

REW ENVIRONMENTAL CONSULTANTS, INC.

November 11, 2015

Delivered to via: kkelley@northhampton-nh.gov
papple@northhampton-nh.gov

Paul Apple, Town Administrator
Kevin Kelley, Building Inspector
233 Atlantic Avenue, 2nd Floor
North Hampton, New Hampshire 03862

RE: Interior Evaluation for Mold
North Hampton Public Library, 237A Atlantic Avenue, North Hampton

Provided herewith are the results of four (4) spore trap samples used in identifying airborne mold spores and particulate particles. All samples were collected from the North Hampton Public Library at the subject address on 28-Oct-2015.

Objective

Capture and quantify a broad spectrum of viable and non-viable fungal spores in the indoor air.

Assess whether the concentrations pose an indoor air quality issue with library staff and the general public.

Sampling Protocols and Sample Representativeness

Spore trap samples (or air samples) work by having a known volume of air pass through a sampling cassette (known as a spore trap) equipped with a slide. Particles in air impact a sticky surface on the slide and consequently adhere to, and are captured on, this sticky surface. Microscopy analysis of the captured particles is then completed.

Each air sample was collected for 5 minutes at a flow rate of 15 liters per minute (l/m) using a manufactured-set and calibrated flow pump. Air samples represent the office area (ID 01992110), the main room of the library (ID 02005347), and the children's room (ID 02006083). All were collected at 4 feet above the floor.

Sampling locations were selected based on site-specific issues such as water intrusion or in areas that we believe would yield a best representation of indoor conditions. Sampling data represents a specific moment in time and subject to temporal and spatial distribution.

Associated with



M.A.R.S.

MOLD ASSESSING AND REMEDIATION SERVICES, LLC

Danvers, Massachusetts and Naples, Florida

978-375-7086 or 239-825-4424

www.mars-mold.com



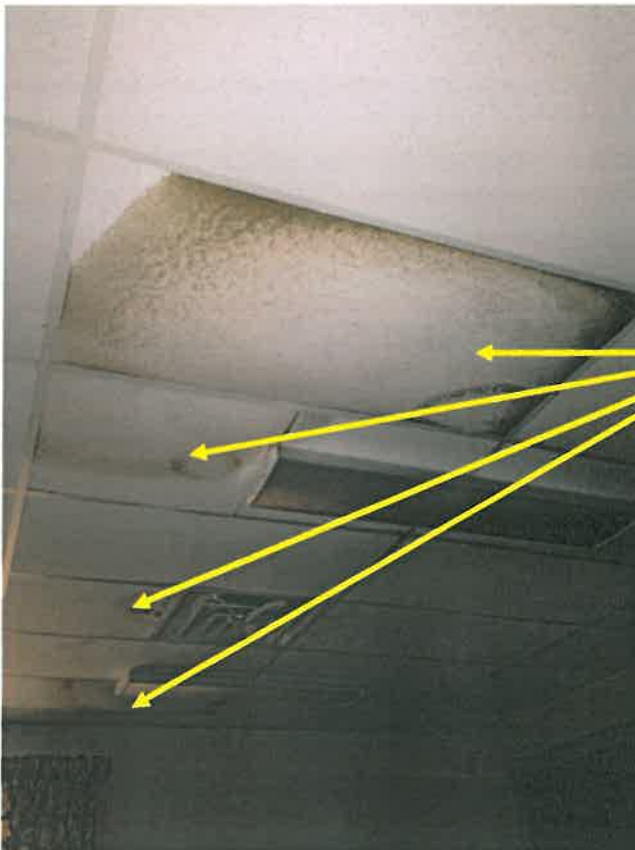
The results are given in spores per cubic meter of air (spores/m³). Spore trap analysis counts all cells, living or dead.

All samples were transferred under a chain-of-custody to Air Allergens and Mold Testing (AAMT) located in Stone Mountain, Georgia. Appended to this report are the AAMT results.

Walk-Through Visual Assessment

A visual evaluation for the presence of mold was conducted 28-Oct-2015. The visual inspection was completed for the first floor (the office, Craig Room, and main or central area).

Water intrusion was evident on suspended ceiling tiles in the children's room. Water intrusion has also damaged suspended ceiling tiles in the office and in the main room.



Children's Room of Library: Damaged Ceiling Tiles from Water Intrusion



Air Quality Analysis

The general spore count for the primary organisms detected in the indoor air is at normal concentrations or a normal ecology. Hyphae were indicated acceptable.

Normal ecology is a condition of settled spores, fungal fragments or traces of actual growth whose identity, location and quantity is reflective of a normal fungal ecology for an indoor environment.

Discussion/Conclusion

Background contains spores, pollen and miscellaneous organic and inorganic particles such as skin, dust, soil, insulation, carbon, etc. An acceptable background concentration is $<100,000$ particles/m³. One interior air sample was elevated and exceeds this concentration. The children's room was 317,093 particles/m³.

Airborne fiberglass fibers encountered in the indoor environment are most commonly composed of amorphous (non-crystalline) fibrous glass particles commonly known or identified in products as fiberglass or mineral wool. Fibrous glass sources may include ceiling tiles, debris from renovation projects, or the degradation of HVAC system sound liners. More importantly, airborne detection is a strong indicator of concurrent surface contamination and the potential for skin or eye contact irritation.

Although no direct health effects can be derived by their measurement, skin cell fragment concentrations are a good combined surrogate indicator of effective fresh air transfer rates, occupant density, commensal bacteria potential, house-keeping and cleaning practices, and filtration of recirculated air in the building. Elevated fragments were found in the children's room and office area.

Filtration of recirculated air or make-up air through HVAC may improve indoor air conditions with MERV 8 or MERV 10 filtration. This is simply a change out and upgrading the filters currently used.

The ceiling tiles are breaking down from water intrusion and will add to general background concentrations. The recent construction in the children's room may also be the reason for an elevated background.

Opinion

Overall air quality is acceptable.



If you have questions, please call me (978-375-7086).

Sincerely,
REW Environmental Consultants, Inc.
Mold Assessing and Remediation Services, LLC

Dick Warren, LSP, LMA, LMR
Owner-Principal

Hayden Warren, CGC, CMA, CMR
Owner-Principal

Website: www.mars-mold.com

**Sample Analysis
for**

North Hampton

M.A.R.S. REW Environmental

Company: M.A.R.S. REW Environmental
 Attention: Richard Warren
 Address: 500 Maple Street, Danvers, MA
 01923

Air Allergen Mold Testing, Inc.
 2041 Hessian Court
 Stone Mountain, Ga. 30087
 Phone (770) 938-4861 Fax (770) 270-0853
 Linear Spore Trap Analysis by SOP AAMTDX001

Report Date 10/30/2015
 Date Received 10/30/2015
 Analyzed by R. Billups
 Date Ammended
 Report Number 8979

Project: North Hampton

Location	Outside			Office			Main Rm		
AAMT Nbr	8979-001			8979-002			8979-003		
Spore Trap Serial #	02004611			01992110			02005347		
Sample/Cassette Type	Allergenco D Posi-Track			Allergenco D Posi-Track			Allergenco D Posi-Track		
Liters Collected	75 L			75 L			75 L		
Humid/Temp	72 / 46			61 / 70			61 / 70		
Particulate	carbon	soil		soil	carbon		soil	carbon	
Fibrous Particulate							cellulose		
Skin Fragments	0-25			26-50			0-25		
Background / Cubic Meter	58,471			55,098			62,969		
Hyphae / m ³	87			87					
Pollen / m ³									
Spore Name	Raw Ct	Spore / m ³	% of Total	Raw Ct	Spore / m ³	% of Total	Raw Ct	Spore / m ³	% of Total
Predominately Outdoor									
Alternaria									
Arthrinium									
Ascospores	1	44	0.1						
Basidiospores	132	31,680	93.8	9	393	42.9	9	393	75.0
Bipolaris									
Curvularia									
Epicoccum	1	13							
Nigrospora									
Periconia/Myxomycete	1	44	0.1	2	87	9.5	2	87	16.6
Pithomyces				1	44	4.8			
Spegazzinia									
Torula									
Indoor - Outdoor									
Aspergillus/Penicillium	41	1,789	5.3	9	393	42.9	1	44	8.4
Cladosporium	5	218	0.6						
Water Related									
Chaetomium									
Stachybotrys									
Trichoderma									
Total Spores	181	33,788	100	21	917	100	12	524	100

Limit of Detection @600x

44

44

44

Limit of Detection @300x

13

13

13

Please see attached sheet for additional information and important notes.

Richard Billups

Richard Billups, Laboratory Director

Top 3 organisms =

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Report Date 10/30/2015
 Date Received 10/30/2015
 Analyzed by R. Billups
 Date Amended
 Report Number 8979

Project: North Hampton

Location	Outside			Childrens Rm					
AAMT Nbr	8979-001			8979-004					
Spore Trap Serial #	02004611			02006083					
Sample/Cassette Type	Allergenco D Posi-Track			Allergenco D Posi-Track					
Liters Collected	75 L			75 L					
Humid/Temp	72 / 46			64 / 70					
Particulate	carbon	soil		soil	carbon				
Fibrous Particulate				cellulose	glass like				
Skin Fragments	0-25			26-50					
Background / Cubic Meter	58,471			317,093					
Hyphae / m ³	87			87					
Pollen / m ³									
Spore Name	Raw Ct	Spore / m ³	% of Total	Raw Ct	Spore / m ³	% of Total	Raw Ct	Spore / m ³	% of Total
Predominately Outdoor									
Alternaria									
Arthrinium									
Ascospores	1	44	0.1	3	131	2.7			
Basidiospores	132	31,680	93.8	75	3,273	68.4			
Bipolaris									
Curvularia				1	13	0.3			
Epicoccum	1	13							
Nigrospora									
Periconia/Myxomycete	1	44	0.1	7	305	6.4			
Pithomyces				1	13	0.3			
Spegazzinia									
Torula									
Indoor - Outdoor									
Aspergillus/Penicillium	41	1,789	5.3	22	960	20.1			
Cladosporium	5	218	0.6	2	87	1.8			
Water Related									
Chaetomium									
Stachybotrys									
Trichoderma									
Total Spores	181	33,788	100	111	4,782	100			

Limit of Detection @600x

44

44

Limit of Detection @300x

13

13

Please see attached sheet for additional information and Important notes.

Top 3 organisms =


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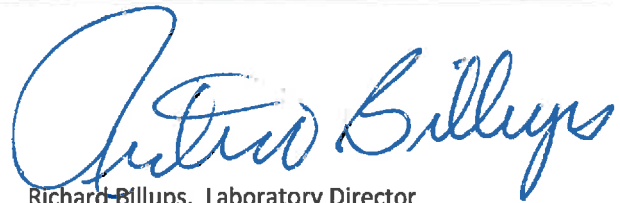
Spore Trap Comments

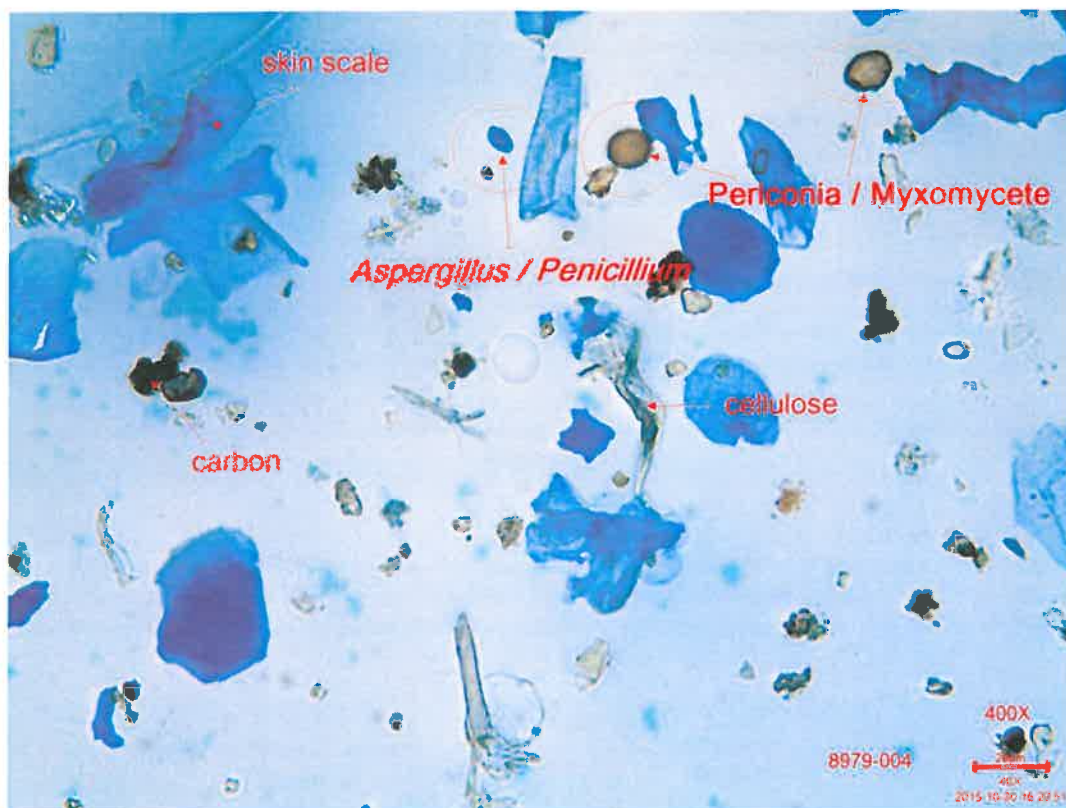
Sample 8979-001 for Sample ID: 02004611, Outside, Basidiospores counted in 2 tranverses.

Background is a combination of debris, skin and fibers.

* Water Related refers to organisms that are commonly found in areas of high water activity. This can be in the form of high Relative Humidity (RH), meaning consistently above 50%.

**Spore Total symbols are; ND is None Detected, DS is Defective Slide and NT is No Trace


Richard Billups, Laboratory Director



Company	Air Allergen
Project	North Hampton
Location	Childrens Rm
SampleType	Allergenco D Posi-Track
AAMT Nbr	8979-004
Date Analyzed	10/30/2015

Information on specific organisms listed can be viewed on our Fungal Organisms Description page.
Background particle information can be found on the How to Read Our Reports section.

Richard Billups, Laboratory Director

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2041 Hessian Court
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Phone (770) 938-4861
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Company: M.A.R.S./REW ENV CONS INC
 Contact: RICHARD WARREN
 Address: 500 MAPLE STREET
 Address:
 City, State, Zip: DANVERS, MASSACHUSETTS
 Phone: 978-375-7086
 Email: REWENV@MSN.COM

Project

NORTH HAMPTON
LIBRARY, NORTH
HAMPTON, NH

730-230A
Date and Time Collected: 1D-28-2015
Collected by: RW

[illegible]

Volume = # minutes \times Liters/minute
Area = πr^2 cm² m² m³

* Microscopic Exam

Score Trap = AOC, Allergenco, Micro 5, etc.

Time, Size, Sex, Bulk (Specify) (Qualitative only)

Fungal Culture

Alt. Dist. Dist. Swath (specify to genus or species level)

**Relinquished by
Time and Date**

Received by
Time and Date
Richard Johnson
10:30-2015 10A

Air Allergen # 8979

Report type : Lab Results ☒ Lab Results with Remediation

Lab Results with Remediation

FEDEX
UPS
USPS

Drop Off
Other

12-10-15 11:56

TAT = Up to 3 hours, Same Day, Next Day, 2-5 day
(Applies to Spore Traps & Direct Microscopic Exams only)
Same day must be at lab by 2:00 PM ET)

How To Read Our Reports

AAMT Test #					
Customer Sample #					
Spore Trap Serial #					
Location					
Volume (L)	75	Amount of Air sampled, out of 1000 Liters			
Skin Fragments %		26-50			
Background / m ³	126,853	Total particles in 1 cubic meter of air (1000 liters)			
Hyphae / m ³	1067				
	Spore Name	Raw Count	Spores/m % Total		
Predominantly Outside	Alternaria	2	83 0.4	How many spores the analyst counted (raw count)	
	Arthrinnium				
	Arthrospores				
	Ascospores				
	Basidiospores				
	Bipolaris				
	Curvularia				
	Epicoccum				
	Nigrospora	5	207 0.9		Percent of the total spores present per cubic meter
	Periconia/Myxomycete				
	Pithomyces				
	Spegazzinia				
	Tetraploa				
	Torula				
Urediniospores					
Inside / Outside	Aspergillus/Penicillium	400	16,593 73.1	Total number of spores after formula applied to raw spore count, which will equal how many spores there are per one cubic meter of air	
	Cladosporium	127	5,268 23.2		
Water Dam	Chaetomium	10	415 1.8	Total spores in this sample per one cubic meter of air.	
	Stachybotrys	3	124 0.5		
	Trichoderma				
	Ulocladium				
Total		547	22,690 100		

Please see attached sheet for additional information.

Limit of Detection @ 600x	44	Each spore counted by the analyst represents this many spores at one cubic meter, at the specified magnification
Limit of Detection @ 300x	13	

How to Read Our Reports

1. Notice that the major groups of spores are separated into Inside / Outside and Predominantly Outside , Water damage .

This is to make it easier to compare important groupings on the report.

2. The spore types, as well as the number identified is important. High levels of *Aspergillus* / *Penicillium*, and any level of the Water Damage organisms should be of concern.
3. The Outside, or Background sample is used to verify that the sampling equipment is operating correctly. The Outside sample can also be used to determine if the HVAC is operating correctly and as a comparison to the spores recovered inside.
4. The background is represented as particles per cubic meter. The higher the number of particles the more likely that the HVAC is not operating correctly, or there may be overcrowding in the room. High levels of particles can also be an indicator of poor air quality that can lead to respiratory irritation.
5. Skin fragments are common in the indoor air. Again, as the % of fragments rise, the more chance that it may be indicating poor circulation or overcrowding.
6. Particles and Fibers are identified on page 2 of the report. If there is something important to note about the fibers or if dust mite parts are observed, it will be noted here.
7. Hyphae are analogous to the stem of a plant. The spores arise from the hyphae, therefore, hyphae should be taken into account when looking at the total spore count, although they are not a part of that number. Hyphae can also give rise to new fungus growth in HVAC systems and carpeting.
8. The spore types are explained in the Organism section of the report.
9. The Limit of Detection is equal to one spore counted by the analyst divided by the inverse of the volume sampled and by the percent of the slide analyzed. If the detection limit is 41, it means that if there are 41 spores of that type in 1 cubic meter of air, that reading 30% of the slide at 600x (magnification) will result in a raw count of 1.

FUNGAL ORGANISM DESCRIPTIONS

Organism		Recovered From	Comments	Inside / Outside Spore Type	High Water Activity Indicator	Mycotoxins Produced	Health Risk Type	Found in Combinations with
Genus	Species							
<i>Acromonium</i>	species	soil, dead leaves, carpet, gypsum board	generally recovered in large numbers	Often recovered from water damaged inside wall board and carpeting	YES	NO	keratitis, mycetoma, aspergillosis	<i>Stachybotrys</i> , <i>Chaetomium</i> , <i>Trichoderma</i> , <i>Aspergillus</i> , <i>Penicillium</i>
<i>Alternaria</i>	<i>alternata</i>	carpet and air. Mostly on outside spores on plants and in soil	occurs in small amounts	OUT	YES	YES	phaeophy-mycetals, infections of bone, cutaneous tissue, ears, eyes, paranasal sinuses and urinary tract	<i>Bipolaris</i> , <i>Curvularia</i> , <i>Cladosporium</i> , <i>Pithomyces</i> , <i>Epicoccum</i> , <i>Drechslera</i> , <i>Exserohilum</i> , <i>Helminthosporium</i>
<i>Athrinium</i>	species	soil, forest litter, plant materials, decaying wood, decaying wood in crawl spaces	not often occurring inside, generally outside in moderate numbers. Often found on decaying wood in crawl spaces	OUT		NO	NA	<i>Curvularia</i> , <i>Bipolaris</i> , <i>Cladosporium</i> , <i>Pithomyces</i> , <i>Epicoccum</i>
Ascospores		wide variety of substrates. Plant, soil, air, cellulose materials, wood in crawl spaces	at certain times of year, found in large numbers outside	OUT	<i>Chaetomium</i> globosum, <i>Eurotium</i> species - YES. Most other genera and species, NO	dependent on genus or species recovered	Not generally involved with human disease.	<i>Basidiospores</i> (if outside), not generally recovered on laboratory media.
<i>Aspergillus</i>	<i>flavus</i>	common in seeds, nuts and cereals		BOTH	YES	YES	Respiratory pathogen. Second most often cause of <i>Aspergillosis</i>	<i>Aspergillus</i> sp., <i>Penicillium</i> sp.
<i>Aspergillus</i> (<i>Neosartorya</i>)	<i>fumigatus</i> (<i>fischeri</i>)	Air, Carpet, HVAC	Must be < 1. Not tolerated at any level inside.	NA	NA	YES	Respiratory pathogen. Most often cause of <i>Aspergillosis</i>	<i>Aspergillus versicolor</i> , <i>Aspergillus</i> <i>sydowii</i> , <i>Aspergillus niger</i> , <i>Penicillium</i> sp., <i>Cladosporium</i> sp., bacteria
<i>Aspergillus</i>	<i>niger</i>	food, indoor air		BOTH	YES	YES	aspergillosis	other <i>Aspergillus</i> , <i>Penicillium</i>
<i>Aspergillus</i>	<i>ochraceus</i>	coffee beans, spices, soil		BOTH	YES	YES	aspergillosis	<i>Aspergillus versicolor</i> , <i>Aspergillus</i> <i>sydowii</i> , <i>Aspergillus niger</i> , <i>Penicillium</i> sp., <i>Cladosporium</i> sp., bacteria

Organism	Recovered From		Comments	Indoor / Outside	High Water Activity	Mycotoxins	Health Risk	Found in
	Genus	Species						
Aspergillus		species	soil, food, air, carpet, HVAC	BOTH	Indicator YES several species	Produced YES several species	aspergillosis, allergy	Combination with Penicillium
Aspergillus		sydowii	soil, food, leather	BOTH	YES	NO	aspergillosis	other Aspergillus, Penicillium
Aspergillus		ustus	food, indoor environment	BOTH	YES	NO	aspergillosis	other Aspergillus, Penicillium
Aspergillus		versicolor	HVAC, insulation, carpet, air	NA	NA	YES	aspergillosis	Aspergillus sydowii, Aspergillus fumigatus, Aspergillus ustus
Aureobasidium		pululans	food, indoor, soil, leaf, seeds, fruit drinks, carpet, wet areas	INSIDE	YES	NO	corneal, peritoneal, cutaneous, pulmonary, systemic mycosis	yeasts Chaetomium, Stachybotrys, Trichoderma, Aspergillus, Penicillium
Basidiomycetes			soil, wood, cellulose materials, plywood when wet	OUTSIDE	YES	NO for air, YES for some mushrooms	NONE from air. Some mushrooms ingested can contain dangerous toxins	Ascomycetes, recovered on laboratory media as sterile mycelium, sometimes with "clamps" and/or arthrospores
Bispora		sp.	soil, wood	OUTSIDE	NO	NO	NA	Bipolaris, Curvularia, Cleodsporium, Pitomyces, Epicoccum, Drechslera, Exserohilum, Helminthosporium
Chrysomya		Species	soil	BOTH	NO	NO	NA	NA
Chaetomium		Species	Ascomycetes commonly associated with wet gypsum board. Present in soil	INSIDE	YES	NO	occasionally associated with infections of blood, brain, skin and nails	yeasts, Stachybotrys, Trichoderma, Aspergillus, Penicillium

Organism	Species	Recovered From	Comments	Inside / Outside	High Water Activity	Mycotoxins Produced	Health Risk	Found in
<i>Cladosporium</i>	<i>Cladosporioides</i>	plant material, soil, indoor air, carpet, HVAC	common spore in the indoor air. Indicates normal air when greater than <i>C. sphaerospermum</i>	BOTH	NO	NO	NA	<i>Alternaria, Curvularia, Phthomyces, Epicoccum, Drechslera, Exserohilum, Helminthosporium</i>
<i>Cladosporium</i>	<i>sphaerospermum</i>	plant material, soil, indoor air, carpet, HVAC	High amount in indoor air indicates poor air quality	BOTH	YES	NO	NA	<i>Cladosporium cladosporioides, Aspergillus sp., Penicillium sp.</i>
<i>Cladosporium</i>	species	plant material, soil, indoor air, carpet, HVAC		BOTH	NO	NO	NA	<i>Alternaria, Curvularia, Phthomyces, Epicoccum, Drechslera, Exserohilum, Helminthosporium</i>
<i>Curvularia</i>	species	soil, plant material, carpet, cellulos materials (paper)		BOTH			opportunistic pathogen of cornea and sinuses. Related to keratitis, endocarditis, mycetoma and pulmonary infection.	<i>Alternaria, Cladosporium species Phthomyces, Epicoccum, Drechslera, Exserohilum, Helminthosporium</i>
<i>Dicyna</i>	species	soil	related to wood rot	OUT	YES	NO	NA	<i>Chaetium, Stachybotrys, Trichoderma</i>
<i>Epicoccum</i>	<i>nigrum</i>	plants, soil, carpet, air, seeds	generally recovered in small numbers	primarily outside but is common inside, as well	NO	NO	None	<i>Alternaria, Curvularia, Cladosporium species, Phthomyces, Drechslera, Exserohilum, Helminthosporium</i>
<i>Eurotium Eurotium</i>	<i>amstelodami herbariorum</i>	soil, variety of food, indoor air		BOTH	NO Although, Xerophilic, often found in water damaged buildings.	NO	aspergillosis	<i>Aspergillus, Penicillium</i>
<i>Fusarium</i>	species	grains, soils, apples, potatoes, sugar beet, maize	few, when recovered	BOTH	NO	YES several species	keratitis, occasionally mycetoma, sinusitis, septic arthritis and onychomycosis. Contains highly toxic secondary metabolites when ingested in some feed grains.	<i>Aspergillus, Penicillium, Acromonium, Epicoccum</i>

Organism		Recovered From	Comments	Inside / Outside	High Water Activity	Mycotoxins	Health Risk	Found in
Genus	Species			Spore Type	Indicator	Produced	Type	Combination with
<i>Microsporium</i>	species	human and animal scalp, skin, nails	rarely recovered in air samples	IN	NO	NO	dermatophyte. Ringworm, infections of skin, scalp and nails	<i>Trichophyton, Epidermophyton</i>
<i>Mucor</i>	species	soil, wet damp materials	common bread mold	BOTH	YES	NO	Common cause of zygomycosis	<i>Rhizopus, Absidia, Cunninghamella, Syncephalastrum</i>
<i>Myxomycete</i>		plant pathogen	low, outside	OUTSIDE	NO	NO	NO	seen at various times of the years outside with a combination of other outside spores
<i>Nigrospora</i>	species	carpet, air, soil, plants		BOTH	NO	NO	None	<i>Alternaria, Cladosporium</i> species <i>Pithomyces, Epicoccum, Drechslera, Exserohilum, Helminthosporium</i>
<i>Paecilomyces</i>	<i>varitoli</i>	soil, compost	thermophilic	Both	YES	YES	sinusitis, eye infections	<i>Aspergillus, Penicillium</i>
<i>Penicillium</i>	sp.	soil, food	most common spore type found in the indoor air	Both	YES	YES several species of the approximately 200 known	Aspergillosis	<i>Aspergillus, Paecilomyces</i>
<i>Periconia</i>	species	plant pathogen	low, outside	OUTSIDE	NO	NO	NO	seen at various times of the years outside with a combination of other outside spores
<i>Phoma</i>	species	plant, soil, carrot, wood		BOTH	NO	NO	occasional agent of phaeothyphomycosis	found in combination with a variety of wood rot or plant pathogen fungi
<i>Pithomyces</i>	species	soil, air, plant material	at certain times of the year can be recovered in moderate amounts from common bread mold	OUTSIDE	NO	NO	NONE	<i>Alternaria, Cladosporium</i> species, <i>Epicoccum, Drechslera, Exserohilum, Helminthosporium</i>
<i>Rhizopus</i>	species	soil, damp wet materials		BOTH	YES	NO	Most common cause of zygomycosis	<i>Mucor, Absidia, Cunninghamella, Syncephalastrum</i>

Organism	Recovered From		Comments	Indoor / Outdoor Spore Type	High Water Activity Indicator	Mycotoxins Produced	Health Risk Type	Found in
	Species							
<i>Rhodothra</i>	species	wood, behind wall paper, cellulose products, carpets	pink, orange or red yeast, needs very high water activity levels	BOTH	YES	NO	NONE	Combination with <i>Sporobolomyces</i> , <i>Aureobasidium</i> , <i>Chaetomium</i> , <i>Stachybotrys</i>
<i>Scopulariopsis</i>	<i>brevicaulis</i>	soil, wood, food	has a characteristic ammoniacal odor	BOTH	NO	NO	Can infect toenail. May be a risk or subcutaneous or invasive infections of the immunocompromised	<i>Aspergillus</i> , <i>Penicillium</i>
<i>Spegazzinia</i>	species	soil, plants	very small numbers outside	OUTSIDE	NO	NO	NO	seen at various times of the year outside with a combination of other outside spores
<i>Sporothrix</i>	species	soil, wood, moss		BOTH			one species is known to cause human infections	
<i>Stachybotrys (Memnoniella)</i>	<i>chartarum (echinata)</i>	Most often actively growing on the backside of gypsum board. Carpet, HVAC provide sparse growth and sometimes only spores	Must be < 1. Not tolerated at any level inside, although individual spores are occasionally brought in on shoes from the soil.	Most often recovered inside	YES	YES	Neurotoxic. Toxins are damaging to organs but the spores do not grow at body temperature.	<i>Chaetomium</i> , <i>Trichoderma</i> , <i>Acremonium</i> , <i>Ulocladium</i> , <i>Aspergillus usui</i>
<i>Stemphylium</i>	species	soil, grass, wood, paper	in small numbers outside	OUTSIDE	NO	NO	NONE	<i>Alternaria</i> , <i>Cladosporium</i> species, <i>Epicothium</i> , <i>Drechslera</i> , <i>Exserohilum</i> , <i>Helminthosporium</i> , <i>Curvularia</i> , <i>Pitheomyces</i> , <i>Bipolaris</i>
<i>Tetraploa</i>	species	plant material	very small numbers outside	OUTSIDE	NO	NO	NO	seen at various times of the year outside with a combination of other outside spores
<i>Torula</i>	species	soil, plants	very small numbers outside	OUTSIDE	NO	NO	NO	seen at various times of the year outside with a combination of other outside spores

Organism		Recovered From	Comments	Inside / Outside Spore Type	High Water Activity Indicator	Mycotoxins Produced	Health Risk Type	Found in
Genus	Species							
<i>Trichoderma</i>	species	soil, plant material, carpet, cellulose materials (paper), decaying wood	clumps of green spores in large numbers	BOTH	YES	NO	<i>T. viride</i> is associated with aspergillosis. <i>T. harzianum</i> is associated with hypersensitivity pneumonitis	<i>Aspergillus</i> , <i>Penicillium</i> , <i>Chaetomium</i> , <i>Acremonium</i> , <i>Stachybotrys</i>
<i>Uredinospores</i> (Rusts)		plant pathogen	variable in numbers produced	OUTSIDE	NO	NO	NO	seen at various times of the years outside with a combination of other outside spores
<i>Wallemia</i>	<i>Sabii</i>	soil, variety of food, indoor air	produced in small numbers	BOTH	NO Although, Xerophilic, often found in water damaged buildings.	NO	NO	<i>Eurotium amstelodami</i> , <i>Aspergillus versicolor</i>
<i>Trichophyton</i>	species	human and animal scalp, skin, nails	rarely recovered in air samples	IN	NO	NO	dermatophyte. Ringworm, infections of skin, scalp and nails	<i>Microsporum</i> , <i>Epidermophyton</i>
<i>Ulocladium</i>	species	soil, grass, wood, paper	in small numbers outside, moderate inside	BOTH	YES	NO	NONE	<i>Aspergillus</i> , <i>Penicillium</i> , <i>Chaetomium</i> , <i>Acremonium</i> , <i>Stachybotrys</i>
<i>Ustilago</i>	species	plant pathogen		BOTH	NO	NO	NO	soil organisms

GLOSSARY

Actinomycetes	Class of filamentous bacteria associated with water damaged building materials. Strong earthy odor is present. Some genera are associated with skin and respiratory infections.
Aspergillosis	refers to any species of the genera <i>Aspergillus</i> and <i>Penicillium</i> that can infect the respiratory tract, sinuses, ear, eye, skin, mucous membranes and multiple systemic sites. The most common cause of aspergillosis is <i>Aspergillus fumigatus</i> and <i>Aspergillus flavus</i>
Ascomycetes (ascospores)	a class of fungi characterized by the presence of asci and spores, and having two distinct reproductive phases, a perfect stage and an imperfect stage . Outside, mainly found as plant pathogens.
Basidiomycetes (basidiospores)	the largest class of fungi the Basidiomycota has been divided into 2 classes, mushrooms , and the jelly , rust and smut fungi). Major contributor to wood rot.
Chromoblastomycosis	granulomatous inflammation with suppurative reaction, generally superficial and/or subcutaneous.
Conidiophore	also known as a " fruiting structure ". Presence of a specialized hyphal structure that serves as a stalk on which the conidia are formed. Indicative of current fungal growth.

Dermatophyte	a fungus belonging to the genus, <i>Trichophyton</i> , <i>Epidermophyton</i> or <i>Microsporum</i> , with the ability to obtain nutrients from keratin and infect skin, hair, or nails of humans or animals.
Deuteromycetes	The Fungi imperfecti or imperfect fungi, also known as Deuteromycota, are fungi which do not fit into the commonly established taxonomic classifications of fungi that are based on biological species concepts or morphological characteristics of sexual structures because their sexual form of reproduction has never been observed; hence the name "imperfect fungi."
ERMI Group 1	set of fungal organisms that EPA proposes are found in homes that may have health risks due to high levels of "water loving" fungi
Hyalohyphomycosis	saprophytic fungi that produce colorless hyphae
Hyphae	string-like structures that support the spores of fungi. Also called mycelia or mycelium
Keratitis	inflammation of the cornea of the eye
Mycetoma	a localized, chronic cutaneous or subcutaneous infection classically characterized by draining sinuses, granules and swelling.
Mycosis	disease caused by a fungus

Myxomycetes (slime mold)	A class of peculiar organisms, the slime molds, formerly regarded as animals (Mycetozoa), but now generally thought to be plants and often separated as a distinct phylum (Myxophyta); essentially equivalent to the division Myxomycota. They are found on damp earth and decaying vegetable matter, and consist of naked masses of protoplasm, often of considerable size, which creep very slowly over the surface and ingest solid food.
Onychomycosis	a fungal infection that affects the fingernails or toenails
Phaeohyphomycosis	saprophytic fungi that produce dark brown to black hyphae and infect the skin and may also be subcutaneous.
Sporotrichosis	Subcutaneous infection that may produce ulcerations in the skin.
Sterile Mycelium	hyphae that have an absence of spores or conidia
Subcutaneous	situated or occurring directly under the skin
Suppurative	producing puss
Uredinospores (Rusts)	are the thinner-walled spores of some fungi : (rusts and smuts), from which the basidium arises. Plant pathogens.
Xerophilic	Prefers dry places, growing under dry conditions
Zygomycosis	infection caused by opportunistic fungi of the zygomycete group (<i>Rhizopus</i> , <i>Mucor</i> , <i>Rhizomucor</i> , <i>Absidia</i> , <i>Sycephalastrum</i> , <i>Cunninghamella</i>)

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