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## ***Mold Inspection***

September 27, 2019

Jane Doe

Via Email: [Janedoe@gmail.com](mailto:Janedoe@gmail.com)

Ref: Mold Inspection

Report# 15684

Property Location: 1234 Sample Dr.  
Windermere, FL 34786

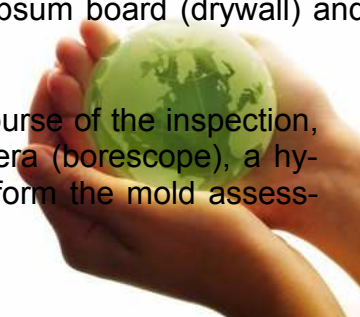
Attn: Ms. Jane Doe



In accordance with your instructions, we performed a walk-through visual inspection of the interior of the home for any visual evidence of fungal growth on the indoor surfaces on Tuesday, September 24th at 9:00 am. The visual inspection of the subject property was to specifically check for signs of suspected mold growth. The inspection and testing reports are based on the conditions of the subject property existing and apparent on the precise time and date of the mold inspection. Not all conditions may be visible on the inspection date due to weather conditions, inoperable systems, inaccessibility of areas within the subject property or for any other limiting reason. Access was provided by the seller's realtor.

The house was originally constructed on or about the year 2012 and is approximately 7,000 square feet of conditioned space under roof. The house is masonry block and wood frame constructions on masonry stem wall foundation. The interior walls are gypsum board (drywall) and wood paneling; and the floors are tile, wood and carpet.

In performing such visual inspection, the inspector may utilize, in the course of the inspection, a thermal imaging device, moisture meters, fiber optic inspection camera (borescope), a hygrometer and/or any device that supports the inspectors' ability to perform the mold assessment.



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### Area Inspected and Observations

A comprehensive visual inspection was conducted of the interior of the residence as well as the garage area of the house. The purpose is to identify possible fungal growth or any conditions conducive to fungal growth as a result of water intrusion, leaks and/or other water events that would support the environment for fungal growth.

Further investigation led to the discovery of elevated moisture and/or previous water intrusion in the following areas.

- The windows of the main staircase; elevated moisture in the bottom window, damage to jamb and sill of top window,
- The master bedroom wall (opposite from living room chimney); dry stains likely from previous roof chimney flashing leak (stains in attic as well)
- Minor evidence in the front right bedroom the second floor; small area of water staining on window sills,
- Minor stains on the carpet tack strip of the second bedroom on first floor (under window)
- The elevated moisture and stains in the rear of the pool / lanai storage closet (as a result of the balcony leak,

As a result of the moisture readings and stains, we obtained an air sample from the main staircase, the master bedroom, the second bedroom (no stains) on the first floor and the front bedroom on the second floor. The EMSL lab results (found on the page after the picture page of this report) indicated a **Moderate / Borderline** count of ***Aspergillus/Penicillium*** for the staircase, second bedroom first floor and front right bedroom on the second floor. This is likely reflecting the moisture damage building material associated with current and previous water intrusion. ***Aspergillus/Penicillium*** is found in soil, compost piles, decaying vegetation, stored grain, and other kinds of organic matter. Can be found indoors in water-damaged buildings. A few species can cause aspergillosis in humans with compromised or defective immune systems. Most people are naturally immune to this infection of the lung. *Aspergillus fumigatus* is the most common cause of aspergillosis, followed by *A. flavus* and *A. niger*. Some species are able to produce mycotoxins, depending on the strain, substrate, and/or food source.

In addition, we obtained a swab sample of the suspect material at the right rear corner of the pool / lanai storage closet (elevated moisture in the drywall at the time of the inspection / active leak from balcony). **The swab sample indicate a High presence of Stachybotrys and Memnoniella.**

\*\*\****Memnoniella*** is a contaminant, found most often with *Stachybotrys* on wet cellulose. Forms in chains, but it is very similar to *Stachybotrys* and sometimes is considered to be in the *Stachybotrys* family. Certain species do produce toxins very similar to the ones produced by *Stachybotrys chartarum* and many consider the I.Q. importance of *Memnoniella* to be on par with *Stachybotrys*. Allergic and infectious properties are not well studied.

## Area Inspected and Observations

\*\*\* ***Stachybotrys*** is a greenish-black fungi that colonizes particularly well in high cellulose material such as dry wall, wood framing, wall paper, ceiling tiles, carpets and thermal insulation. It is also one of several molds that can produce potent mycotoxins (toxic agents) that can cause serious health problems in both children and adults. Individuals with chronic exposure to the toxin produced by this fungus could be susceptible to cold and flu symptoms, sore throats, diarrhea, headaches, fatigue, dermatitis, intermittent

Further investigation of the areas of elevated moisture in the staircase (and possible additional sampling) is warranted. The air samples indicated a Moderate / Borderline spore count. **Please note that the most effective way to determine if there is a fungal issue with the affected areas would be conduct inner wall air sampling. We did not have permission to access the walls via a small hole in the drywall. There is likely (due to the elevated moisture readings), elevated conditions in one or more areas where moisture was detected.**

Further investigation may include access the interior of the walls and/or wall cavity testing (invasive measures) in the areas previously tested.

We do recommend remediation of the damage material in the pool / lanai closet. The remediation would normally involve creating a containment area within the affected area; however, the closet is an exterior space and not connected to the interior or under conditioned air. Normally, the contained area would be placed under a controlled environment, negative air pressure and air filtration. This may not be necessary due to the fact it is an "exterior" area.

However, the damaged material will need to be removed from the closet following established standards. All of the effected material should be removed at least two feet past the last know damaged areas, structural material should be appropriately cleaned following industry standard practices ( IICRC S520 "2013", Institute of Inspection, Cleaning and Restoration) the "Standard and Reference Guide for Professional Mold Remediation" and (IICRC S500) "Standard and Referenced Guide for Professional Water Damage Restoration".

It is important to arrest the water issues prior to final remediation and repairs to prevent a re-occurrence of these issues. The constant introduction of additional water can only magnify the present problem. It is possible that fungal growth can be present in concealed (wall / ceiling) cavities related to the water issues, and not manifest in air samples taken. **We did not have permission take samples from inside wall/s.** Mold can occur in cavities of walls (areas not accessible) and not manifest (at the levels) in samples taken. Therefore, care should be given to the repair / remediation of these areas, especially if there is mold discovered inside these areas.

The results of the mold sampling are found on the last pages of this report, after the picture page.

As always, consult with licensed mold remediators and contractors to understand the scope and expense of any remediation.

## **DISCLAIMERS**

This report was prepared under the constraints of time and scope, and it reflects a limited investigation and evaluation. It is understood and agreed that this assessment will be of readily accessible areas of the building / house and is limited to visual observations and physical sampling with analysis of apparent conditions/components tested and existing at the time of the assessment only. Latent and concealed defects and deficiencies are excluded from the assessment; equipment, items and systems will not be dismantled including invasive and/or deconstructive measures. Further analytical testing may be required to find mold infestations in hidden areas not observed. Locating of possible contamination from asbestos, radon, urea-formaldehyde fungi, PCB's (Polychlorinated Biphenyls—organic compounds) lead, Reactive Drywall (aka Chinese Drywall) or other toxic materials (VOC's; volatile organic compounds) or substances in the water, air, soil or building materials and other environmental hazards prior to remediation may be warranted. The results of this analysis represent conditions only at the exact time and locations from which samples were taken. Thus, the report should not be relied upon to represent conditions at any other location or date and does not imply that this property is free of these or other contaminants. The inspection was performed using current acceptable environmental techniques that are acceptable and used by professional environmental consultants.

The analytical results and report is generated by Certified Building Inspectors, at the request of and for the exclusive use of the person or entity named on such report. Results, reports or copies of same will not be released by CBI to any third party without prior written request from the client. This report applies only to the sample(s) tested and analysis by EMSL Analytical, Inc.

The client is solely responsible for the use and interpretation of the test results and reports requested from CBI. CBI is not able to assess the degree of any potential hazard resulting from the materials and areas analyzed. Therefore, we respectfully suggest that you review this report with your personal physician or health care person(s) for information that may affect the inhabitants of the home.

CBI reserves the right to dispose of all samples after a period of fourteen (14) days, According to all state and federal guidelines, unless otherwise specified. Other general conclusions and important information can be found in various other parts of this report such as but not limited to sections of report that discuss sample results. This is just a small part of the report. It is very important that you read the entire report.

## **MOISTURE REMOVAL**

Extremely important: Prior to any remediation, always correct all conditions that have contributed to excess moisture at the property, and extract any excess water from the property, and remove excess humidity with a professional dehumidifier. An immediate response and thorough cleaning, drying and/or removal of water damaged materials will prevent and/or limit microbial growth.

Relative humidity should generally be maintained at levels below 50% to inhibit mold growth. Short-term periods of higher humidity would not be expected to result in mold growth. However, condensation on cold surfaces could result in water accumulation at much lower relative humidity levels. ( American Society of Heating, Refrigerating, and Air-conditioning Engineers, Inc. Ventilation for acceptable indoor air quality—ASHRAE Standard)

### **General Mold Inspection limitations and disclaimer**

Do not depend on your mold inspector for any medical advice; that is the job of a medical specialist. If any illness is experienced that may be related to mold or other indoor environmental factors, then a family doctor should be consulted regarding health complaints; in addition the unhealthy person should obtain a referral to the appropriate medical professionals specializing in allergies, environmental medicine, or occupational health, etc as prescribed by their doctor. If building related symptoms, such as allergy or asthma-like symptoms or other similar symptoms are experienced, then a mold investigation is often the logical starting point in an effort to locate, define and control the problem as mold is often the culprit. One must keep in mind that occasionally other bioaerosols can result in symptoms or illness as well.

This inspection is not intended to sample or report on what the inspector considers to be typical tiny amounts of expected mold. Unless arrangements are made and agreed to in written form and paid for, this is not an environmental investigation for conditions, such as dust mites, roaches, and pet allergens, virus's, lead-based paints, asbestos, radon, VOC's or any other environmental conditions; **this is a mold inspection only.**

This is not a wood destroying organism or termite inspection report for dry rot fungus or other fungus that caused wood decay. The inspector does not offer an opinion as to the advisability of the purchase or sale of property. Unless you pay for and request mold sampling in every room, inner wall stud bay, AC duct, carpet, and all other surface in all areas, then areas tested and sampled during this standard mold inspection will be at the discretion of the mold inspector.

Environmental testing equipment when used are used in specific areas and each and every area is not checked with such devices. Inspector is not responsible or liable for the non-discovery of any water damage, water problems, mold contamination, mold problems or other conditions of the subject property, or any other problems which may have developed or become more evident after the inspection and testing time and date.

The inspector or CBI are not responsible for, or liable for, the non-discovery of any water damage, water problems, mold contamination, mold problems or other conditions of the subject property, or any other problems that were not discovered due to inadequate sampling in specific areas where sampling was not requested and paid for or where no readily visible clues existed that would have warranted sampling in those areas. Your inspector is unlikely to sample for hidden mold, or locate hidden mold inside walls or hidden behind wall paper, appliances, or furniture etc.

### **Samples Collected**

Air sampling for fungal growth were obtained from three "Air-O-Cell" spore traps, one in the master bedroom, second bedroom on the first floor, the main staircase, the front bedroom on the first floor and one from the exterior. It is necessary to sample the exterior so that a comparison of the indoor airborne concentration levels to outdoor spores concentration levels can be made. If the total indoor airborne concentration levels are significantly higher (10x) than those found outside the structure, it would indicate the possible presence of a fungal reservoir (elevated fungal growth) inside the building. In addition, we obtained a swab sample of the damage /stained drywall in the pool / lanai storage closet. The EMSL lab results are presented on the pages after the picture page of this report.

### Guidelines For Interpretation:

No acceptable quantitative regulatory standards currently exist by which to assess the health risks related to mold exposure. 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 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 water is the key. Preventing water damage or water condensation will prevent mold growth.

***Cladosporium***, ***Aspergillus/Penicillium*** and ***Ascospores*** are some of the most common genre worldwide and can be found everywhere in nature. The spores are dry spores which are easily dispersed. The effects on humans is dependent on genus and species, but generally are non-pathogenic. The allergenicity of *both types of mold* have been well documented. It generally has been associated with symptoms such as hay fever and asthma in genetically susceptible individuals.

Since these molds, *Cladosporium*, *Aspergillus* & *Ascospores* are considered an ***Allergenic*** mold, and allergenic mold is normally not dangerous in low amounts, but can act as an allergen in higher amounts thus possibly triggering or causing sneezing, wheezing and stuffy noses to sensitizing individuals

### GENERAL INFORMATION ON MOLD BIOLOGY SPORE SAMPLING METHODS AND HEATH ISSUES:

#### BASIC MOLD BIOLOGY:

Fungi share some basic similarities with plants and bacteria but are not plants nor are they bacteria. They are in their own kingdom, the Fungi Kingdom. The terms mold and mildew are used interchangeably, but according to some definitions, mildew is a powdery growth that attacks and grows on living plants while molds are often fuzzy and grow on all sorts of surfaces. Molds, mildews, and other fungi usually reproduce by forming and releasing spores into the air. Most indoor spores are just 2 to 10 microns across; the human eye can only at best under just the right lighting conditions objects that are 10 or more microns across. Toxins known as mycotoxins and also allergens are found primarily in the spores of various molds. These substances can be found in live or dead spores. Colony forming units are individual spores or clumps of spores stuck together or even tiny fragments of mold fibers that, under the right conditions will grow into living mold colonies.

## COMMON SAMPLING METHODOLOGY:

**NON VIABLE SAMPLES:** Air-o-Cells, Micro 5 cassettes, CyClex, CyClex D, and other spore traps are typically used for trapping airborne spores. In non viable samples, no attempt to grow the spores is made; thus, as a result, live and dead spores are counted in these samples to give an idea of the total estimated number of spores per cubic meter of air. This form of sampling is very helpful because it allows us to determine total numbers of mold spores per cubic meter of air, regardless of whether they are live or dead. This is very important because often spores can be allergenic or can contain mycotoxins regardless of if they are live or dead.

## MOLD RELATED HEALTH ISSUES:

### MOLD EXPOSURE LIMITS

Your inspector can help determine spore types and levels in sample locations but cannot tell you how many spores will make you ill because everyone has a different sensitivity to mold spores.

### ALLERGY ASTHMA AND HYPERSENSITIVITY DISEASES

Mold-related allergenic and asthmatic illness in moldy homes are very common, well known, and are very serious problems that should be addressed. Sensitive person's repeated exposure to high mold spore levels can result in even higher sensitivity to mold allergens. Many serious hypersensitivity diseases in humans, such as baker's lung, wood workers lung, etc. are the result of repeated industrial level exposures to molds; these have long been well documented in science and the medical field.

### As a matter of definitions, we offer the following information:

While most people are not susceptible to maladies due to common molds or fungi, **Stachybotrys** and **Memnoniella** have been deemed hazardous to humans no matter their physical health.

### Toxic Molds

\*\*\****Memnoniella*** is a contaminant, found most often with *Stachybotrys* on wet cellulose. Forms in chains, but it is very similar to *Stachybotrys* and sometimes is considered to be in the *Stachybotrys* family. Certain species do produce toxins very similar to the ones produced by *Stachybotrys chartarum* and many consider the I.Q. importance of *Memnoniella* to be on par with *Stachybotrys*. Allergenic and infectious properties are not well studied.

\*\*\* ***Stachybotrys*** is a greenish-black fungi that colonizes particularly well in high cellulose material such as dry wall, wood framing, wall paper, ceiling tiles, carpets and thermal insulation. It is also one of several molds that can produce potent mycotoxins (toxic agents) that can cause serious health problems in both children and adults. Individuals with chronic exposure to the toxin produced by this fungus could be susceptible to cold and flu symptoms, sore throats, diarrhea, headaches, fatigue, dermatitis, intermittent local hair loss, and generalized malaise. Persons recovering from recent surgery or people with immune suppression or chronic inflammatory lung diseases may be at a greater risk for developing health problems associated with this mold exposure.

### Common Molds Definitions

**Agrocybe** are part of the Basidiomycetes family. It is one of the major classes of fungal organisms. This class contains the mushrooms, shelf fungi, puffballs, and a variety of other macro fungi. Many basidiomycete spores are reported to be allergenic.

**Alternaria** is a cosmopolitan dematiaceous (phaeoid) fungus commonly isolated from plants, soil, food, and indoor air environment. The production of melanin-like pigment is one of its major characteristics.

**Arnium** (Ascomycetes) is most commonly isolated from dung. Not generally associated with human disease and is most often considered benign.

**Arthrospores-** a bacterial resting cell, formerly considered a spore, but now known to occur in endosporous bacteria

**Ascospores** are fungal spores which are from mushrooms. The specific mushroom species can not be identified on the culture plate. Many mushroom spores are reported to be allergenic

**Bacteria** are a group of prokaryotic organisms with distinctive cell wall structures , some of which are important as pathogens and for their biochemical properties.

**Basidiomycetes** - One of the major classes of fungal organisms. This class contains the mushrooms, shelf fungi, puffballs, and a variety of other macro fungi. It is extremely difficult to identify a specific genera of mushrooms by using standard culture plate techniques. Some basidiomycete spores can be identified by spore morphology, however; some care should be exercised with regard to specific identification. Many basidiomycete spores are reported to be allergenic.

**Beltrania** is a mitosporic fungus that is very widespread and commonly found in dead leaves and plant debris in subtropical to tropical areas. It is known as an ascomycete, which is one of the major classes of fungal organisms. This class contains the "sac fungi" and the yeasts. Many are reported to be allergenic. Note: see Ascospore.

**Bipolaris** species are common, and are most closely related to Drechslera and Exserohilum. Our laboratory does not separate Bipolaris, Drechslera, and Exserohilum species. The only morphological difference between Bipolaris and Drechslera is that Drechslera spores germinate from any cell (of the spore) and Bipolaris germinates only from polar cells. Exserohilum spores have an inner cup-like structure which is visible in the basal cell.

**Cercospora** (Hyphomycetes)-Widespread plant pathogens that cause leaf spot on many plants.

Both **Chaetomium** and **Curvularia** are easily dispersed. Once again, the effects on humans is dependent on genus and species, but generally are non-pathogenic. Both are considered allergens associated with symptoms of hay fever and the like. However, Curvularia is a relatively common cause of allergenic fungal sinusitis. Curvularia is allergenic and may cause infections in immunocompromised individuals.



(continued)

**Cladosporium** and **Aspergillus/Penicillium** are some of the most common genera worldwide and can be found everywhere in nature. The spores are dry spores which are easily dispersed. The effects on humans is dependent on genus and species, but generally are non-pathogenic. The allergenicity of both types of mold have been well documented. It generally has been associated with symptoms such as hay fever and asthma in genetically susceptible individuals.

**Chlamydo-spore** is the thick walled big resting spore of several kinds of fungi. It is the life-stage which survives in unfavorable conditions.

**Epicoccum** sp. - It is commonly found as a secondary invader in plants, soil, grains, textiles and paper products where Cladosporium and Aureobasidium are present. It is mostly saprophytic, or weakly parasitic. Epicoccum is frequently isolated from air and occasionally occurs in house dust. Reported to be an allergen but not in a high frequency. Due to the ability of this fungus to grow at 37 C, it can cause infection of skin in humans. Morphological characteristics are production of dark conidia, several-celled (15-celled), globose, verrucose, 15-25 microns in diameter, and in a fruiting body (sporodochium).

**Ganoderma** is large, very hard, woody bracket fungi that grow on living and dead trees. Some species are common on oaks, chestnuts, and conifers. Many species are being investigated for possible medicinal uses.

**Gliomastix** is found in wood, soil, cellulose materials and plant litter.

**\*\*\*Memnoniella (TOXIC)** is a contaminant, found most often with Stachybotrys on wet cellulose. Forms in chains, but it is very similar to Stachybotrys and sometimes is considered to be in the Stachybotrys family. Certain species do produce toxins very similar to the ones produced by Stachybotrys chartarum and many consider the I.Q. importance of Memnoniella to be on par with Stachybotrys. Allergenic and infectious properties are not well studied.

**Myxomycete/Smut** do not usually grow indoors. They are parasitic plant pathogens that require a living host for the completion of their life cycle. Type I allergies (hay fever, asthma).

**Nigrospora** (Hyphomycetes) species are common on plants, particularly in the tropics. Occasionally isolated from soil, air, and foodstuffs.

**Paecilomyces** Commonly found in soil and dust, less frequently in air. *variotii* can cause paecilomycosis. Linked to wood-trimmers disease and humidifier associated illnesses. They are reported to be allergenic. Some members of this genus are reported to cause pneumonia. It may produce arsine gas if growing on arsenic substrate. This can occur on wallpapers covered with paris green.

**Periconia** is a widespread fungus commonly found on various substrates, including stalks and grasses, herbaceous stems, dead leaves, or leaf spots. The spores of Periconia species are often indistinguishable from the spores of smut fungi like *Ustilago* species when collected on air cas-

(continued)

**Pithomyces** (Hyphomycetes) this genus is common in soil and on dead or decaying plant materials. Requires high moisture level for spore germination. Can potentially produce cyclodepsipeptides, sporidesmolides, and sporidesmin.

**Scopulariopsis** is a filamentous fungus that inhabits soil, plant material, feathers, and insects. It is distributed worldwide. Several species of Scopulariopsis have teleomorphs which are classified in the genus Microascus. While Scopulariopsis is commonly considered as a contaminant, it may cause infections in humans, particularly in immunocompromised patients.

**Spegazzinia** species comprise a very small proportion of the fungal biota. This genus is somewhat related to other lobed or ornamented genera such as Candelabrum. No information is available regarding health effects or toxicity. Allergenicity has not been studied. Usually identified on spore trap samples where it is seen every few weeks. (Spores have very distinctive morphology.) May also be found in air by culturable (Andersen) samples if a long enough incubation period is provided so that sporulation occurs. Natural habitat includes soil and many kinds of trees and plants.

\*\*\* **Stachybotrys (TOXIC)** is a greenish-black fungi that colonizes particularly well in high cellulose material such as dry wall, wood framing, wall paper, ceiling tiles, carpets and thermal insulation. It is also one of several molds that can produce potent mycotoxins (toxic agents) that can cause serious health problems in both children and adults. Individuals with chronic exposure to the toxin produced by this fungus could be susceptible to cold and flu symptoms, sore throats, diarrhea, headaches, fatigue, dermatitis, intermittent local hair loss, and generalized malaise. Persons recovering from recent surgery or people with immune suppression or chronic inflammatory lung diseases may be at a greater risk for developing health problems associated with this mold exposure.

**Syncephalastrum** is a filamentous fungus that is commonly isolated from soil and animal feces particularly in tropical and subtropical areas. It is a heterothallic fungus and requires a mating strain to produce zygospores. *Syncephalastrum* is commonly considered as a contaminant. It is very rarely associated with human disease.

**Trichosporon** is a yeast isolated from soil, water samples, vegetables, mammals, and birds. As well as being a member of the normal flora of mouth, skin and nails, it is the causative agent of superficial and deep infections in humans. The genus Trichosporon is non- or weakly fermentative. There is no sexual reproduction phase.

This concludes the report. There are pictures and the EMSL Lab results on the following pages for your review. Thank you for selecting Certified Building Inspectors to conduct your evaluations. If you need any further information please feel free to contact us.

Respectfully,

*Joe Inspector*

Certified Building Inspectors

Joe Inspector, Mold Assessor License # xxxxxxx

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Questions or comments? E-mail us at [info@yourcbi.com](mailto:info@yourcbi.com) or call 407 - 628 - 4405





1. Mold in the corner of the pool / lanai storage closet.



2. Elevated moisture in the corner of closet.



3. Damaged window sill and jamb at staircase.



4. Elevated moisture in the window sill in the guest bedroom.



5. Possible previous water intrusion at the second bedroom on first floor.



6 A little staining on the carpet tack strip of this bedroom, under window



7. Blemishes on the drywall of the master bedroom.



8. Stains on master bedroom wall maybe from previous roof leak associated with fireplace chimney.



9. Water stains evident on the window sill of front right bedroom on the second floor



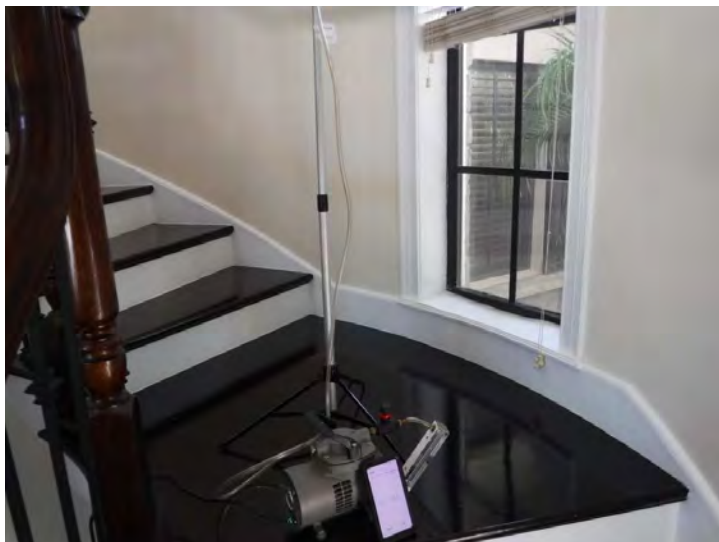
10. No Elevated moisture at the time of the inspection.



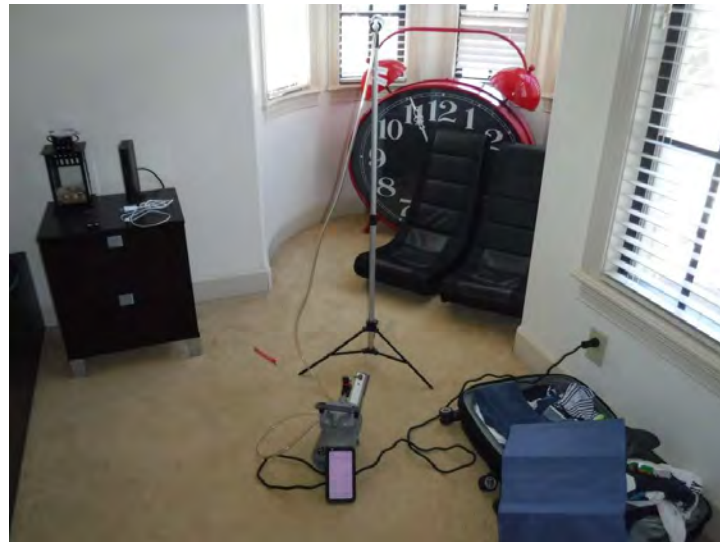
11. Air sample obtained form master bedroom.



12. Air sample obtained from guest bedroom First floor.



13. Air sample taken from staircase.



14. Air sample from front right bedroom.



15. Swab sample taken from pool / lanai Closet.



16. Air sample from the exterior (required)



# EMSL Analytical, Inc.

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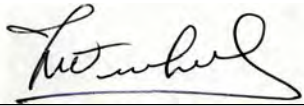
<b>EMSL Order:</b> 341914707
<b>Customer ID:</b> CEPA50
<b>Customer PO:</b>
<b>Project ID:</b>

<b>Attn:</b> Coleman Certified Building Inspectors 160 Circle Drive Maitland, FL 32751	<b>Phone:</b> (407) 647-8700 <b>Fax:</b> (407) 644-7858 <b>Collected:</b> 09/24/2019 <b>Received:</b> 09/24/2019 <b>Analyzed:</b> 09/26/2019
<b>Project:</b> 15684 Shurran	

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	341914707-0001 2794 8791 75 Master Bedroom			341914707-0002 2794 8780 75 2nd Bedroom 1st Floor			341914707-0003 2794 8790 75 Stair Landing			
	Spore Types	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total	Raw Count	Count/m³	% of Total
Alternaria (Ulocladium)	1	40	4.8	-	-	-	-	-	-	-
Ascospores	4	200	23.8	3	100	8.2	1	40	4.8	4.8
Aspergillus/Penicillium	3	100	11.9	17	720	59	13	550	66.3	66.3
Basidiospores	3	100	11.9	3	100	8.2	1	40	4.8	4.8
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	1	40	4.8	-	-	-	-	-	-	-
Cladosporium	-	-	-	3	100	8.2	-	-	-	-
Curvularia	4	200	23.8	2	80	6.6	2	80	9.6	9.6
Epicoccum	-	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	1	40	3.3	-	-	-	-
Myxomycetes++	1	40	4.8	1	40	3.3	2	80	9.6	9.6
Pithomyces++	1	40	4.8	-	-	-	1	40	4.8	4.8
Rust	1	40	4.8	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	-	-	-	-	-	-	-
Monodictys	-	-	-	-	-	-	-	-	-	-
Nigrospora	-	-	-	1	40	3.3	-	-	-	-
Pestalotia/Pestalotiopsis	1	40	4.8	-	-	-	-	-	-	-
Spegazzinia	-	-	-	-	-	-	-	-	-	-
<b>Total Fungi</b>	<b>20</b>	<b>840</b>	<b>100</b>	<b>31</b>	<b>1220</b>	<b>100</b>	<b>20</b>	<b>830</b>	<b>100</b>	<b>100</b>
Hyphal Fragment	3	100	-	2	80	-	3	100	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-	-
Pollen	1	40	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-	-
Background (1-5)	-	2	-	-	1	-	-	1	-	-

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

  
 Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida  
 or other approved signatory

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

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Samples analyzed by EMSL Analytical, Inc. Orlando, FL AIHA-LAP, LLC EMLAP 163563

Initial report from: 09/26/2019 15:02:38

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# EMSL Analytical, Inc.

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Tel/Fax: (407) 599-5887 / (407) 599-9063

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EMSL Order: 341914707

Customer ID: CEPA50

Customer PO:

Project ID:

**Attn:** Coleman  
Certified Building Inspectors  
160 Circle Drive  
Maitland, FL 32751

**Phone:** (407) 647-8700

**Fax:** (407) 644-7858

**Collected:** 09/24/2019

**Received:** 09/24/2019

**Analyzed:** 09/26/2019

**Project:** 15684 Shurran

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location	341914707-0004 2794 8792 75 Front Bedroom 2nd Floor			341914707-0005 2888 7475 75 Exterior						
	Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total			
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-	-
Ascospores	2	80	9.3	7	300	18.1	-	-	-	-
Aspergillus/Penicillium	11	460	53.5	4	200	12	-	-	-	-
Basidiospores	1	40	4.7	6	300	18.1	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	4.7	7	300	18.1	-	-	-	-
Curvularia	-	-	-	5	200	12	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	1	40	2.4	-	-	-	-
Myxomycetes++	1	40	4.7	3	100	6	-	-	-	-
Pithomyces++	2	80	9.3	1	40	2.4	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	2	80	4.8	-	-	-	-
Monodictys	-	-	-	3	100	6	-	-	-	-
Nigrospora	-	-	-	-	-	-	-	-	-	-
Pestalotia/Pestalotiopsis	2	80	9.3	-	-	-	-	-	-	-
Spegazzinia	1	40	4.7	-	-	-	-	-	-	-
<b>Total Fungi</b>	<b>21</b>	<b>860</b>	<b>100</b>	<b>39</b>	<b>1660</b>	<b>100</b>	-	-	-	-
Hyphal Fragment	1	40	-	-	-	-	-	-	-	-
Insect Fragment	1	40	-	-	-	-	-	-	-	-
Pollen	1	40	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	-	-	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	-	-	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	-	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	-	-	-
Background (1-5)	-	2	-	-	1	-	-	-	-	-

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

Yessica Martinez Seeman, Microbiology Technical Manager, Central Florida  
or other approved signatory

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Order ID: 341914707  
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**Attn:** Coleman  
Certified Building Inspectors  
160 Circle Drive  
Maitland, FL 32751  
**Phone:** (407) 647-8700  
**Fax:** (407) 644-7858  
**Collected:** 09/24/2019  
**Received:** 09/24/2019  
**Analyzed:** 09/26/2019  
**Proj:** 15684 Shurran

## Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Swab Samples (EMSL Method MICRO-SOP-200)

<b>Lab Sample Number:</b>	341914707-0006				
<b>Client Sample ID:</b>	Swab				
<b>Sample Location:</b>	Pool Storage Closet				
<b>Spore Types</b>	<b>Category</b>				
Alternaria (Ulocladium)	-				
Ascospores	-				
Aspergillus/Penicillium	Rare				
Basidiospores	-				
Bipolaris++	-				
Chaetomium	-				
Cladosporium	-				
Curvularia	-				
Epicoccum	-				
Fusarium	-				
Ganoderma	-				
Myxomycetes++	-				
Pithomyces++	-				
Rust	-				
Scopulariopsis/Microascus	-				
Stachybotrys/Memnoniella	*High*				
Unidentifiable Spores	-				
Zygomycetes	-				
Hyphal Fragment	-				
Insect Fragment	-				
Pollen	-				

Category: Count/per area analyzed - Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000

- Denotes Not Detected.

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

\* = Sample contains fruiting structures and/or hyphae associated with the spores.

Yessica Martinez Seeman, Microbiology  
Technical Manager, Central Florida

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

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Samples analyzed by EMSL Analytical, Inc. Orlando, FL AIHA-LAP, LLC--EMLAP Accredited #163563

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## GUIDANCE FOR INTERPRETATION OF MOLD RESULTS

There are no government-issued numerical standards for mold interpretation. However, some environmental companies, industrial hygienists, and other IAQ professionals use the following arbitrary numbers for guidance in interpreting microbial survey results.

The final mold interpretation should not be based solely on numbers! Information gathered from the walk-through investigation of the area is very significant, including sources of moisture or high humidity, and signs of visible mold growth. In air samples, it is important to consider the type and concentration of fungi indoors, as compared to outdoors or a non-complaint area. One should consider the indoor:outdoor fungal count ratio, the presence/absence of certain fungi indoors versus outdoors, the genus/species of predominant fungi indoors versus outdoors, and whether the fungi detected indoors are allergenic and/or toxigenic.

### **Bioaerosol**

<250	CFU/m <sup>3</sup>	Low/Normal
250-1,000	CFU/m <sup>3</sup>	Moderate/Borderline
>1,000	CFU/m <sup>3</sup>	Active Growth/Sporulation
>5,000	CFU/m <sup>3</sup>	Very Active Growth/Sporulation

### **Swab/Wipe**

<100	CFU/in <sup>2</sup>	No Growth/Background
<10,000	CFU/in <sup>2</sup>	Low/Normal Growth
10,000-100,000	CFU/in <sup>2</sup>	Moderate Growth
100,000-1,000,000	CFU/in <sup>2</sup>	Active Growth/Sporulation
>1,000,000	CFU/in <sup>2</sup>	Very Active Growth/Sporulation

### **Bulk substrate**

<100	CFU/g	No Growth
<25,000	CFU/g	Low/Normal Growth
25,000-200,000	CFU/g	Moderate Growth
200,000-1,000,000	CFU/g	Active Growth/Sporulation
>1,000,000	CFU/g	Very Active Growth/Sporulation

### **Micro-vac Dust**

<5,000	CFU/ft <sup>2</sup>	Low/Normal
5,000-25,000	CFU/ft <sup>2</sup>	Moderate/Borderline
25,000-75,000	CFU/ft <sup>2</sup>	Active Growth/Sporulation
>75,000	CFU/ft <sup>2</sup>	Very Active Growth/Sporulation

### **Definitions**

CFU = Colony Forming Units

Colony = A group of hyphae with or without spores, generally of one species and potentially from one spore, cell, or propagule.



**EMSL Analytical Inc.**  
**Department of Microbiology**

## Some Common Fungi and Yeasts

### ***Absidia* (Zygomycetes)**

A common contaminant isolated from soil, air, stored grains, foods, and the indoor environment. Reported to be allergenic and a rare cause of human infection called zygomycosis.

### ***Acremonium* (Hyphomycetes)**

Naturally found in soils, decaying organic matter, and plant debris. Can be found in food and the indoor environment. *Acremonium* is a common allergen, can produce a trichothecene mycotoxin, and volatile organic compounds (VOCs).

### ***Agrocybe* (Basidiomycetes)**

Medium to large mushrooms growing in grassy areas, on wood mulch, and pine needles. Some species are edible.

### ***Alternaria* (Hyphomycetes)**

A common saprobe found on decaying wood, decaying plants, food, soil, and outdoor air. Some species are plant pathogens. Indoors, it can be found in house dust, carpet, damp areas around showers and window frames, and anywhere condensation occurs. Because of its abundance and ubiquity, *Alternaria* is one of the most important fungal allergens and is recognized as the chief fungal cause of hay fever. Infection is extremely rare.

### ***Arthrimum* (Hyphomycetes)**

A cosmopolitan fungus isolated from plant debris and soil. Often isolated from air near grassy places, but rarely found indoors. Not reported to cause human or animal infection.

### ***Arnium* (Ascomycetes)**

Most commonly isolated from dung. Not generally associated with human disease and is most often considered benign.

### **Ascomycetes**

Constitutes the largest class of fungi characterized by the production of sexual spores in structures called asci. This includes plant pathogens, saprobes, and decomposers. With a few exceptions, most Ascomycetes do not grow in buildings and are seldom agents of wood rot. Ascomycetes are the perfect stages of molds like *Aspergillus* and *Penicillium*. At high levels, Ascomycetes spores may cause allergies.

Since most Ascomycetes are plant pathogens, ascospores are common during the growing season of plants and rare during winter, such as those of the Ascomycetes genera: *Daldinia*, *Hypoxylon*, *Paraphaeosphaeria*, *Phaeosphaeria*, and *Leptosphaeria*.

### **Ascospores**

Sexual spores produced by Ascomycetes.

### ***Aspergillus* (Hyphomycetes)**

Teleomorph: *Emericella* (Ascomycetes), *Eurotium* (Ascomycetes)

Found in soil, compost piles, decaying vegetation, stored grain, and other kinds of organic matter. Can be found indoors in water-damaged buildings. A few species can cause aspergillosis in humans with compromised or defective immune systems. Most people are naturally immune to this infection of the lung. *Aspergillus fumigatus* is the most common cause of aspergillosis, followed by *A. flavus* and *A. niger*. Some species are able to produce mycotoxins, depending on the strain, substrate, and/or food source. Others species are used in the manufacture of food, such as *A. oryzae* or *A. soyae* for soy sauce.

### ***Aureobasidium* (Hyphomycetes)**

A common saprobe frequently isolated from soil, plant surfaces, seeds, grains, fruits and other food, human skin, and nails. Common indoors in humid areas such as bathrooms, kitchens, poorly maintained HVAC systems, and window frames. Allergies to *Aureobasidium* are common but infections are rarely reported.

### **Basidiomycetes**

A class of fungi characterized by spores formed on basidia. Includes the mushrooms, toadstools, boletes, wood bracket fungi, and puffballs. Some species are edible, such as *Agaricus bisporus*, the commercially cultivated mushroom. A few species cause wood brown rot, white rot, and dry rot in buildings.

### **Basidiospores**

Sexual spores produced by Basidiomycetes.

### ***Beauveria* (Hyphomycetes)**

Found in plant debris and soil. Some species are well known parasites of insects. It is also isolated from food materials and indoor environments.

### ***Bipolaris* (Hyphomycetes)**

A common saprobe and plant pathogen frequently isolated from plant debris and soil. It is also a common cause of leaf spot on golf course turf. A few species are capable of causing disease in humans.

### ***Botrytis* (Hyphomycetes)**

Teleomorph: *Sclerotinia* (Ascomycetes)

Most species are important plant pathogens, such as *B. cinerea*, which can cause gray mold disease on various plant parts. Can be found in food and indoor environment, particularly on plants, fruits, and vegetables.

### ***Cercospora* (Hyphomycetes)**

Teleomorph: Mycosphaerellaceae

Widespread plant pathogens that cause leaf spot on many plants.

### ***Chaetomium* (Ascomycetes)**

A common fungus in soils, dung, decaying organic matter, seeds, and wood or other cellulose-containing materials. Can be found indoors in water-damaged buildings on sheet rock, wallpaper, and other paper products. It is a common cause of food spoilage. Some species are allergenic but rarely cause human infections.

### ***Chromelosporium***

Teleomorph: *Peziza* (Ascomycetes)

### ***Chrysonilia* (Hyphomycetes)**

Teleomorph: *Neurospora* (Ascomycetes)

This genus is widespread; being found in food and indoors. *Chrysonilia sitophila* is popularly referred to as the red bread mold that occurs on breads, baked goods, meat, and fruits.

### ***Chrysosporium* (Hyphomycetes)**

Teleomorph: Various Ascomycetes

A common soil saprobe occasionally isolated from human or animal skin and nail. *Chrysosporium inops* is xerophilic and occurs in food.

### ***Cladosporium* (Hyphomycetes)**

Teleomorph: *Mycosphaerella* (Ascomycetes)

Widely distributed as plant pathogens and saprobes. It is the most frequently found fungus in outdoor air. Indoors, it usually occurs at low concentrations in damp or humid areas, but may be found in high concentrations in water-damaged building materials. Its ability to sporulate heavily and to get airborne makes it an important fungal allergen. Frequently isolated as a contaminant in foods. Only occasionally associated with disease in humans; one species can cause chronic subcutaneous infection.

### **Coelomycetes**

An artificial class of fungi characterized by asexual spores that are produced within a cavity lined by fungal tissue or fungal and host tissues. Most are saprobes or pathogens on plants, fungi, and lichens.

### ***Coprinus* (Basidiomycetes)**

These mushrooms are popularly referred to as the inky caps because their gills dissolve into a black inky fluid at maturity. Found on wood, dung, humus, and soil. Some species are edible.

### ***Curvularia* (Hyphomycetes)**

Teleomorph: *Cochliobolus* (Ascomycetes)

A common saprobe found in soil, plants, cereals, and cellulosic materials such as paper and archives. Some species are plant pathogens but can also occur indoors. It is allergenic and may cause infections in immunocompromised people.

### ***Dicyma* (Hyphomycetes)**

Teleomorph: *Ascotricha* (Ascomycetes)

### ***Doratomyces***

A saprobe commonly found on decaying plant materials, straw, dung, wood, and in soil. It produces dark, sooty colonies. It has the ability to penetrate cellophane and to decompose cellulose. *Doratomyces stemonitis* is suspected to be the causal agent of "speck rot" on potatoes.

### ***Dreschlera* (Hyphomycetes)**

Mostly plant pathogens that cause leaf spot, seedling blight, leaf stripe, or net blotch.

### ***Emericella* (Ascomycetes)**

Anamorph: *Aspergillus* (Hyphomycetes)

Usually found in soil, potatoes, grain, citrus, and stored seeds. Can be found in food and the indoor environment. *Emericella nidulans* can produce a sterigmatocystin mycotoxin and can be pathogenic to man and animals.

### ***Epicoccum* (Hyphomycetes)**

A cosmopolitan saprobe isolated from air, soil, grain, seeds, textiles, paper products, and food materials. Can be a plant pathogen, and is a common cause of leaf spots of various plants. Can be found in indoor environments, where it can grow under conditions of low humidity. It is a known allergen, and is occasionally isolated from human skin and sputum.

### ***Eurotium* (Ascomycetes)**

Anamorph: *Aspergillus* (Hyphomycetes)

Can be found in stored food, fruit juices, grains, nuts, milled rice, spices, meat products, and peas. Also commonly occurs in indoor environments. *Eurotium herbariorum* may cause keratitis and indigestion in man.

### ***Exophiala* (Hyphomycetes)**

Widely distributed as a saprobe in soil, water, on plants and decaying wood. It is an occasional contaminant of feet and nails. *Exophiala* infections have also been reported in animals, including fish.

### ***Fusarium* (Hyphomycetes)**

Soil-borne fungi containing many plant pathogens that cause root rot, stem rot, fruit rot, and vascular wilt. Common on commodities, such as rice, bean, soybean, and other crops. Some species are important mycotoxin producers, and others notably *F. oxysporum*, *F. solani* and *F. moniliforme*, are recognized as opportunistic pathogens of man and animals. The species that can produce three of the five internationally regulated mycotoxins are:

<i>Fusarium</i> sp	Habitat	Trichothecenes	Zearalenone	Fumonisin
<i>F. acuminatum</i>	Food	Can produce	-	-
<i>F. crookwellense</i>	Food	Can produce	Can produce	-
<i>F. culmorum</i>	Food, Indoor	Can produce	Can produce	-
<i>F. equiseti</i>	Food	Can produce	Can produce	-
<i>F. graminearum</i>	Food	Can produce	Can produce	-
<i>F. poae</i>	Food	Can produce	-	-
<i>F. proliferatum</i>	Food	-	-	Can produce
<i>F. sambucinum</i>	Food	Can produce	-	-
<i>F. semitectum</i>	Food	-	Can produce	-
<i>F. sporotrichioides</i>	Food, Indoor	Can produce	-	-
<i>F. verticillioides</i>	Food	-	-	Can produce

### ***Ganoderma* (Basidiomycetes)**

Large, very hard, woody bracket fungi that grow on living and dead trees. Some species are common on oaks, chestnuts, and conifers such as hemlock, spruce, and pine. Many species are being investigated for possible medicinal uses.

### ***Geotrichum* (Ascomycetes Yeast)**

Teleomorph *Dipodascus*, *Galactomyces* (Ascomycetes)

Commonly found in soil, water, air, decaying leaves, rotting paper, and textiles. Involved in spoilage of food like bakery products, dairy products, juices, fruits, and vegetables. Can be found in indoor environments with some species producing strong odors.

### **Hyphomycetes**

A group of fungi in which asexual spores called conidia are produced from special conidiogenous cells.

### ***Helvella* (Ascomycetes)**

A saddle-shaped fruiting body of a fungus found on soil, or sometimes on rotting wood. Occasionally found growing on soil under houses.

### ***Memmoniella* (Hyphomycetes)**

Mainly isolated from soils and dead plant material in tropical countries but has also been isolated from indoor sources such as paper, wallpaper, and textiles. Exposure to this genus should be avoided as they can produce griseofulvins, a potentially toxic metabolite. Emerging research has proposed that *Memmoniella* species actually belong to *Stachybotrys*.

### ***Monodictys* (Hyphomycetes)**

Found on dead wood, stem, tree bark, damp linoleum, and paper. Isolated from soil and air.



### **Myxomycetes**

Popularly called slime molds. These are not true fungi taxonomically. Some species are found in the soil, in decaying wood, or other organic matter, where they produce structures full of powdery resting spores.

### ***Mucor* (Zygomycetes)**

Often found in soil, plants, hay, stored seeds, and manure. They can be found indoors in house dust, HVAC system dust, and poorly maintained carpets. They are rapid growers and can contaminate many kinds of stored food, including fruits and vegetables. A few species have been recovered from well-documented cases of zygomycosis. In general, infections due to members of this genus are rare.

### ***Nigrospora* (Hyphomycetes)**

Some species are common on plants, particularly in the tropics. Occasionally isolated from soil, air, and foodstuffs.

### ***Paecilomyces* (Hyphomycetes)**

Teleomorph: *Byssochlamys* (Ascomycetes)

A common saprobe found on dead plants and compost. Some species are insect parasites while others cause food spoilage. It is rarely a human pathogen but can cause infection in animals. However, some species, such as *P. variotii*, *P. marquandii* and *P. lilacinus* are emerging as causative agents of disease in immunocompromised individuals.

### ***Penicillium* (Hyphomycetes)**

Many species are common contaminants on a variety of substrates. May be found indoors in air samples, carpet dust, or on wallpaper. Some species are able to produce mycotoxins, as summarized below. Human pathogenic species are rare, only limited to *P. marneffeii*, which causes disease in immunocompromised individuals. Some species are used for commercial production, such as *P. chrysogenum* for the antibiotic penicillin, *P. griseofulvum* for the antibiotic griseofulvin, and *P. roquefortii* for blue cheese.

<b><i>Penicillium</i></b>	<b>Habitat</b>	<b>Toxic Metabolite</b>
<i>P. aurantiogriseum</i>	Food, Indoor	Can produce
<i>P. brevicompactum</i>	Food, Indoor	-
<i>P. chrysogenum</i>	Food, Indoor	-
<i>P. citrinum</i>	Food, (Indoor)	Can produce
<i>P. commune</i>	Food, Indoor	Can produce
<i>P. corylophilum</i>	Food, Indoor	-
<i>P. crustosum</i>	Food	Can produce
<i>P. digitatum</i>	Food	-
<i>P. expansum</i>	Food	Can produce
<i>P. funiculosum</i>	Food, Indoor	-
<i>P. griseofulvum</i>	Food	-
<i>P. olsonii</i>	Food, Indoor	-
<i>P. oxalicum</i>	Food	Can produce
<i>P. polonicum</i>	Food, Indoor	Can produce
<i>P. roqueforti</i>	Food	-
<i>P. rugulosum</i>	Food, Indoor	-
<i>P. variable</i>	Food, Indoor	-
<i>P. verrucosum</i>	Food	Can produce
<i>P. viridicatum</i>	Food	Can produce

***Periconia* (Hyphomycetes)**

A widespread fungus commonly found on various substrates, including stalks of grasses, herbaceous stems, dead leaves, or leaf spots. The spores of *Periconia* species are often indistinguishable from the spores of smut fungi like *Ustilago* species, when collected on air cassettes. Both genera can have spores that are brown, verruculose, or echinulate, ranging from 10-16 microns in diameter.

***Peziza* (Ascomycetes)**

Anamorph: *Chromelosporium*

Popularly referred to as cup fungi. They vary in size and color, but are mostly shades of ocher or brown to gray-violet. Most species are commonly found on old straw, compost, peat, leaf litter, rotting wood, damp soil, and other moist substrates. Can be found indoors in wet basements and wet carpets.

***Phialophora* (Hyphomycetes)**

Teleomorph: Ascomycetes

Occurs in nature as a soft rot fungus on wood often causing a distinct blue stain. Can cause diseases in immunocompromised individuals.

***Phoma* (Coelomycete)**

Found in soil and plant materials as saprobes. Will grow on a variety of materials such as butter, paint, cement, and rubber. Occasionally pathogenic to plants and humans, but infection from this fungus is extremely rare.

***Pithomyces* (Hyphomycetes)**

This genus is common in soil and on dead or decaying plant materials. Requires high moisture level for spore germination. Can potentially produce cyclodepsipeptides, sporidesmolides, and sporidesmin.

***Rhinocladiella* (Hyphomycetes)**

Teleomorph: *Capronia* (Ascomycetes)

***Rhizopus* (Zygomycete)**

Frequently isolated from soil and agricultural products, such as cereals and vegetables. Can cause infection in immunocompromised, malnourished or severely burned people.

***Rhodotorula* (Yeast)**

A reddish yeast frequently isolated from air, soil, water, fruit juice, dairy products, and other substrates. Typically found as a saprobe in moist environments indoor such as carpeting, cooling coils, water tanks, humidifiers, and drain pans. Reported to be allergenic. Has been found to colonize terminally ill patients.

**Rusts**

Obligate parasitic fungi, which belong to Teliomycetes – Uredinales that cause plant diseases.

***Scopulariopsis* (Hyphomycetes)**

Teleomorph: *Microascus* (Ascomycetes)

Mainly soil-borne, but also frequently isolated from wood, grain, fruit, paper, and food such as meat and dairy products. Also isolated from indoor environments. Most species can liberate arsenic gaseous compounds that can lead to arsenic poisoning. Has recently been associated with invasive human infections.

***Scytalidium* (Hyphomycetes)**

Isolated from wood and soil.

***Serpula* (Basidiomycete)**

Wood-attacking fungi. *Serpula lacrymans* is popularly referred to as the dry rot fungus or house fungus.

**Smuts (Teliomycetes)**

Obligate parasites and pathogens of plants that cause smut on various plant parts such as *Silene* anthers, corn kernels, onion bulbs, and rice grains.

**Sordaria (Ascomycetes)**

Common on dung. One species, *S. fimicola* is fairly common and is found on other substrates besides dung.

**Sporobolomyces (Yeast)**

Can be commonly detected in air samples. Frequently encountered indoors in water tanks, humidifiers, drain pans, etc.

**Sporoschisma (Hyphomycetes)**

Found on rotten wood and dead stems.

**Sporothrix (Hyphomycetes)**

Teleomorph: *Ophiostoma* (Ascomycetes)

Isolated from soil, live or dead plants, and peat moss. *S. schenckii* is an agent of human sporotrichosis, cutaneous infection, and ocular mycosis, usually in immunocompromised people.

**Sporotrichum (Hyphomycetes)**

Teleomorph: *Phanerochaete* (Basidiomycetes)

Can get airborne and be inhaled where it can form giant cells in the lungs.

**Stachybotrys (Hyphomycetes)**

A common saprophyte found on many substrates like grains, decaying plant materials, textiles, and tobacco. Grows indoors on water-damaged cellulose rich materials, such as sheet rock, paper, ceiling tiles, insulation backing, gypsum board, and wallpaper. The presence of this fungus can be significant due to its ability to produce mycotoxins under certain environmental conditions. Exposure to the toxins can occur through inhalation, ingestion, or skin exposure.

It is possible that *Stachybotrys* may play a role in the development of sick building syndrome, but probably only in conjunction with other factors. Until more information is available on the health risks of environmental exposure to *Stachybotrys*, caution should be taken when dealing with this fungus.

**Stemphylium (Hyphomycetes)**

A common saprobe typically is found on dead plants and wood. It has been also isolated from air, paper, and cellulosic materials.

**Syncephalastrum (Zygomycete)**

Often isolated from soil and dung in tropical and subtropical regions. Can also be a persistent laboratory contaminant.

**Taeniolella (Hyphomycetes)**

Common on dead branches, wood, and senescent leaves. Was isolated from human cutaneous and subcutaneous lesions.

**Tetraploa (Hyphomycetes)**

Teleomorph: *Massarina* (Ascomycetes)

Found on stems and leaf bases of many plants. *Tetraploa aristata* has been reported to cause keratitis.

**Thermomyces (Hyphomycetes)**

A thermophilic fungus that grows rapidly at 40°C.

***Torula* (Hyphomycetes)**

Cosmopolitan fungi commonly found on wood, leaves, plant roots, and plant litter. Has also been isolated from air and soil. Some species cause stains in hardwoods.

***Trichoderma* (Hyphomycetes)**

Very common especially in soil and decaying wood, dead leaves, fallen timber, compost heaps, and activated sludge. Can be found indoors in water-damaged buildings. Has occasionally been associated with disease in immunocompromised individuals.

***Trichophyton* (Hyphomycetes)**

Some species are dermatophytes (growing on the skin) of humans or animals.

***Tritirachium* (Hyphomycetes)**

A saprobe commonly isolated from decaying plant materials. Easily gets airborne. Can cause corneal ulcers.

***Ulocladium* (Hyphomycetes)**

Found as a saprobe in soil, plant materials, rotten wood, paper, textiles and cellulose materials. Frequently collected in air and dust samples. Can grow indoors on water-damaged building materials. Has not been associated with disease in humans but can be very allergenic.

***Verticillium* (Hyphomycetes)**

Mostly soilborne, root-inhabiting fungi that cause vascular wilt and other diseases on plants. Some species also infect mushrooms, rusts, and other fungi, as well as nematodes, ticks, mites and other insects. Other species can attack wool and textiles, or can decompose paper.

***Wallemia* (Hyphomycetes)**

A very xerophilic fungus that has been isolated from soil, air, hay, textiles, and food such as jam, salted fish, and milk products. Can cause allergies.

**Yeast**

A growth form exhibited by some fungi in which the fungus exists as single budding cells.

**Zygomycetes**

A class of fungi where the asexual spores are mostly formed endogenously in sporangia. The majority of the species are saprobes.

### Definitions

**Allergen/allergenic**

An allergen is an antigen, principally a protein, which can elicit symptoms of allergic disease in a previously sensitized individual. This antigen is specifically recognized by the individual's immune system, with subsequent development of specific antibody and/or cell mediated immunity. Fungi can elicit an allergic reaction ranging from mild to severe, anywhere from a stuffy nose, through hay fever and asthma to pneumonitis. In most cases, the physical condition of the host, the amount of allergen the host is exposed to (spores, fungal hyphae, dust, pollen, etc.) and the degree of sensitization of the individual determines the severity of the reaction. In general, common environmental or indoor air contaminating fungi most often affect humans as irritants that elicit an immune response that we generally associate with allergies (hypersensitivity).

**Anamorph**

The imperfect stage or asexual state of the fungus produced by mitosis.

**Colony**

An individual fungal growth on an agar culture plate or natural/manufactured substrate, when the fungus has grown sufficiently to be readily seen with a hand lens or low-power microscope.

**Conidia (conidium, singular)**

Asexual non-motile spores.

**Conidiophore**

The specialized hypha or cell on which conidia are produced.

**Hyphae (singular hypha)**

The individual filament or thread that make up a fungus.

**Hyphal Fragment**

A portion of the fungal mycelium that does not have any spores or other diagnostic fungal structures, and therefore, could not be identified.

**Immunocompromised**

Incapable of developing a normal immune response, usually as a result of disease (lupus, HIV), malnutrition, or immunosuppressive therapy (chemotherapy, corticosteroids).

**Mycotoxin**

Secondary metabolites produced by fungi, which are toxic to human and animals in small quantities. Production of a specific mycotoxin tends to be genus-, species-, or even strain-specific.

**No Mold Detected**

This result indicates that spores, hyphae, or any fungal structures were not observed from the sample.

**Parasite**

An organism that requires a living host to survive. It lives in or on the host and derives nutrients or other substances from the host. It is generally not able to live saprophytically, and it may often cause extensive damage to the host.

**Pathogen**

An organism that can cause a disease on another living organism.

**Saprobe**

A fungus that feeds by external digestion of dead organic matter, and usually has the ability to adapt rapidly on the substrate.

**Spore**

An individual reproductive body or propagule of fungi, similar to a seed of plant.

**Spore-producing structures**

Fungal parts involved in spore production such as hyphae, conidiophores, phialides, and fruiting bodies, among others.

**Teleomorph**

The perfect stage or sexual state of the fungus involved in producing meiotic or sexual spores.

**Xerophilic**

Able to grow under dry conditions.