



# EXPANDED FUNGAL REPORT®

#### **Prepared Exclusively For**

Homestead Inspections, LLC 2846 North Narragansett Avenue Chicago, IL 60634

Report Date: 11/27/2009
Project: 67 Summerhill
EMSL Order: 260906830







2444 W. George Street Chicago, IL 60618

Phone: (773) 313-0099 Fax: (773) 313-0139 Web: http://www.emsl.com Email:chicagolab@emsl.com

Attn: Jeff Merritt

Homestead Inspections, LLC 2846 North Narragansett Avenue

Chicago, IL 60634

EMSL Order: 260906830 Customer ID: HOST62 Collected: 11/21/2009 Received: 11/25/2009 Analyzed: 11/27/2009

Proj: 67 Summerhill

#### 1. Description of Analysis

#### **Analytical Laboratory**

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

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

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

#### Air Samples - Spore traps:

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

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

Fungal spores are identified and grouped by morphological characteristics including color, shape, septation, ornamentation, and fruiting structures (if present) which are compared to published mycological identification keys and texts. EMSL reports provide spore counts per cubic meter of air to three significant figures. Please note that each spore category is



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reported to three significant figures. Due to rounding and the application of three significant figures the sum of the individual spore numbers may not equal the total spore count on the report. EMSL does not maintain responsibility for final volume concentrations (counts/m3) since this volume is provided by the field collector and can not be verified by EMSL.

Analyzed:

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

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

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

#### 2. Analytical Results

See attached data reports and charts.



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Test Report: Air-O - Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (EMSL Method 05-TP-003)

		Sample Concentration	В	Background Concentration	Background Corrected
	Particle Identification	(counts/m³)		(counts/m³)	(counts/m³)
Lab Camania Namahan	Alternaria	None Detected		22	Less than Background
Lab Sample Number	Ascospores	156		400	Less than Background
260906830-0001	Aspergillus/Penicillium	467		311	156
	Basidiospores	689		600	89
Client Sample ID	Bipolaris++	44		None Detected	44
15587352	Chaetomium	None Detected		None Detected	Equal To Background
	Cladosporium	556		5710	Less than Background
	Curvularia	None Detected		None Detected	Equal To Background
Location	Epicoccum	None Detected		467	Less than Background
	Fusarium	None Detected		None Detected	Equal To Background
1st Floor	Ganoderma	None Detected		None Detected	Equal To Background
	Myxomycetes++	44		None Detected	44
Sample Volume (L)	Pithomyces	None Detected		None Detected	Equal To Background
	Polythrincium	None Detected		None Detected	Equal To Background
150	Rust	44		1160	Less than Background
	Scopulariopsis	None Detected		None Detected	Equal To Background
Sample Type	Stachybotrys	44		None Detected	44
Inside	Torula	None Detected		None Detected	Equal To Background
moldo	Ulocladium	None Detected		None Detected	Equal To Background
Comments	Unidentifiable Spores	None Detected		None Detected	Equal To Background
Comments	Zygomycetes	None Detected		None Detected	Equal To Background
	Total Fungi	2040		8670	Less than Background
	Hyphal Fragment	22		156	Less than Background
	Insect Fragment	None Detected		None Detected	Equal To Background
	Pollen	22		44	Less than Background
	Analytical Sensiti	vity 600x:	22	counts/cubic meter	
	Analytical Sensiti	vity 300x *:	7*	counts/cubic meter	
	Skin Fragments:		3	1 to 4 (low to high)	
	Fibrous Particulat	ce:	1	1 to 4 (low to high)	
	Background:		3	1 to 4 (low to high); 5 (	overloaded)

Bipolaris++ = Bipolaris/Dreschlera/Exserohilum

Myxomycetes ++ = Myxomycetes / Periconia / Smut

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

Samples analyzed by EMSL Analytical, Inc. Chicago 2444 W. George Street, Chicago IL AIHA EMLAP 102992

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5

indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "\*"

Denotes particles found at 300X. EMSL maintains liability limited to cost of anaysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client.

Samples received in good condition unless otherwise noted.

Nancy McDonald, Laboratory Manager or other Approved Signatory

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		Sample Concentration	В	Background Concentration	Background Corrected
	Particle Identification	(counts/m³)		(counts/m³)	(counts/m³)
Lab Camala Namban	Alternaria	None Detected		22	Less than Background
Lab Sample Number	Ascospores	89		400	Less than Background
260906830-0002	Aspergillus/Penicillium	289		311	Less than Background
	Basidiospores	422		600	Less than Background
Client Sample ID	Bipolaris++	None Detected		None Detected	Equal To Background
15587443	Chaetomium	None Detected		None Detected	Equal To Background
	Cladosporium	467		5710	Less than Background
	Curvularia	None Detected		None Detected	Equal To Background
Location	Epicoccum	None Detected		467	Less than Background
	Fusarium	None Detected		None Detected	Equal To Background
2nd Floor	Ganoderma	None Detected		None Detected	Equal To Background
	Myxomycetes++	22		None Detected	22
Sample Volume (L)	Pithomyces	None Detected		None Detected	Equal To Background
4=0	Polythrincium	22		None Detected	22
150	Rust	22		1160	Less than Background
	Scopulariopsis	None Detected		None Detected	Equal To Background
Sample Type	Stachybotrys	None Detected		None Detected	Equal To Background
Inside	Torula	None Detected		None Detected	Equal To Background
	Ulocladium	None Detected		None Detected	Equal To Background
Comments	Unidentifiable Spores	None Detected		None Detected	Equal To Background
Comments	Zygomycetes	None Detected		None Detected	Equal To Background
	Total Fungi	1330		8670	Less than Background
	Hyphal Fragment	44		156	Less than Background
	Insect Fragment	22		None Detected	22
	Pollen	None Detected	$\perp$	44	Less than Background
	Analytical Sensiti	vity 600x:	22	counts/cubic meter	
	Analytical Sensiti	vity 300x *:	7*	counts/cubic meter	
	Skin Fragments:		2	1 to 4 (low to high)	
	Fibrous Particulat	te:	1	1 to 4 (low to high)	
	Background:		2	1 to 4 (low to high); 5 (	overloaded)

Bipolaris++ = Bipolaris/Dreschlera/Exserohilum

Myxomycetes ++ = Myxomycetes / Periconia / Smut

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		Sample Concentration	Background Concentration	Background Corrected
	Particle Identification	(counts/m³)	(counts/m³)	(counts/m³)
Lab Sample Number	Alternaria	22	22	N/A
Lab Campic Number	Ascospores	400	400	N/A
260906830-0003	Aspergillus/Penicillium	311	311	N/A
	Basidiospores	600	600	N/A
Client Sample ID	Bipolaris++	None Detected	None Detected	N/A
15587390	Chaetomium	None Detected	None Detected	N/A
	Cladosporium	5710	5710	N/A
	Curvularia	None Detected	None Detected	N/A
Location	Epicoccum	467	467	N/A
	Fusarium	None Detected	None Detected	N/A
Outside Control	Ganoderma	None Detected	None Detected	N/A
	Myxomycetes++	None Detected	None Detected	N/A
Sample Volume (L)	Pithomyces	None Detected	None Detected	N/A
4=0	Polythrincium	None Detected	None Detected	N/A
150	Rust	1160	1160	N/A
	Scopulariopsis	None Detected	None Detected	N/A
Sample Type	Stachybotrys	None Detected	None Detected	N/A
Background	Torula	None Detected	None Detected	N/A
Baokground	Ulocladium	None Detected	None Detected	N/A
Comments	Unidentifiable Spores	None Detected	None Detected	N/A
Comments	Zygomycetes	None Detected	None Detected	N/A
	Total Fungi	8670	8670	N/A
	Hyphal Fragment	156	156	N/A
	Insect Fragment	None Detected	None Detected	N/A
	Pollen	44	44	N/A
	Analytical Sensiti	vity 600x:	22 counts/cubic meter	
	Analytical Sensiti	vity 300x *:	7* counts/cubic meter	
	Skin Fragments:		1 1 to 4 (low to high)	
	Fibrous Particulat	e:	1 1 to 4 (low to high)	
	Background:		1 1 to 4 (low to high); 5 (	(overloaded)

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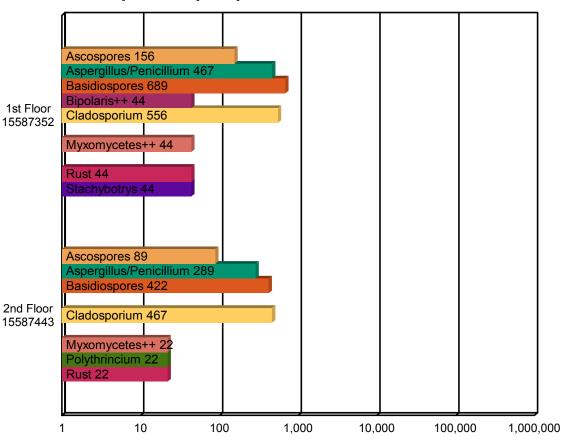
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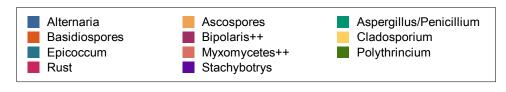
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# **Spore Trap Report: Total Counts**



Spore Counts per m3



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



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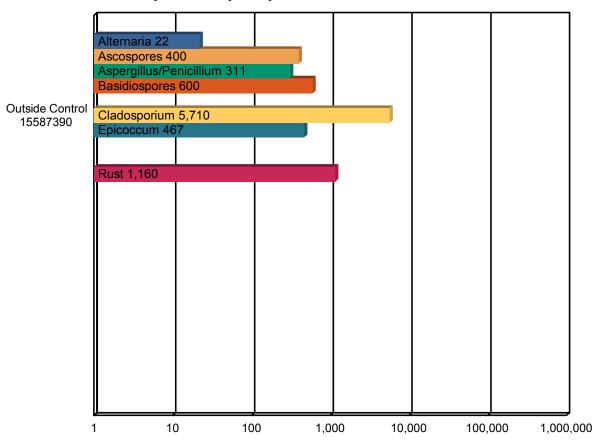
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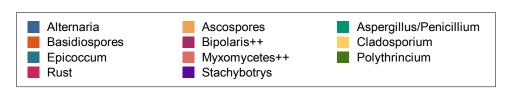
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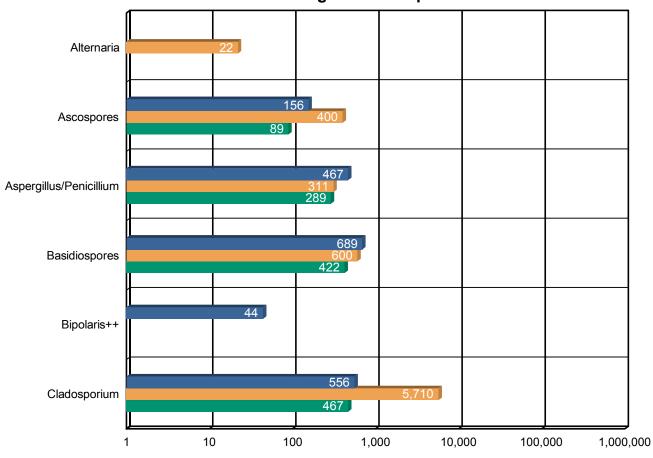
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### **Background Comparison Chart**



Spore Counts per m3



<sup>\*</sup> The chart is displayed using a logarithmic scale. The bar size is not directly proportional to the number of spores.



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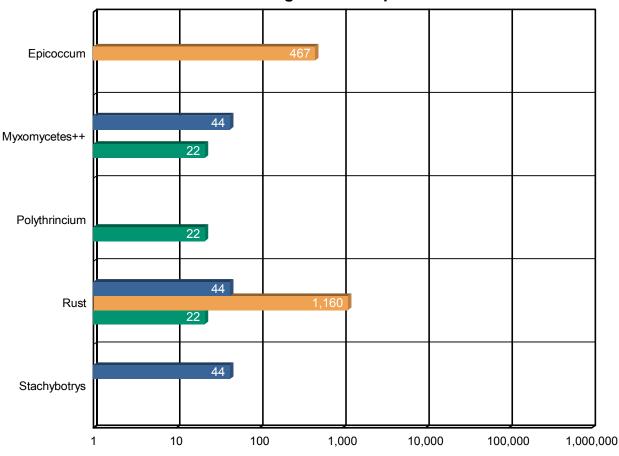
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# **Background Comparison Chart**



Spore Counts per m3



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#### 3. Understanding the Results

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

#### Air Samples:

Air samples are typically evaluated by means of fungal type identified and by comparing indoor and outdoor concentrations, complaint to non-complaint areas, or area of concern to areas of non-concern. In general, the levels and types of fungi in the indoor air (in non-problem buildings) should be similar to or lower than those found in the outdoor air. Higher levels of spores (order of magnitude) found inside may indicate that moisture sources and resultant fungal growth are present. Spore count results are influenced by geographic location, seasonal and diurnal variation, and biotic/abiotic outside conditions. For example, fresh snow cover on the ground will affect the outdoor spore count concentration.

Use the following guidelines when interpreting the results:

- 1. The composition and diversity of fungi in indoor, non-problem buildings should be similar to that of the outdoor air.
- 2. Compare spore count concentrations indoors and outdoors. Elevated indoor concentrations may indicate indoor fungal growth. Be aware that this is not always consistent and additional sampling may be needed.
- 3. Certain fungi are very good indicators of water damage. The presence of these spores, even in small quantities, indicates the presence of water damage. These indicator fungi include, but are not limited to, *Chaetomium, Fusarium, Stachybotrys* (including *Memnoniella*), and *Ulocladium*.
- 4. Different types of fungi grow at different levels of biologically available water. These differences in fungal growth suggest the degree of water damage or saturation. For example, Stachybotrys is an indication of short term, severe, or prolonged water damage over time.



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

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

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



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# 4. Glossary of Fungi

ALTERNARIA	
Natural Habitat	Common saprobe and pathogen of plants. Typically found on plant tissue, decaying wood, and
	foods. Soil . Air outdoors.
Suitable Substrates in the	Indoors near condensation (window frames, showers). House dust (in carpets, and air) Also
Indoor Environment	colonizes building supplies, computer disks, cosmetics, leather, optical instruments, paper,
	sewage, stone monuments, textiles, wood pulp, and jet fuel
Water Activity	Aw =0.85-0.88
Mode of Dissemination	Wind
Allergic Potential	Type I allergies (hay fever, asthma), Type III (hypersensitivity pneumonitis)
Potential or Opportunistic	Phaeohyphomycosis {causing cystic granulomas in the skin and subcutaneous tissue}. In
Pathogens	immunocompetent patients, Alternaria colonizes the paranasal sinuses, leading to chronic
	hypertrophic sinusitis
Industrial Uses	Biocontrol of weed plants · Biocontrol fungal plant pathogens.
Potential Toxins Produced	Alternariol (AOH) . Alternariol monomethylether (AME). Tenuazonic acid (TeA). Altenuene
	(ALT). Altertoxins (ATX)
Other Comments	Alternaria spores are one of the most common and potent indoor and outdoor airborne
	allergens. Additionally, Alternaria sensitization has been determined to be one of the most
	important factors in the onset of childhood asthma. Synergy with Cladosporium or Ulocladium
	may increase the severity of symptoms



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



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



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Homestead Inspections, LLC 2846 North Narragansett Avenue

Chicago, IL 60634

EMSL Order: 260906830 Customer ID: HOST62 Collected: 11/21/2009 Received: 11/25/2009 Analyzed: 11/27/2009

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



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



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EPICOCCUM	
Natural Habitat	A worldwide saprophytic fungi, being isolated from dead plant material and soil.
Suitable Substrates in the	Paper, textiles
Indoor Environment	
Water Activity	0.86-0.90
Mode of Dissemination	Wind
Allergic Potential	Hay fever, asthma
Potential or Opportunistic	Unknown
Pathogens	



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STACHYBOTRYS	
Natural Habitat	Decaying plant materials and Soil.
Suitable Substrates in the	Water damaged building materials such as: ceiling tiles, gypsum board, insulation backing,
Indoor Environment	sheet rock, and wall paper. Paper. Textiles.
Water Activity	Aw=0.94
Mode of Dissemination	Insects, Water, and Wind
Allergic Potential	Type I (hay fever, asthma)
Potential or Opportunistic	Unknown.
Pathogens	
Industrial Uses	Unknown.
Potential Toxins Produced	Mycotoxins produced by Stachybotrys include Roridin A, Roridin E, Roridin H, Roridin L-2,
	Satratoxin G, Satratoxin H, Isosatratoxin F, Verucarin A, Verucarin J, and Verrucariol.
Other Comments	Stachybotrys may play a role in the development of sick building syndrome. The presence of
	this fungus can be significant due to its ability to produce mycotoxins. Exposure to the toxins
	can occur through inhalation, ingestion, or skin exposure.



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Proj:

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Chicago, IL 60634

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#### 5. References and Informational Links

#### **Books**

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

#### **Consumer Links**

- Read the full text of AIHA's "The Facts About Mold" consumer brochure. http://www.aiha.org/content/accessinfo/consumer/factsaboutmold.htm
- The Occupational Safety and Health Administration (OSHA) http://www.osha.gov/SLTC/molds/index.html
- CDC Mold Facts <u>http://www.cdc.gov/mold/faqs.htm</u>
- CDC Stachybotrys Questions and answers on Stachybotrys chartarum and other molds <a href="http://www.cdc.gov/nceh/airpollution/mold/stachy.htm">http://www.cdc.gov/nceh/airpollution/mold/stachy.htm</a>
- IOM, NAS: Clearing the Air: Asthma and Indoor Air Exposures <a href="http://fermat.nap.edu/books/0309064961/html/index.html">http://fermat.nap.edu/books/0309064961/html/index.html</a>
- National Library of Medicine-Mold website http://www.nlm.nih.gov/medlineplus/molds.html



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- California Department of Health Services (CADOHS) http://www.cal-iag.org/mold0107.htm
- Minnesota Department of Health http://www.health.state.mn.us/divs/eh/indoorair/mold/index.html
- New York City Department of Health and Mental Hygiene http://www.nyc.gov/html/doh/html/epi/moldrpt1.shtml
- H.R.: The United States Toxic Mold Safety and Protection Act http://www.house.gov/convers/mold.htm

#### **EPA**

- "Should You Have the Air Ducts in Your Home Cleaned?" http://www.epa.gov/iag/pubs/airduct.html
- "Fact Sheet: Flood Cleanup Avoiding Indoor Air Quality Problems" http://www.epa.gov/iag/pubs/flood.html
- General information about molds and actions that can be taken to clean up or prevent a mold problem.

http://www.epa.gov/iag/asthma/triggers/molds.html

- "A Brief Guide to Mold, Moisture, and Your Home" Includes basic information on mold, cleanup guidelines, and moisture and mold prevention. http://www.epa.gov/iag/molds/moldguide.html
- "Mold Remediation in Schools and Commercial Buildings" Information on remediation in schools and commercial property, references for potential mold and moisture remediators.

http://www.epa.gov/iag/molds/mold-remediation.html

#### **FEMA**

- "Homes That Were Flooded May Harbor Mold Problems" Information and tips for cleaning mold.
  - http://www.fema.gov/diz01/d1364n18.shtm
- "Mold Can Damage Home and Health" How to check for mold, potential health effects
  of mold, and how to treat mold in the home.
   http://www.fema.gov/diz01/d1379n41.shtm

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 "Prompt Flood Cleanup Can Help Prevent Health Problems" - How to clean up in-house mold problems (not large or serious exposures). <a href="http://www.fema.gov/diz99/d1279n09.shtm">http://www.fema.gov/diz99/d1279n09.shtm</a>



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

#### A. Sample Retention

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

#### B. Change Orders and Cancellation

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

#### C. Warranty

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

#### D. Limits of Liability

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



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