



**Eurofins EMLab P&K**

[www.MoldREPORT.com](http://www.MoldREPORT.com)

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Approved by:

A handwritten signature in black ink that reads "Murali R Putty".

Technical Manager  
Murali Putty

Dates of Analysis:  
MoldReport Direct exam: 05-22-2014

Service SOPs:  
MoldReport Direct exam (EM-MY-S-1039)†

†AIHA-LAP, LLC accredited service, Lab ID #102856

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 and tested. Information supplied by the client which can affect the validity of results: sample air volume.

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**Client: EMLab P&K MOLD REPORT**

Contact: Mr. Quality Control  
Project: Sample Report  
Date of Sampling: 05-22-2014  
Date of Receipt: 05-22-2014  
Date of Report: 05-22-2014

**MoldREPORT**

Eurofins EMLab P & K  
111 Anza Boulevard, Suite 122, Burlingame, CA 94010  
(800) 651-4802 Fax (623) 780-7695

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

Your MoldREPORT™ 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™ 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™, including important terms, conditions and applicable legal provision relating to this report.
- 4. Scope and Limitations** - Important information regarding the scope of the MoldREPORT™ 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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**Summary of Sample Analysis Results**

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**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 2 indicated mold growth on the surface(s) sampled at the time of sampling.

The surface sample results of 1 did not indicate 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
1 * see p. 4 for details	No Mold Growth	None
2 * see p. 5 for details	Mold Growth	Cladosporium species Stachybotrys species

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**Detailed Results of Surface Sample Analysis**

Location:	1
Lab ID-version:‡	5507388-1
Sample Type:	Tape sample

Mold growth present*: Low=small amounts of mold growth present High=large amounts of mold growth present	No growth found	Low			High
Acremonium species					
Alternaria species					
Aspergillus species					
Aureobasidium species					
Chaetomium species					
Cladosporium species					
Penicillium species					
Stachybotrys species					
Trichoderma species					
Ulocladium species					

Miscellaneous spores present: Indicative of normal conditions**	Very few
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Background debris:	Light
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Other comments:	None
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\* Quantities of molds seen growing are graded Low to High with High denoting the highest numbers.

\*\* 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.

‡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 Low when mold growth is detected.

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**Detailed Results of Surface Sample Analysis**

Location:	2
Lab ID-version:‡	5507389-1
Sample Type:	Tape sample

Mold growth present*: Low=small amounts of mold growth present High=large amounts of mold growth present	No growth found	Low			High
Acremonium species					
Alternaria species					
Aspergillus species					
Aureobasidium species					
Chaetomium species					
Cladosporium species					
Penicillium species					
Stachybotrys species					
Trichoderma species					
Ulocladium species					

Miscellaneous spores present: Indicative of normal conditions**	Very few
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Background debris:	Moderate
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Other comments:	None
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\* Quantities of molds seen growing are graded Low to High with High denoting the highest numbers.

\*\* 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

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**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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**Important Information, Terms and Conditions Relating to your MoldREPORT™**

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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™ 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™ 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™ 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

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The scope of the MoldREPORT™ system is limited to Eurofins EMLab P&K's proprietary MoldSCORE™ 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™ system.

### MoldREPORT™ Inspection Limitations

MoldREPORT™ 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™ 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™ relies on non-invasive and non-destructive tests, so it cannot guarantee that hidden mold problems will be detected and reported. MoldREPORT™ 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™ 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™ analysis is generally performed at the genus level. Currently there are no generally-accepted 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™ 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™ Cassettes, Burkard™ samplers, and Allergenco™ 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™ analysis system uses the direct examination data in addition to the MoldREPORT™ air sample analysis.

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## Glossary

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**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)

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#### **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, basidiomycetes 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 cellulose-based 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)

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#### ***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.

#### ***Memmoniella:***

**Distribution:** *Memmoniella* 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:** *Memmoniella* produces dry spores that are easily dispersed through the air by wind.

**Where it is found outdoors:** *Memmoniella* 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:** *Memmoniella* 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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Contact: Mr. Quality Control  
Project: Sample Report  
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## MoldREPORT

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### Glossary (continued)

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#### ***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 textiles.

**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](http://www.acgih.org)  
American Conference of Governmental Industrial Hygienists - information on IAQ and useful links.

[www.aiha.org](http://www.aiha.org)  
American Industrial Hygiene Association - general IAQ information

[www.calepa.ca.gov](http://www.calepa.ca.gov)  
California Environmental Protection Agency - California IAQ resources

[www.emlab.com](http://www.emlab.com)  
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[www.epa.gov](http://www.epa.gov)  
Environmental Protection Agency - information regarding prevention and remediation of mold

[www.health.state.ny.us](http://www.health.state.ny.us)  
New York State Department of Health - New York state recommendations for IAQ, indoor mold inspections, remediation, and prevention

[www.moldreport.com](http://www.moldreport.com)  
MoldREPORT™ - online store, and other information about MoldREPORT™

[www.nih.gov](http://www.nih.gov)  
National Institutes of Health - information regarding environmental health issues, including IAQ

[www.niehs.nih.gov](http://www.niehs.nih.gov)  
National Institute of Environmental Health Sciences - information on mold

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