necessary in many cases. When

mold cleanup is necessary a licensed mold assessment consultant can provide you with a **mold remediation protocol**. A protocol must specify the estimated quantities and locations of materials to be remediated, methods to be used and clearance criteria that must be met.

**What is meant by “clearance criteria?”**

**Clearance criteria** refer to the level of “cleanliness” that must be achieved by the persons conducting the mold cleanup. It is important to understand and agree with the mold assessment consultant prior to starting the project as to what an acceptable clearance level will be, including what will be acceptable results for any air sampling or surface sampling for mold. There are no national or state standards for a “safe” level of mold. Mold spores are a natural part of the environment and are always present at some level in the air and on surfaces all around us.

**What is “mold remediation?”**

**Mold remediation** is the cleanup and removal of mold growth from surfaces and/or contents in a building. It also refers to actions taken to prevent mold from growing back. Licensed **mold remediation contractors** must follow a mold remediation protocol as described above and their own **mold remediation work plan** that provides specific instructions and/or standard operating procedures for how the project will be done.

Before a remediation project can be deemed successful, a mold assessment consultant must conduct a **post-remediation assessment**. This is an inspection to ensure that the work area is free from all visible mold and wood rot, the project was completed in compliance with the remediation protocol and remediation work plan, and that it meets all clearance criteria that were specified in the protocol. The assessment consultant must give you a **passed clearance report** documenting the results of this inspection. If the project fails clearance,

further remediation as prescribed by a consultant will be necessary.

### **What is a Certificate of Mold Damage Remediation?**

No later than the 10<sup>th</sup> day after a mold remediation project stop date, the remediation contractor must sign and give you a **Certificate of Mold Damage Remediation**. The licensed mold assessment consultant who conducted the post-remediation assessment must also sign the certificate. The consultant must truthfully state on the certificate that the mold contamination identified for the project has been remediated and whether the underlying cause of the mold has been corrected. (That work may involve other types of professional services that are not regulated by the mold rules, such as plumbing or carpentry.) Receiving a certificate documenting that the underlying cause of the mold was remediated is an advantage for a homeowner. It prevents an insurer from making an underwriting decision on the residential property based on previous mold damage or previous claims for mold damage. If you sell your property, the law requires that you provide the buyer a copy of all certificates you have received for that property within the preceding five years.

### **How is a property owner protected if a mold assessor or remediator does a poor job or damages the property?**

The rules require licensees to have commercial general liability insurance in the amount of at least \$1 million, or to be self-insured, to cover any damage to your property. Before hiring anyone, you should ask for proof of such insurance coverage. You may wish to inquire if the company carries additional insurance, such as professional liability/errors and omissions (for consultants) or pollution insurance (for contractors), that would provide additional recourse to you should the company fail to perform properly.

### **How is my confidentiality protected if I share personal information about myself with a company?**

Under the code of ethics in the rules, to the extent required by law, licensees must keep confidential any personal information about a client (including medical conditions) obtained during the course of a mold-related activity. Further, you may be able to negotiate a contract to include language that other personal information be kept confidential unless disclosure "is required by law." However, licensees are required to identify dates and addresses of projects and other details that can become public information.

### **How do I file a complaint about a company?**

Anyone who believes a company or individual has violated the rules can file a complaint with TDLR. For information on this process, call 1-800-803-9202, or complete the online complaint form at <https://www.tdlr.texas.gov/complaints/>.

### **Can property owners do mold assessment or remediation on their own property without being licensed?**

Yes. A homeowner can take samples for mold or clean it up in the home without a license. An owner, or a managing agent or employee of an owner of a residential property is not required to be licensed, **unless** the property has 10 or more residential dwelling units. For non-residential properties, an owner or tenant, or a managing agent or employee of an owner or tenant, is not required to be licensed to do mold assessment or remediation on property owned or leased by the owner or tenant, **unless** the mold contamination affects a total surface area of 25 contiguous square feet or more. Please refer to 16 TAC §78.30 for further details on exceptions and exemptions to licensing requirements.

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*For more information about mold and the Texas Mold Assessment and Remediation Rules, contact:*

**Texas Department of Licensing and Regulation**

**Mold Assessors and Remediators**

**PO Box 12057, Austin, TX 78711**

**Phone: 512-463-6599 or 800-803-9202**

**[www.tdlr.texas.gov](http://www.tdlr.texas.gov)**

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