

# Report Contents

Section I – Limited Mold Inspection Report Section II – Independent Lab Results

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For Mold Inspection Sciences Texas, Inc. a Licensed Mold Assessment Company TDLR License # ACO1001, Expiration Date: 03/20/2021; and Licensed Asbestos Consulting Agency TX DSHS License # 100433, Expiration Date: 09/22/2020



# **Mold Inspection Report**



1119 East 11th Street ~ Austin, TX 78702

Prepared for Neema Amini Date of Inspection - Thursday, March 26, 2020



# **Section 1: Mold Inspection Information**

#### Site Description and Scope of Project

Construction Type – Pier and Beam, wood exterior, composition roof Age of Structure – 104 years Building Type – Single Family Home Size – 1,400 Square feet Scope – Entire Structure & Crawl Space

#### Purpose, Limitations, and Inspector/Client Responsibilities

If any item or comment in this report is unclear, you should ask the inspector or project manager to clarify the findings. It is very important that you carefully read ALL this information.

This Mold Assessment was subject to the Texas Mold Assessment and Remediation Rules (16 Tex. Admin. Code, Chapter 78), Administrative Rules of the Texas Department of Licensing and Regulation, see <a href="https://www.tdlr.texas.gov/mld/mldrules090118.pdf">https://www.tdlr.texas.gov/mld/mldrules090118.pdf</a>

Mold Inspection Sciences Texas, Inc. (MISTX) performed a "limited" mold inspection at the subject property in accordance with the TDLR Administrative Rules and generally accepted professional practices. A Mold Assessment addresses only those building materials and conditions that are present, visible, and accessible at the time of the inspection. This report and associated conclusions are based on the visible conditions of the inspected areas and materials and information reported by the client. The inspector does not climb over obstacles, move furnishings or stored items, or go into any area that might present a safety hazard.

MISTX makes no guarantees or warranties, express or implied, regarding the condition of the property. MISTX reserves the right to revise opinions and conclusions if necessary and warranted by the discovery of new or additional circumstances. This report is specific and "limited" in nature and shall not be relied on as a statement that no mold exists in this property. It is always possible that hidden mold growth exists beyond the visibly accessible areas.

This inspection did not include locating/testing of asbestos materials or lead-based paint.

Although some preventative maintenance issues may be noted in this report, this inspection was not a safety or code inspection or a leak detection inspection, and the inspector is not required to identify all potential issues.

Items identified in this Report do not obligate any party to make repairs or take other actions; however, failure to address water intrusion or moisture issues or wet materials noted in this report, may lead to mold growth and/or further damage of the structure. This service does not include follow-up inspections or testing to verify that proper corrections have been made.

This report is provided for the specific benefit of the client named above.



# Section 2: Observations and Readings

## Areas/Issues Noted for Microbial Sampling

## **CRAWL SPACE [MS-1]**

Staining or visible signs of water damage was/were observed in this area.



Area affected: ~3 SF

Suspected source(s)/
cause(s): External
penetration / Roof leak



# **CRAWL SPACE [MS-2]**

#### Wood decay present.

Consider consulting a licensed professional for evaluation and repair.



Area affected: ~2 SF

Suspected source(s)/
cause(s): Condensation /
External penetration



## **CRAWL SPACE [MS-3]**

Mold-like growth was observed in this area.

Client opted not to have the suspect material sampled at this time.



Area affected: ~6 SF

Suspected source(s)/
cause(s): Condensation /
External penetration

## **ENTRY [MS-4]**

Staining or visible signs of water damage was/were observed in this area.

Client opted not to have the ambient air sampled in this area at this time.



Moisture Content: Dry

Humidity - this area: 72% Humidity - Outdoor: 57%

Area affected: ~10 SF

Suspected source(s)/cause(s): Roof leak

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.

#### ENTRY [MS-5]

Mold-like growth was observed in this area.

Client opted not to have the suspect material sampled at this time.



Moisture Content: Dry

Humidity - this area: 72% Humidity - Outdoor: 57%

Area affected: ~2 SF

Suspected source(s)/cause(s): Roof leak



## **LIVING ROOM [MS-6]**

Staining or visible signs of water damage was/were observed in this area.



Moisture Content: Dry

Humidity - this area: 73% Humidity - Outdoor: 57%

Area affected: ~6 SF

Suspected source(s)/ cause(s): Roof leak/ External penetration

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.

#### **LIVING ROOM [MS-7]**

Mold-like growth was observed in this area.

Client opted not to have the suspect material sampled at this time.



Moisture Content: Dry

Humidity - this area: 73% Humidity - Outdoor: 57%

Area affected: ~1 SF

Suspected source(s)/
cause(s): Window leak/
Condensation

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.

#### LIVING ROOM [MS-8]

Staining or visible signs of water damage was/were observed in this area.

Client opted not to have the ambient air sampled in this area at this time.

\* This condition was observed in more than one area of the structure. Not all instances are shown. \*



Moisture Content: Dry

Humidity - this area: 73% Humidity - Outdoor: 57%

Area affected: ~5 SF

Suspected source(s)/
cause(s): Window leak



## **BATHROOM** [MS-9]

Staining or visible signs of water damage was/were observed in this area.

Client opted not to have the ambient air sampled in this area at this time.



Moisture Content: Dry

Humidity - this area: 75% Humidity - Outdoor: 57%

Area affected: ~4 SF

Suspected source(s)/
cause(s): Plumbing leak/
External penetration

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.

#### **BATHROOM [MS-10]**

Staining or visible signs of water damage was/were observed in this area.



Moisture Content: Dry

Humidity - this area: 75% Humidity - Outdoor: 57%

Area affected: ~3 SF

Suspected source(s)/
cause(s): Plumbing leak

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.

## **BATHROOM** [MS-11]

Mold-like growth was observed in this area.

Client opted not to have the suspect material sampled at this time.



Moisture Content: Dry

Humidity - this area: 75% Humidity - Outdoor: 57%

Area affected: ~2 SF

Suspected source(s)/
cause(s): Plumbing leak/
Sink overspray



## **BATHROOM** [MS-12]

Mold-like growth was observed in this area.

Client opted not to have the suspect material sampled at this time.





Moisture Content: Dry

Humidity - this area: 75% Humidity - Outdoor: 57%

Area affected: ~2 LF

Suspected source(s)/
cause(s): External
penetration

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.

## **WEST BEDROOM [MS-13]**

Staining or visible signs of water damage was/were observed in this area.

Client opted not to have the ambient air sampled in this area at this time.



Moisture Content: Dry

Humidity - this area: 72% Humidity - Outdoor: 57%

Area affected: ~8 SF

Suspected source(s)/cause(s): Roof leak



## **WEST BEDROOM [MS-14]**

Staining or visible signs of water damage was/were observed in this area.





Humidity - this area: 72% Humidity - Outdoor: 57%

Moisture Content: Suspect

Area affected: ~5 SF

Suspected source(s)/cause(s): Roof leak

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.



## **EAST BEDROOM [MS-15]**

Staining or visible signs of water damage was/were observed in this area.

Client opted not to have the ambient air sampled in this area at this time.



Moisture Content: Dry

Humidity - this area: 73% Humidity - Outdoor: 57%

Area affected: ~5 SF

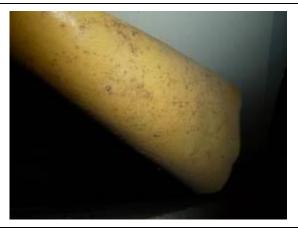
Suspected source(s)/cause(s): Roof leak



## **EAST BEDROOM [MS-16]**

Mold-like growth was observed in this area.

Client opted not to have the suspect material sampled at this time.



Moisture Content: Dry

Humidity - this area: 73% Humidity - Outdoor: 57%

Suspected source(s)/
cause(s): Roof leak2 SF

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.

## HALLWAY [MS-17]

Staining or visible signs of water damage was/were observed in this area.

Client opted not to have the ambient air sampled in this area at this time.



Moisture Content: Suspect

Humidity - this area: 76% Humidity - Outdoor: 57%

Area affected: ~8 SF

Suspected source(s)/cause(s): Roof leak

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.

#### HALLWAY [MS-18]

Mold-like growth was observed in this area.

Client approved recommended surface sample, referenced as, DE1.

(Independent laboratory analysis attached)



Moisture Content: Suspect

Humidity - this area: 76% Humidity - Outdoor: 57%

Area affected: ~1 SF

Suspected source(s)/cause(s): Roof leak

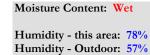


# **DINING ROOM [MS-19]**

Staining or visible signs of water damage was/were observed in this area.

Client opted not to have the ambient air sampled in this area at this time.

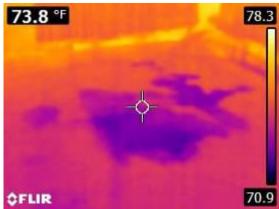




Area affected: ~23 SF

Suspected source(s)/cause(s): Roof leak







# KITCHEN [MS-20]

Staining or visible signs of water damage was/were observed in this area.

Client opted not to have the ambient air sampled in this area at this time.





Moisture Content: Wet

Humidity - this area: 76% Humidity - Outdoor: 57%

Area affected: ~20 SF

Suspected source(s)/cause(s): Roof leak



# **KITCHEN [MS-21]**

Mold-like growth was observed in this area.

Client approved recommended surface sample, referenced as, DE2.

(Independent laboratory analysis attached)







Moisture Content: Wet

Humidity - this area: 76% Humidity - Outdoor: 57%

Area affected: ~4 SF

Suspected source(s)/ cause(s): Roof leak



#### Areas/Issues Noted for Preventative Maintenance

## ROOF [PM-1]

Worn or damaged roofing materials, signs of ponding, or previous repairs were noted.

These conditions can allow water to enter the structure, which could lead to a moisture problem in the attic, ceilings, and other surrounding building materials.

Consider consulting a licensed professional for evaluation and repair.



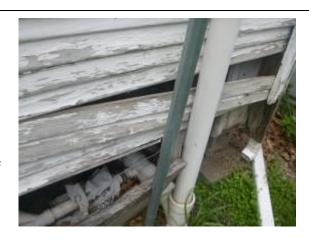
## **EXTERIOR [PM-2]**

Splitting/bowing, water damaged and/or deteriorated siding materials were observed on exterior walls.

This condition can allow water to infiltrate the interior of the structure and lead to excessive moisture.

\* This condition existed multiple times. Not all occurrences are shown. \*

Consider contacting a licensed contractor to assess the condition of the siding materials on the exterior walls.





## **EXTERIOR [PM-3]**

# Plants/trees are coming into contact with the roof/walls.

Plants/trees excrete enzymes that can deteriorate building materials. In addition, they can trap water against the structure.

Consider trimming back trees/plants and removing any plants growing directly on the exterior.



# ROOF [PM-4]

# Plants/trees are coming into contact with the roof.

Plants/trees excrete enzymes that can deteriorate building materials. In addition, they can trap water against the structure.

Consider trimming back trees/plants and removing any plants growing directly on the roof or house.



#### CRAWL SPACE [PM-5]

#### Earth to wood contact.

This issue was noted for preventative maintenance purposes. Consider consulting a licensed contractor for evaluation and correction or repair.





## **CRAWL SPACE [PM-6]**

Standing water or wet soil under the structure.

This issue was noted for preventative maintenance purposes. Consider consulting a licensed contractor for evaluation and correction or repair.



Area affected: ~5 SF Suspected source(s)/ cause(s): External penetration

## **LIVING ROOM [PM-7]**

Insect nest was found inside the home.



Humidity - this area: 73% Humidity - Outdoor: 57%

\* Humidity level for this area is above the ASHRAE recommended level for habitable spaces. Preferable level is between 30% and 60%.

# LIVING ROOM [PM-8]

Floors are warped and raised.

\* This condition existed multiple times. Not all occurrences are shown. \*



Humidity - this area: 73% Humidity - Outdoor: 57%



# **DINING ROOM [PM-9]**

Open penetration to the outside.



Humidity - this area: 78% Humidity - Outdoor: 57%



# **Section 3: Mold Samples**

Currently, there are no generally accepted standards or government regulations for "normal" or "safe" airborne mold spore exposure levels. As such, spore counts are compared to a baseline, outdoor sample. In general, indoor spore counts should be statistically similar to the outdoor counts and proportionately similar in terms of spore types.

- If the indoor results are **statistically similar** to the outdoor results, we consider the airborne mold spore levels to be normal.
- When the airborne mold levels indoors are not statistically similar, the results may indicate an **indoor source** of mold, which is amplifying the airborne levels of one or more types of mold.
- If there are water marker mold types (Stachybotrys, Chaetomium, Ulocladium, and Memnoniella) present in an indoor air sample, this is usually a clear indicator of a moisture and mold concern in the area tested.
- When the indoor levels of one particular type of mold are **significantly higher** than the outdoor levels of the same mold type, this is usually a **clear indicator** of a mold concern in the area tested.

#### Air Samples

Lab Code	Location	Comments	
OS	Outdoor	Recommended by inspector and	
		declined by client.	
Declined-	Entry	Recommended by inspector and	
Air		declined by client	
Declined-	Living Room	Recommended by inspector and	
Air		declined by client	
Declined-	Bathroom	Recommended by inspector and	
Air		declined by client	
Declined-	West Bedroom	Recommended by inspector and	
Air		declined by client	
Declined-	East Bedroom	Recommended by inspector and	
Air		declined by client	
Declined-	Hallway	Recommended by inspector and	
Air		declined by client	
Declined-	Dining Room	Recommended by inspector and	
Air		declined by client	
Declined-	Kitchen	Recommended by inspector and	
Air		declined by client	



Surface samples should be understood as either present or absent. It is not the amount of mold detected or not detected on a surface sample that indicates a concern, but whether or not mold growth is present. The EPA states that mold should not be growing inside a structure; therefore, when mold growth is found inside a structure, the goal should be to remove the mold and remedy the cause.

#### Surface Samples

Lab Code	Location	Comments	
Declined-	Crawl Space – Beam	Recommended by inspector and	
Surface		declined by client	
Declined-	Entry – Ceiling	Recommended by inspector and	
Surface		declined by client	
Declined-	Living Room – Window	Recommended by inspector and	
Surface		declined by client	
Declined-	Bathroom – Floor	Recommended by inspector and	
Surface		declined by client	
Declined-	Bathroom – Lower wall	Recommended by inspector and	
Surface		declined by client	
Declined-	East Bedroom – Wallpaper	Recommended by inspector and	
Surface		declined by client	
DE1	Hallway - Ceiling	Recommended by inspector	
		and approved by client	
DE2	Kitchen - Ceiling	Recommended by inspector	
		and approved by client	

For detailed sample results, please see the attached independent laboratory report.



# Section 4: Methodologies

#### General Methodology

A mold assessment normally includes the following:

- Visual inspection and procedural assessment focused on the discovery of signs of mold growth and moisture intrusion
- O Use of a moisture meter to help locate areas of actively wet building materials and to test suspect areas
- Analytical analysis by collection of microbial samples requested by client and submission of samples to a licensed microbiology lab for analysis
- O Provision of a written report of the limited mold inspection findings and, where applicable, a lab report of the sample analysis

#### **Laboratory Services**

Microbial samples collected by MISTX are submitted under chain of custody to a laboratory licensed by the state of Texas. If samples were collected, the laboratory's report is included as an attachment to this report.

#### Sampling Methodologies

Air Samples – Air sampling for total fungi is designed to count and identify the presence of total fungal material (i.e. culturable and non-culturable spores) in a measured volume of air. The air samples are collected via the spore trap method with the use of a Zefon Air-O-Cell. Airflow through the cassette is produced by an electrically powered air-sampling device set and calibrated to a flow rate of 15 liters per minute. The sample cassettes are then sealed and submitted to the laboratory via a chain of custody for analysis.

Wall/Ceiling Cavity Samples – Cavity samples are collected by drilling a small (1/4") hole into the drywall or other material, then inserting a plastic tube into the hole through which an air sample is pulled. The cavity air sample is collected using the same media and method as stated above for standard air sampling.

Surface Swab Samples – Surface swab samples are collected using sterile swabs enclosed in sterile tubes which contain a transport media solution. These samples are collected by moistening the swab with the provided solution and then swabbing the suspect area. The swabs are then inserted into the sterile tubes, sealed, and submitted to the laboratory via a chain of custody for analysis.

Surface Tape Samples—Surface tape samples collected using a forensic tape lift kit. These samples are collected by pressing the tape media slide to the surface of a building material. The Bio-Tape slide is then sealed in its included case and submitted to the laboratory via a chain of custody for analysis.



#### Relative Humidity Readings

Relative humidity (RH) readings were obtained from both the interior and exterior of the property. The RH was measured and recorded to determine the potential effect it may have on microbial amplification.

Guidance on RH in occupied buildings is provided by the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) in the ANSI/ASHRAE Standard 62.1-2016, *Ventilation for Acceptable Indoor Air Quality*. The RH in habitable spaces preferably should be maintained between 30% and 60% to minimize the growth of allergenic and pathogenic organisms (e.g., dust mites, fungi and associated mycotoxins).

## Moisture Content Readings

A moisture meter was utilized on this project to measure the moisture content (MC) of certain building materials (walls, ceilings, flooring, etc.) throughout the structure, especially areas suspect of water intrusion. Measurement and recording of MC is performed to detect building materials containing unacceptable levels of moisture.

Fungal growth requires moisture, a food source, and fungal spores. Thus, wood and building materials that are continuously dry should not promote microbial growth. Construction materials with elevated MC are likely to promote fungal growth. It is recommended that the source of moisture be located and corrected immediately.

NOTE: When a moisture meter is used in a non-penetrating manner, it is possible to obtain a reading of "Red" even if there is no excessive moisture. This can occur when there are certain types of materials below the surface being measured; such as metal. Moisture readings should be used as a guide for further testing and investigation only.

#### **Infrared Camera Readings**

An infrared camera was utilized on this project to measure temperature anomalies in certain building materials (walls, ceilings, flooring, etc.) throughout the structure, especially areas suspect of moisture or water intrusion. Thermography is performed to assist in locating moisture issues in the structure.



# Section 5: Applicable Regulations

## Asbestos Containing Materials in Single Family Dwellings

Single family dwellings, that are to remain single family dwellings, do not fall under the definition of a "public building" or "commercial building" as defined in the Texas Asbestos Health Protection Rules (TAHPR). Therefore, TAHPR does not require suspect materials to be sampled prior to disturbance or removed. However, federal Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) regulations concerning asbestos do apply, and any contractor that will disturb the material must be advised that it contains asbestos. Materials such as sheet rock wall and ceiling systems, and flooring materials and mastics are just some examples of materials that could contain asbestos.

#### **Texas Mold Regulations**

Under the *Rules* for Mold Assessors and Remediators, *Administrative Rules* of the Texas Department of Licensing and Regulation, 16 Texas Administrative Code, Chapter 78 (Effective November 1, 2017), <a href="https://www.tdlr.texas.gov/mld/mldrules090118.pdf">https://www.tdlr.texas.gov/mld/mldrules090118.pdf</a>, all companies and individuals who perform mold-related activities must have the appropriate licensing from the TDLR. For more information about mold and the *Rules* for Assessors and Remediators, visit the TDLR website: <a href="https://www.tdlr.texas.gov/mld/mldrules.htm">https://www.tdlr.texas.gov/mld/mldrules.htm</a>.

NOTICE: This Report is NOT A MOLD REMEDIATION PROTOCOL. If there is less than 25 contiguous square feet of visible mold growth, hiring a licensed Mold Remediation Contractor is not required by the Texas *Rules*.

However: All licensed Mold Remediation Contractors must follow a Mold Remediation Protocol, and the Mold Remediation Contractor must follow all *Rules*. This includes developing a work plan which follows a Protocol developed by a licensed Mold Assessment Consultant," per the *Rules*. A Mold Remediation Protocol is a detailed scope of work for the mold remediation work that is needed.

If desired, MISTX can write a Mold Remediation Protocol for this project upon request. Fees are based on the size of the project, the estimated time it will take to write the Protocol and manage the project.

Mold Inspection Sciences Texas, Inc. Lab Report 2512 S IH 35, Suite 110 Austin, TX 78704 USA (512) 535-2493





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Date of Sampling: 03-26-2020 Date of Receipt: 03-27-2020 Date of Report: 03-27-2020

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(800) 651-4802 Fax (623) 780-7695

MoldREPORT

#### **Table of Contents**

Thank you for choosing MoldREPORT<sup>TM</sup> from Eurofins EMLab P&K. Our mission is to provide industry leadership for the assessment of mold in the home indoor environment.

Your MoldREPORT<sup>TM</sup> is designed and intended for use by professional inspectors in office and residential home inspections to help in the assessment of mold growth in the living areas sampled by professional inspectors. Our laboratory analysis is based on the samples submitted to Eurofins EMLab P&K. Please read the entire report to fully understand the complete MoldREPORT<sup>TM</sup> process. The following is a summary of the report sections:

- 1. Detailed Results of Sample Analysis Laboratory results from the samples collected at the site.
- 2. Understanding Your Sample Analysis Results Detailed summary of how to understand the analytical results from the air samples and/or surface samples including interpretive guidelines.
- 3. Important Information, Terms and Conditions General information to help you understand and interpret your MoldREPORT<sup>TM</sup>, including important terms, conditions and applicable legal provision relating to this report.
- **4. Scope and Limitations -** Important information regarding the scope of the MoldREPORT<sup>TM</sup> system, and limitations of mold inspection, air sampling, and surface sampling.
- 5. Glossary Definitions and descriptions of frequently used terms and commonly found mold.
- 6. References and Resources Literature, websites, and other materials that can provide more in-depth information about mold and indoor air quality.

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MoldREPORT

# **Summary of Sample Analysis Results**

# Do not take any action based on the results of this report until you have read the entire report.

#### **Surface Sample Summary:**

The surface sample results of DE1, DE2 indicated mold growth on the surface(s) sampled at the time of sampling.

Please see the sections titled "Detailed Results of the Surface Sample Analysis", "Understanding Your Surface Sample Analysis Results", "Important Information, Terms and Conditions" and "Scope and Limitations" for additional information.

Location **Mold Growth Dominant Types** DE1: Hallway-Ceiling Mold Growth Chaetomium species \* see p. 4 for details DE2: Kitchen-Ceiling Mold Growth Chaetomium species \* see p. 5 for details Penicillium/Aspergillus group Ulocladium species

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# **Detailed Results of Surface Sample Analysis**

Location:	DE1: Hallway-Ceiling			
Sample Type:	Swab sample			
M 11 11 14	NT (1	T		TT: 1
Mold growth present*:	No growth	Low		High
Low=small amounts of mold growth present	found			
High=large amounts of mold growth present				
Acremonium species				
Alternaria species				
Aspergillus species				
Aureobasidium species				
Chaetomium species				
Cladosporium species				
Penicillium species				
Stachybotrys species				
Trichoderma species				
Ulocladium species				
Miscellaneous spores present:	Very few			
Indicative of normal conditions**				
Background debris:	Heavy			
Other comments:	None			
Other comments.	TOILC			

<sup>\*</sup> Quantities of molds seen growing are graded Low to High with High denoting the highest numbers.

<sup>\*\*</sup> Indicative of normal conditions, i.e. seen on surfaces everywhere. Includes basidiospores (mushroom spores), myxomycetes, plant pathogens such as ascospores, rusts and smuts, and a mix of saprophytic genera with no particular spore type predominating. Distribution of spore types seen mirrors that usually seen outdoors.

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# **Detailed Results of Surface Sample Analysis**

Location:	DE2: Kitchen-Ceiling			
Sample Type:	Swab sample			
			_	
Mold growth present*:	No growth	Low		High
Low=small amounts of mold growth present	found			
High=large amounts of mold growth present				
Acremonium species				
Alternaria species				
Aspergillus species				
Aureobasidium species				
Chaetomium species				
Cladosporium species				
Penicillium species				
Penicillium/Aspergillus group				
Stachybotrys species				
Trichoderma species				
Ulocladium species				
Miscellaneous spores present:	Very few			
Indicative of normal conditions**	VCI y ICW			
indicative of normal conditions				
Background debris:	Light			
3	6			
Other comments:	None			

<sup>\*</sup> Quantities of molds seen growing are graded Low to High with High denoting the highest numbers.

<sup>\*\*</sup> Indicative of normal conditions, i.e. seen on surfaces everywhere. Includes basidiospores (mushroom spores), myxomycetes, plant pathogens such as ascospores, rusts and smuts, and a mix of saprophytic genera with no particular spore type predominating. Distribution of spore types seen mirrors that usually seen outdoors.

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# **Understanding Your Surface Sample Analysis Results**

#### Analysis by direct microscopic examination

Each surface sample was analyzed by direct microscopic examination. This method of analysis is an effective means of determining whether or not mold is growing on the surface sampled, and if so, what kinds of molds are present. A direct microscopic examination, in the absence of evidence of growth on the surface sampled, may also occasionally pick up indications of mold growth in the vicinity based upon the mix of spore types present in the sample. Most surfaces collect a mix of spores that are normally present in the environment. At times it is possible to note a skewing of the normal distribution of spore types, and also to note marker genera that may indicate indoor mold growth. Note that locating an area of mold growth indoors using surface samples does not provide information regarding airborne spore levels.

#### Mold growth present

Samples are examined for the presence of mold growth, as indicated by groups, clumps, and/or chains of single spore types, usually accompanied by intact mycelial and/or sporulating structures. These areas of growth are then identified to genus name, if possible. Quantities are estimated and are graded on a scale from "Low" to "High," with "High" denoting the highest amount.

If mold growth is found, regardless of the magnitude of the growth, it is recommended that the growth be physically removed using appropriate controls and precautions. If mold has been located and removed, it is also important to identify and correct the source of moisture or dampness that allowed the mold to grow. If the affected area becomes moist again, mold growth will occur again. We recommend that you consult a professional if you are not familiar with how to locate and safely remove mold growth or how to identify and correct moisture problems that may exist.

#### Miscellaneous spores present

This is a measure of the mix of spores that are present and are indicative of normal conditions, in other words, seen normally on surfaces almost everywhere. This includes basidiospores (mushroom spores), myxomycetes ("slime molds"), plant pathogens such as rusts and smuts, and a mix of saprobic mold with no particular spore type predominating. The distribution of these spore types resembles that seen outdoors.

#### **Background debris**

Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described as light, medium, heavy, or very heavy. Very heavy background debris may obscure visibility for the analyst. Bulk samples are not graded in this category.

#### Other comments

Additional relevant information is provided, such as the presence of marker genera or the abnormal distribution of spore types. Bacteria may be noted, as well as significant numbers of other biological particles such as algae, lichen, dust mites, etc. In addition, when deemed to be helpful, non-biological particles are also described.

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MoldREPORT Eurofins EMLab P & K

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# Important Information, Terms and Conditions Relating to your MoldREPORT<sup>TM</sup>

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. MoldREPORT<sup>TM</sup> 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. MoldREPORT<sup>TM</sup> 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 scores 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.

#### Warranties, legal disclaimers and limitations

MoldREPORT<sup>TM</sup> is designed and intended for use only in residential home inspections to help in the assessment of mold growth in the living areas sampled. Our laboratory analysis and report are based on the samples submitted to Eurofins EMLab P&K. The inspection(s) and sampling should be performed only by a licensed and professional home inspector, environmental mold specialist, industrial hygienist or residential appraiser trained and qualified to conduct mold inspections in residential buildings. Client agrees to these conditions for the on-site project inspection.

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# **Scope and Limitations of Report and Analysis**

The scope of the MoldREPORT<sup>TM</sup> system is limited to Eurofins EMLab P&K's proprietary MoldSCORE<sup>TM</sup> analysis of the air and surface samples taken at the time of the inspection. Eurofins EMLab P&K cannot be liable, in any form of action, for any items that are not included within the scope of the MoldREPORT<sup>TM</sup> system.

#### **MoldREPORT<sup>TM</sup> Inspection Limitations**

MoldREPORT<sup>TM</sup> results are based upon mold air and surface samples. Mold surface samples are useful for confirming and identifying mold growth while air samples measure airborne mold levels.

This report provided by Eurofins EMLab P&K is based upon the assumption that the information provided by the inspector is true and correct, that a sufficient number of mold and air samples were collected at all the appropriate locations following proper inspection and sampling protocols, and that the mold samples collected represent normal conditions at the site sampled. Eurofins EMLab P&K is not able to, and cannot, guarantee the skill level or experience of the inspector performing the MoldREPORT<sup>TM</sup> inspection, nor can it guarantee that the samples have been properly collected at the site or are representative of normal conditions since many factors outside of Eurofins EMLab P&K's (and the inspector's) control can and do substantially affect mold levels. Consequently, Eurofins EMLab P&K cannot guarantee the accuracy of the interpretation provided herein. It is the responsibility of the inspector to insure that the mold samples were collected properly. MoldREPORT<sup>TM</sup> relies on noninvasive and non-destructive tests, so it cannot guarantee that hidden mold problems will be detected and reported. MoldREPORT<sup>TM</sup> results apply only to the rooms sampled, not to the entire building or any other rooms. It is the responsibility of the property owner, potential purchaser or other end-user of this report to select a properly trained and qualified inspector.

#### **About Air Sample Sampling and Analysis**

Eurofins EMLab P&K requires at least one outdoor air sample and one indoor air sample in order to make indoor/outdoor comparisons and assessments of airborne mold levels, which are an integral part of the Eurofins EMLab P&K MoldREPORT<sup>TM</sup> system. The indoor air samples taken can be representative of the airborne mold present in the area sampled. The analysis and interpretation of these air samples is proprietary and is based upon: relative levels of spores present, quantities and concentration of *Penicillium/Aspergillus* type spores, quantity and concentration of *Cladosporium* spores, quantity and concentration of basidiospores, quantity and concentration of "marker" spore types, quantity and concentration of "other" spore types, and the distribution of mold spore types. Spore identification is performed visually by trained analysts according to industry norms. Using visual identification, most mold spores lack sufficient distinguishing characteristics to allow for species identification, so the MoldREPORT<sup>TM</sup> analysis is generally performed at the genus level. Currently there are no generallyaccepted protocols or regulations regarding air sampling for molds, in large part due to the inability of any single technique to provide a complete analysis of all mold spores and mold growth in an area. Air sampling for MoldREPORT<sup>TM</sup> can be performed using any standard "spore trap" method, which are also called "non-viable air sampling methods" because spore traps do not require the germination and growth of the spores before identification. Commonly used spore trap equipment for performing air sampling for mold includes Zefon Air-O-Cell<sup>TM</sup> Cassettes, Burkard<sup>TM</sup> samplers, and Allergenco<sup>TM</sup> samplers.

#### **About Surface Sampling and Analysis**

Surface sampling can be useful for differentiating between mold growth and stains, for identifying the type of mold growth present (if present), and, in some cases, identifying signs of mold growth in the vicinity. Although not required, surface sampling can improve the accuracy of the results and interpretation of the inspected environment if sampled correctly. Eurofins EMLab P&K accepts surface samples in the form of swabs, tapes, or bulks in order to perform a direct examination of a specific location. The MoldREPORT<sup>TM</sup> analysis system uses the direct examination data in addition to the MoldREPORT<sup>TM</sup> air sample analysis.

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# Glossary

Background Debris - Material(s) found on the air sample other than mold spore(s) or mycelia. Examples include skin cells, insect parts, and fibers.

False Positive - A test result that incorrectly indicates mold growth, when in reality there is none. For example, an air sample test result indicating indoor mold growth, when no mold growth is actually present is a "False Positive."

False Negative - A test result that shows no mold growth, when in reality mold growth is present. For example, an air sample test result indicating no indoor mold growth, when mold growth is actually present.

Fungi - A kingdom that includes yeasts, molds, smuts, and mushrooms. Fungi are not animals, plants or bacteria, but their own kingdom.

HVAC - Heating, Ventilation, and Air Conditioning (HVAC) systems are possible reservoirs for mold growth.

IAQ - Indoor Air Quality (IAQ) is the main focus of Eurofins EMLab P&K and the majority of its customers.

Industrial Hygienist - A professional who monitors exposure to environmental factors that can affect human health. Examples of environmental factors include chemicals, heat, asbestos, noise, radiation, and biological hazards.

Marker Spores - Spore types, such as Chaetomium and Stachybotrys, that when found indoors, even in moderate numbers are an indication of indoor mold growth.

Note: This glossary is intended to provide general information about commonly occurring molds, and is not intended to be a complete source.

#### Alternaria:

**Distribution:** Alternaria is one of the most common molds and is abundant worldwide. This genus contains around 40 to 50 different species, only a few of which are commonly found indoors.

**How it is spread:** Alternaria spores are easily dispersed through the air by wind.

Where it is found outdoors: Alternaria is common outdoors in soil, dead organic debris, foodstuffs, and textiles. It is also a plant pathogen and is frequently found on dead or weakened plants.

Where it is found indoors: Alternaria can grow on a variety of substrates indoors when moisture is present.

#### Acremonium:

**Distribution:** Acremonium is a common mold, including about 80 to 90 different species.

**How it is spread:** Acremonium produces wet slimy spores and is normally dispersed through water flow or droplets, or by insects. Old dry Acremonium spores can sometimes be dispersed through the air by wind.

Where it is found outdoors: Acremonium is found in soil, on dead organic material and debris, hay, and foodstuffs. Where it is found indoors: Acremonium can be found anywhere indoors, but requires very wet conditions in order to proliferate. The spores probably require active disturbance for release.

Aspergillus: (see Penicillium/Aspergillus)

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# Glossary (continued)

#### **Basidiospores:**

**Distribution:** Basidiospores are produced by a very large and diverse group of fungi called basidiomycetes, which contains over 1000 different genera. This group includes many well-known macrofungi, such as mushrooms. Basidiospores are often abundant in outdoor air and sometimes in indoor air.

**How they are spread:** Many types of basidiospores are actively released into the air during periods of high humidity or rain. Once the spores are expelled into the air, they are dispersed easily by wind.

Where they are found outdoors: Basidiomycetes are very common outdoors and can be found in gardens, forests, grasslands, and anywhere there is a substantial amount of dead organic material. They are also found on or near plants and some are known to be plant pathogens.

Where they are found indoors: Basidiospores found indoors typically come from outdoor sources and are carried inside by airflow or on clothing. Certain kinds of basidiomycetes can grow indoors, such as those that cause "dry rot", which can cause structural damage to wood. Occasionally, other basidiomycetes such as mushrooms can be found indoors, but this is not common. Generally, basiodiomycetes require wet conditions for prolonged periods in order to grow indoors.

#### Bipolaris / Dreschlera:

**Distribution:** Bipolaris and Dreschlera are two separate genera of molds that are so visually similar that they are commonly discussed together as a group. Both genera include around 30 - 40 different species.

**How they are spread:** Bipolaris / Dreschlera spores are easily dispersed through the air by wind.

Where they are found outdoors: Bipolaris / Dreschlera type spores are most abundant in tropical or subtropical climates. They can grow in soils, on plant debris and grasses, and are known to be plant pathogens.

Where they are found indoors: Bipolaris / Dreschlera can grow on a variety of indoor substrates when moisture is present.

#### Ceratocystis / Ophiostoma:

**Distribution:** Ceratocystis / Ophiostoma are two separate genera of molds that are so visually similar that they are commonly discussed together as a group. These genera contain around 50 to 60 different species.

**How they are spread:** Ceratocystis / Ophiostoma produce wet slimy spores and are normally dispersed through water flow, droplets, or by insects. These spores are rarely identified in air samples.

Where they are found outdoors: Ceratocystis / Ophiostoma are very common in commercial lumberyards and forests.

Where they are found indoors Ceratocystis / Ophiostoma are abundant on wood framing material in the home, although the spores are rarely found in air samples. This mold is sometimes called "lumber mold".

#### Chaetomium:

**Distribution:** Chaetomium is a common mold worldwide. This genus contains around 80 - 90 different species. **How it is spread:** Chaetomium spores are formed inside fruiting bodies. The spores are released by being forced out through a small opening in the fruiting body. The spores are then dispersed by wind, water drops, or insects. Where it is found outdoors: Chaetomium can be found in soil, on various seeds, cellulose substrates, dung, woody materials and straw.

Where it is found indoors: Chaetomium can grow in a variety of areas indoors, but is usually found on cellulosebased or woody materials in the home. It is very common on sheetrock paper that is or has been wet.

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# Glossary (continued)

Cladosporium:

**Distribution:** Cladosporium is an abundant mold worldwide and is normally one of the most abundant spore types present in both indoor or outdoor air samples. This genus contains around 20 - 30 different species.

**How it is spread:** Cladosporium produces dry spores that are formed in branching chains. Spores are released by twisting of the spore-bearing hyphae as they dry. Thus, the spores are most abundant in dry weather.

Where it is found outdoors: Cladosporium is found in a wide variety of soils, in plant litter, and on old and decaying plants and leaves. Some species are plant pathogens

Where it is found indoors: Cladosporium can be found anywhere indoors, including textiles, bathroom tiles, wood, moist windowsills, and any wet areas in a home. Some species of *Cladosporium* grow at temperatures near or below 0(C) / 32(F) and can often be found on refrigerated foodstuffs and even frozen meat.

#### Curvularia:

**Distribution:** Curvularia is a cosmopolitan fungus and includes approximately 30 different species.

**How it is spread:** Curvularia produces dry spores that are formed in fragile chains and is very easily dispersed through the air by wind.

Where it is found outdoors: Curvularia is most common in tropical or subtropical regions. It is found in soil and on debris of tropical plants.

Where it is found indoors: Curvularia can be found growing on a variety of substrates indoors.

#### Epicoccum:

**Distribution:** Epicoccum is a cosmopolitan mold that includes only two species.

**How it is spread:** Epicoccum produces large dry spores that are easily dispersed through the air by wind.

Where it is found outdoors: *Epicoccum* can be found in soils or on plant debris.

Where it is found indoors: Epicoccum is commonly found on many different substrates indoors including paper, textiles, and insects.

#### Memnoniella:

**Distribution:** Memnoniella is a cosmopolitan mold genus that includes approximately five species. It is frequently found in conjunction with *Stachybotrys* species due to its similar ecological preferences.

**How it is spread:** *Memnoniella* produces dry spores that are easily dispersed through the air by wind.

Where it is found outdoors: Memnoniella can be found outdoors in soil, in plant debris or litter, and as pathogens on some types of living plants.

Where it is found indoors: Memnoniella can grow on a variety of substrates indoors, but mainly can be found on wet cellulose-based materials, such as wallboard, jute, wicker, straw baskets, paper and other wood by-products.

#### Paecilomyces:

**Distribution:** Paecilomyces is ubiquitous in nature and includes between 9 and 30 different species, depending on the taxonomic system used. Its spores are visually similar to *Penicillium / Aspergillus* types of spores.

**How it is spread:** *Paecilomyces* produce dry spores that are easily dispersed through the air by wind.

Where it is found outdoors: Paecilomyces is found outdoors in soils and decaying plant matter, composting processes, legumes and cottonseeds. Some species parasitize insects.

Where it is found indoors: Paecilomyces can be found on a number of materials indoors. It has been isolated from jute fibers, papers, PVC, timber, optical lenses, leather, photographic paper, cigar tobacco, harvested grapes, bottled fruit, and fruit juice undergoing pasteurization.

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# **Glossary (continued)**

#### Penicillium / Aspergillus:

**Distribution:** Penicillium / Aspergillus are two separate genera of molds that are so visually similar that they are commonly discussed together as a group. Together, there are approximately 400 different species of *Penicillium* / Aspergillus.

**How it is spread:** Penicillium / Aspergillus produce dry spore types that are easily dispersed through the air by wind. These fungi serve as a food source for mites, and therefore can be dispersed by mites and various insects as well. Where it is found outdoors: Penicillium / Aspergillus are found in soils, decaying plant debris, compost piles, fruit rot and some petroleum-based fuels.

Where it is found indoors: Penicillium / Aspergillus are found throughout the home. They are common in house dust, growing on wallpaper, wallpaper glue, decaying fabrics, wallboard, moist chipboards, and behind paint. They have also been isolated from blue rot in apples, dried foodstuffs, cheeses, fresh herbs, spices, dry cereals, nuts, onions, and oranges.

#### Stachybotrys:

**Distribution:** Stachybotrys is ubiquitous in nature. This genus contains about 15 species.

**How it is spread:** Stachybotrys produces wet slimy spores and is commonly dispersed through water flow, droplets, or insect transport, less commonly through the air.

Where it is found outdoors: Stachybotrys is found in soils, decaying plant debris, decomposing cellulose, leaf litter and seeds.

Where it is found indoors: Stachybotrys is common indoors on wet materials containing cellulose such as wallboard, jute, wicker, straw baskets, and other paper materials.

#### Torula:

**Distribution:** Torula is a cosmopolitan microfungus and includes approximately eight different species

**How it is spread:** Torula produces dry spores that are easily dispersed through the air by wind.

Where it is found outdoors: Torula is most common in temperate regions and has been isolated from soils, dead herbaceous stems, sugar beet roots, groundnuts, and oats.

Where it is found indoors: Torula is common indoors on wet materials containing cellulose, such as wallboard, jute, wicker, straw baskets, and other paper materials.

#### Ulocladium:

**Distribution:** *Ulocladium* is ubiquitous in nature and includes approximately nine different species. **How it is spread:** *Ulocladium* produces dry spores that are easily dispersed through the air by wind.

Where it is found outdoors: *Ulocladium* is common outdoors in soils, dung, paint, grasses, wood, paper, and

Where it is found indoors: *Ulocladium* is common indoors on very wet materials containing cellulose such as wallboard, jute, wicker, straw baskets, and other paper materials. *Ulocladium* requires a significant amount of water to flourish.

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#### **References and Resources**

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Indoor Air and Human Health, Gammage & Kaye. 1985. Lewis Publishers.

Microfungi, S.G. Gravesen, J.C. Frisvad, & R.A. Samson, published by Munksgaard.

#### **Useful Websites:**

www.acgih.org

American Conference of Governmental Industrial Hygienists - information on IAQ and useful links.

www.aiha.org

American Industrial Hygiene Association - general IAQ information

www.calepa.ca.gov

California Environmental Protection Agency - California IAQ resources

www.emlab.com

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www.epa.gov

Environmental Protection Agency - information regarding prevention and remediation of mold

www.health.state.ny.us

New York State Department of Health - New York state recommendations for IAO, indoor mold inspections, remediation, and prevention

www.moldreport.com

MoldREPORT<sup>TM</sup> - online store, and other information about MoldREPORT<sup>TM</sup>

National Institutes of Health - information regarding environmental health issues, including IAQ

www.niehs.nih.gov

National Institute of Environmental Health Sciences - information on mold

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Approved by:

Dates of Analysis:

MoldReport Direct exam: 03-27-2020

Laboratory Manager Michael Manning

Service SOPs: MoldReport Direct exam (EM-MY-S-1039) AIHA-LAP, LLC accredited service, Lab ID #193549

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received.

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# **Laboratory Results**

## **MoldREPORT: Direct Microscopic Examination**

Location:	DE1: Hallway-Ceiling	DE2: Kitchen-Ceiling
Comments (see below):	None	None
Lab ID-Version‡:	11361935-1	11361936-1
Spore types present (indicative of mold growth)§:		
Aureobasidium	-	-
Basidiospores	-	-
Chaetomium	3+	2+
Cladosporium	-	-
Fusarium	-	-
Lumber mold†	-	-
Penicillium/Aspergillus types	-	2+
Stachybotrys	-	-
Trichoderma	-	-
Ulocladium	-	2+
Spore types present (not indicative of mold growth)§:		
All spore types	Very few	Very few
Other particles detected§:		
Skin cells	Very few	Very few
Pollen	-	-
Background Debris and/or Description**:	Heavy	Light

Comments: None

Basidiomycetes: Commonly found outdoors. Occasionally may grow indoors, mostly as agents of wood decay.

Cladosporium: One of the most commonly found molds outdoors and frequently found growing indoors.

Penicillium/Aspergillus types: Penicllium and Aspergillus are among the most common molds found growing both indoors and out.

Stachybotrys and other marker types: Certain types of mold, such as Aureobasidium, Chaetomium, Fusarium, Trichoderma, and Ulocladium, are generally found in very low numbers outdoors. Consequently their presence indoors, even in relatively low numbers, is often an indication that these molds are originating from growth indoors. When present, these mold types are often the clearest indicator of a mold problem.

†Lumber mold: Fungi in the Ceratocystis/Ophiostoma group are commonly called "Lumber mold". Lumber mold is present on the wood framing of most homes that are built with lumber. Their presence alone is not indicative of an indoor water problem.

\*\*Background debris is an indication of the amounts of non-biological particulate matter present. This background material is graded and described

graded for background debris, in which case a brief description of the material is reported..

‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

The limit of detection is < 1+ when mold growth is detected.

\$All readers are advised to refer to the document "Understanding Direct Microscopic Examination Results" which is available at our website, www.moldreport.com, or by request from the laboratory.

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as Scant, Moderate, Heavy, or Very Heavy. Very heavy background debris may obscure visibility for the analyst. Some sample types are not