



GULF COAST MOLD INSPECTIONS LLC TDLR MAT1282
(BLANE WILLIS) 2338 BRAYDEN MILLS LANE
LEAGUE CITY, TX 77573

Certificate of Mold Analysis

Prepared for:	GULF COAST MOLD INSPECTIONS LLC TDLR MAT1282
Phone Number:	(281) 451-4015
Fax Number:	
Project Name:	CHIP HOSEK
Test Location:	1227 BALL ST GALVESTON , TX 77550
Report Number:	1698672
Received Date:	December 20, 2023
Report Date:	December 20, 2023

Diana Sauri, Laboratory Director or other approved signatory

Currently there are no Federal regulations for evaluating potential health effects of fungal contamination and remediation. This information is subject to change as more information regarding fungal contaminants becomes available. For more information visit <http://www.epa.gov/mold> or www.nyc.gov/html/doh/html/epi/mold.shtml. This document was designed to follow currently known industry guidelines for the interpretation of microbial sampling, analysis, and remediation. Since interpretation of mold analysis reports is a scientific work in progress, it may as such be changed at any time without notice. The client is solely responsible for the use or interpretation. PRO-LAB/SSPTM Inc. makes no express or implied warranties as to health of a property from only the samples sent to their laboratory for analysis. The Client is hereby notified that due to the subjective nature of fungal analysis and the mold growth process, laboratory samples can and do change over time relative to the originally sampled material. PRO-LAB/SSPTM Inc. reserves the right to properly dispose of all samples after the testing of such samples are sufficiently completed or after a 7 day period, whichever is greater.



For more information please contact PRO-LAB at (954) 384-4446 or email info@prolabinc.com

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Test Address : CHIP HOSEK
1227 BALL ST
GALVESTON , TX 77550

ANALYSIS METHOD	6110 Air Direct Examination	6110 Air Direct Examination	6110 Air Direct Examination	6110 Air Direct Examination
LOCATION	FRONT DOOR/CONTROL	FORMAL DINING	CLOSET	HALLWAY
COC / LINE #	1698672 - 1	1698672 - 2	1698672 - 3	1698672 - 4
SAMPLE TYPE	PRO-10	PRO-10	PRO-10	PRO-10
VOLUME	150.00L	150.00L	150.00L	150.00L
SERIAL NUMBER	492785T	482143T	482131T	482299T
COLLECTION DATE	Dec 18, 2023	Dec 18, 2023	Dec 18, 2023	Dec 18, 2023
ANALYSIS DATE	Dec 20, 2023	Dec 20, 2023	Dec 20, 2023	Dec 20, 2023
CONCLUSION	CONTROL	NOT ELEVATED	NOT ELEVATED	NOT ELEVATED

IDENTIFICATION	Raw Count	Spores per m ³	Percent of Total	Raw Count	Spores per m ³	Percent of Total	Raw Count	Spores per m ³	Percent of Total	Raw Count	Spores per m ³	Percent of Total
Chaetomium	4	27	2									
Cladosporium	48	320	28	12	80	23	8	53	50	8	53	22
Curvularia	4	27	2									
Hyphae	8	53	5	4	27	8						
Other Ascospores	60	400	35	12	80	23				12	80	33
Other Basidiospores	8	53	5	8	53	15				4	27	11
Penicillium/Aspergillus	40	270	23	16	110	31	8	53	50	12	80	33
TOTAL SPORES	172	1,150	100	52	350	100	16	106	100	36	240	100
MINIMUM DETECTION LIMIT*	4	27		4	27		4	27		4	27	
BACKGROUND DEBRIS	Light			Light			Light			Light		
OBSERVATIONS & COMMENTS												

Background debris qualitatively estimates the amount of particles that are not pollen or spores and directly affects the accuracy of the spore counts. The categories of Light, Moderate, Heavy and Too Heavy for Accurate Count, are used to indicate the amount of deposited debris. Light (None to up to 25% obstruction); Medium (26% to up to 75% obstruction); Heavy (76% to up to 90% obstruction); Too Heavy (Greater than 90% obstruction). Increasing amounts of debris will obscure small spores and can prevent spores from impacting onto the slide. The actual number of spores present in the sample is likely higher than reported if the debris estimate is 'Heavy' or 'Too Heavy for Accurate Count'. All calculations are rounded to two significant figures and therefore, the total percentage of spore numbers may not equal 100%. The effect of the results relate only to the items tested. The methods used in this analysis have been validated and is fit for the intended use. R "version" indicated after the lab ID# indicates a sample with amended data. PRO-LAB/SSPTM Inc. does not perform any sample collection. The information is supplied by the customer and can affect the validity of results. The results apply to the sample as received.

* Minimum Detection Limit. Based on the volume of air sampled, this is the lowest number of spores that can be detected and is an estimate of the lowest concentration of spores that can be read in the sample. NA = Not Applicable.

Spores that were observed from the samples submitted are listed on this report. If a spore is not listed on this report it was not observed in the samples submitted.

Interpretation Guidelines: A determination is added to the report to help users interpret the mold analysis results. A mold report is only one aspect of an indoor air quality investigation. The most important aspect of mold growth in a living space is the availability of water. Without a source of water, mold generally will not become a problem in buildings. These determinations are in no way meant to imply any health outcomes or financial decisions based solely on this report. For questions relating to medical conditions you should consult an occupational or environmental health physician or professional.

CONTROL is a baseline sample showing what the spore count and diversity is at the time of sampling. The control sample(s) is usually collected outside of the structure being tested and used to determine if this sample(s) is similar in diversity and abundance to the inside sample(s).

ELEVATED means that the amount and/or diversity of spores, as compared to the control sample(s), and other samples in our database, are higher than expected. This can indicate that fungi have grown because of a water leak or water intrusion. Fungi that are considered to be indicators of water damage include, but are not limited to: *Chaetomium*, *Fusarium*, *Memnoniella*, *Stachybotrys*, *Scopulariopsis*, *Ulocladium*.

NOT ELEVATED means that the amount and/or the diversity of spores, as compared to the control sample and other samples in our database, are lower than expected and may indicate no problematic fungal growth. **UNUSUAL** means that the presence of current or former growth was observed in the analyzed sample. An abundance of spores are present, and/or growth structures including hyphae and/or fruiting bodies are present and associated with one or more of the types of mold/fungi identified in the analyzed sample.

NORMAL means that no presence of current or former growth was observed in the analyzed sample. If spores are recorded they are normally what is in the air and have settled on the surface(s) tested.

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ANALYSIS METHOD	6110 Air Direct Examination	6110 Air Direct Examination	INTENTIONALLY BLANK	INTENTIONALLY BLANK
LOCATION	HALL BATH	MASTER BATH		
COC / LINE #	1698672 - 5	1698672 - 6		
SAMPLE TYPE	PRO-10	PRO-10		
VOLUME	150.00L	150.00L		
SERIAL NUMBER	492791T	482137T		
COLLECTION DATE	Dec 18, 2023	Dec 18, 2023		
ANALYSIS DATE	Dec 20, 2023	Dec 20, 2023		
CONCLUSION	NOT ELEVATED	NOT ELEVATED		

IDENTIFICATION	Raw Count	Spores per m ³	Percent of Total	Raw Count	Spores per m ³	Percent of Total				
Chaetomium				4	27	8				
Cladosporium	4	27	11	8	53	16				
Curvularia	4	27	11							
Hyphae	4	27	11	4	27	8				
Other Ascospores	12	80	33	12	80	25				
Other Basidiospores	4	27	11	4	27	8				
Penicillium/Aspergillus	8	53	22	16	110	34				
TOTAL SPORES	36	241	100	48	324	100				
MINIMUM DETECTION LIMIT*	4	27		4	27					
BACKGROUND DEBRIS	Light									
OBSERVATIONS & COMMENTS										

Background debris qualitatively estimates the amount of particles that are not pollen or spores and directly affects the accuracy of the spore counts. The categories of Light, Moderate, Heavy and Too Heavy for Accurate Count, are used to indicate the amount of deposited debris. Light (None to up to 25% obstruction); Medium (26% to up to 75% obstruction); Heavy (76% to up to 90% obstruction); Too Heavy (Greater than 90% obstruction). Increasing amounts of debris will obscure small spores and can prevent spores from impacting onto the slide. The actual number of spores present in the sample is likely higher than reported if the debris estimate is 'Heavy' or 'Too Heavy for Accurate Count'. All calculations are rounded to two significant figures and therefore, the total percentage of spore numbers may not equal 100%. The effect of the results relate only to the items tested. The methods used in this analysis have been validated and is fit for the intended use. R "version" indicated after the lab ID# indicates a sample with amended data. PRO-LAB/SSPTM Inc. does not perform any sample collection. The information is supplied by the customer and can affect the validity of results. The results apply to the sample as received.

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CONTROL is a baseline sample showing what the spore count and diversity is at the time of sampling. The control sample(s) is usually collected outside of the structure being tested and used to determine if this sample(s) is similar in diversity and abundance to the inside sample(s).

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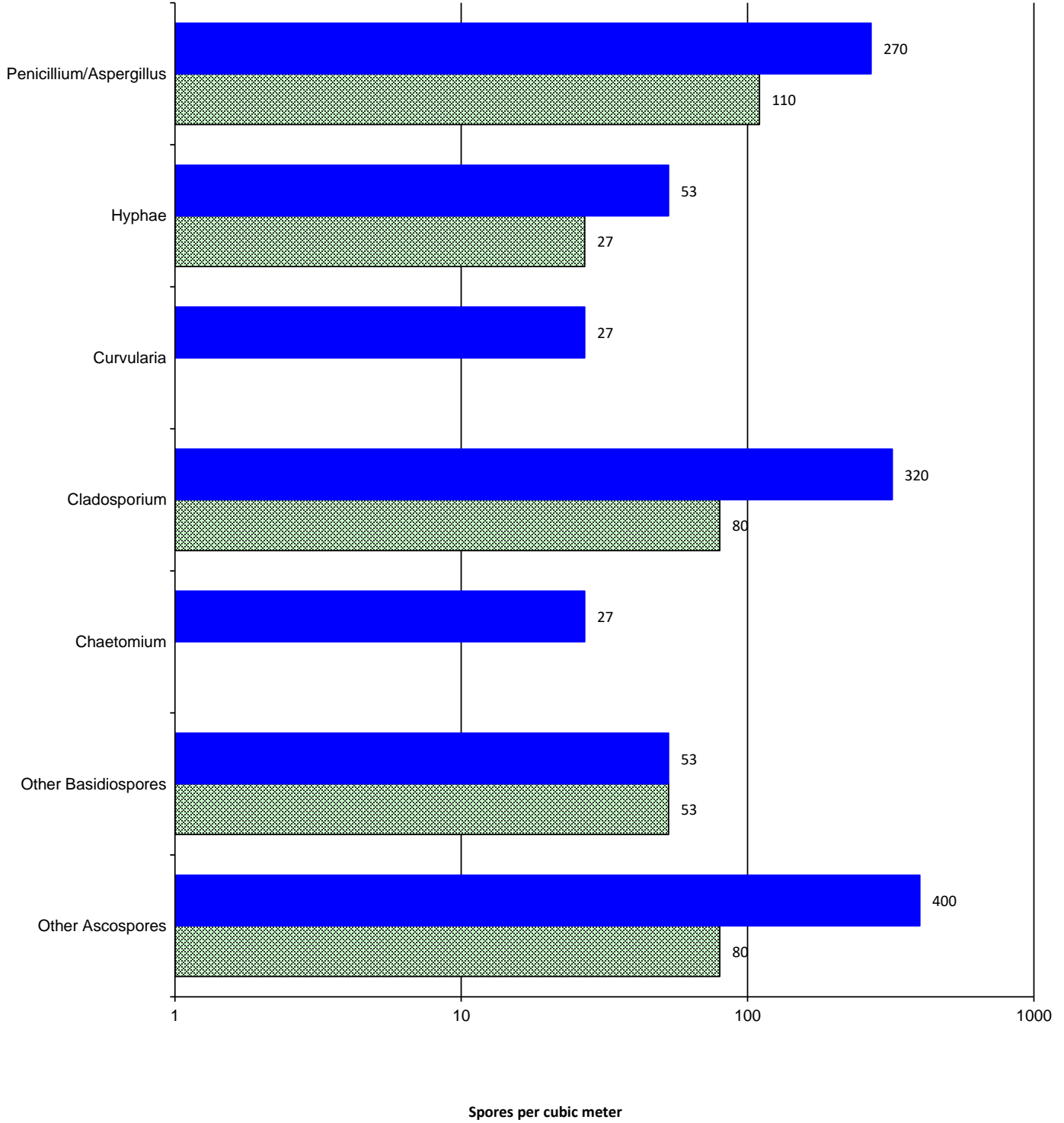
NOT ELEVATED means that the amount and/or the diversity of spores, as compared to the control sample and other samples in our database, are lower than expected and may indicate no problematic fungal growth. **UNUSUAL** means that the presence of current or former growth was observed in the analyzed sample. An abundance of spores are present, and/or growth structures including hyphae and/or fruiting bodies are present and associated with one or more of the types of mold/fungi identified in the analyzed sample.

NORMAL means that no presence of current or former growth was observed in the analyzed sample. If spores are recorded they are normally what is in the air and have settled on the surface(s) tested.



Chain of Custody # 1698672

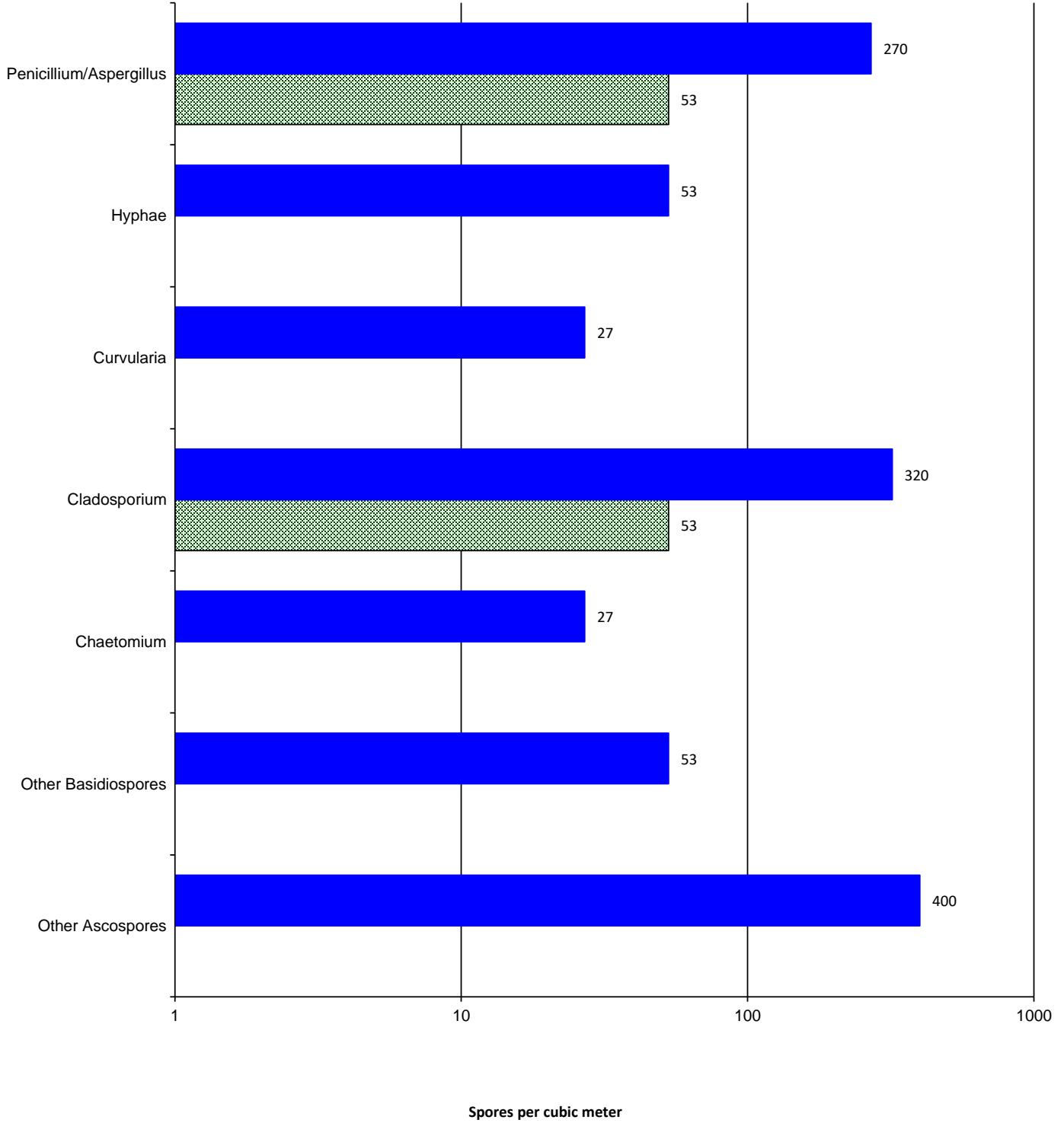
Formal Dining
Front Door/Control





Chain of Custody # 1698672

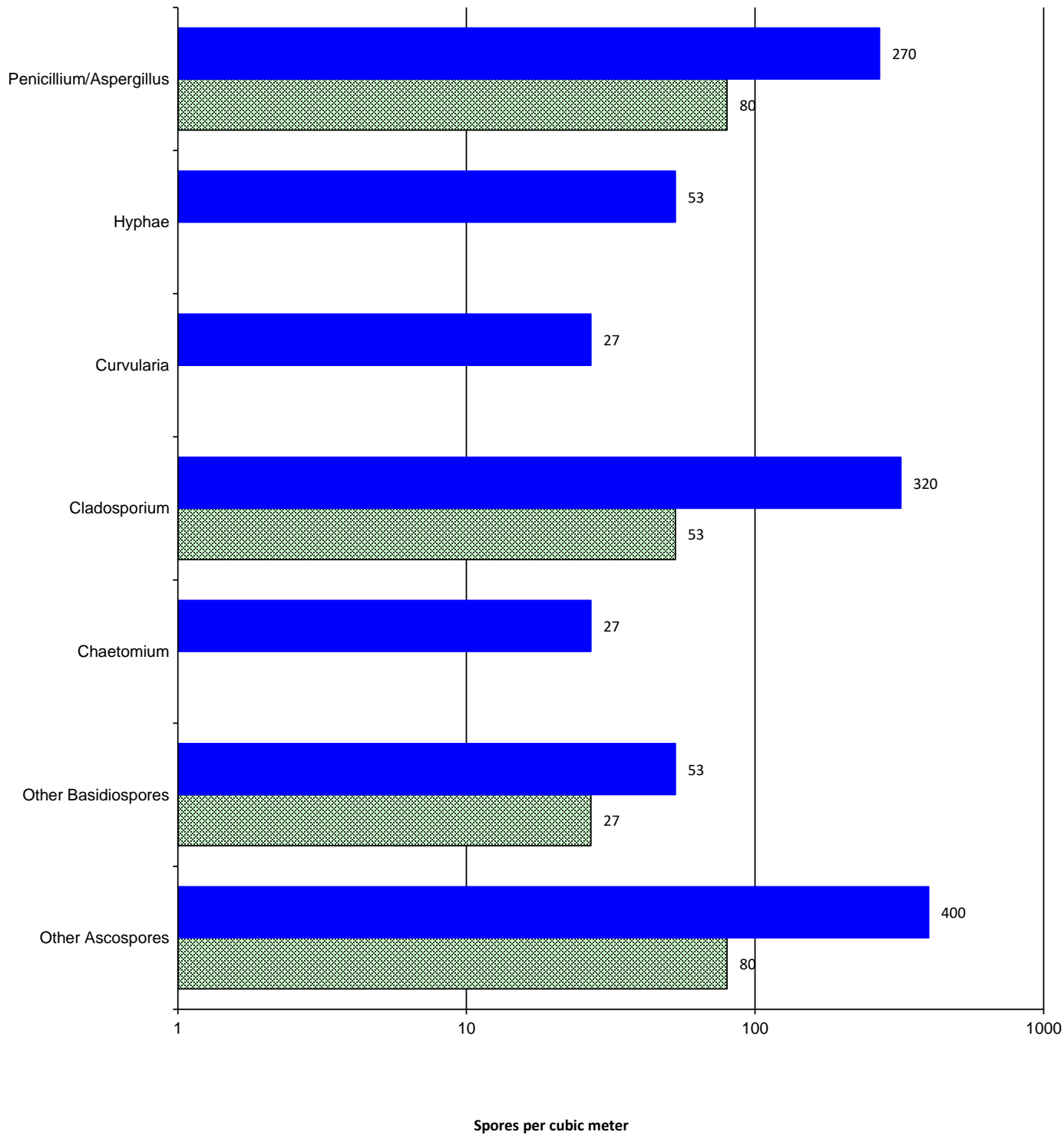
▨ Closet
■ Front Door/Control





Chain of Custody # 1698672

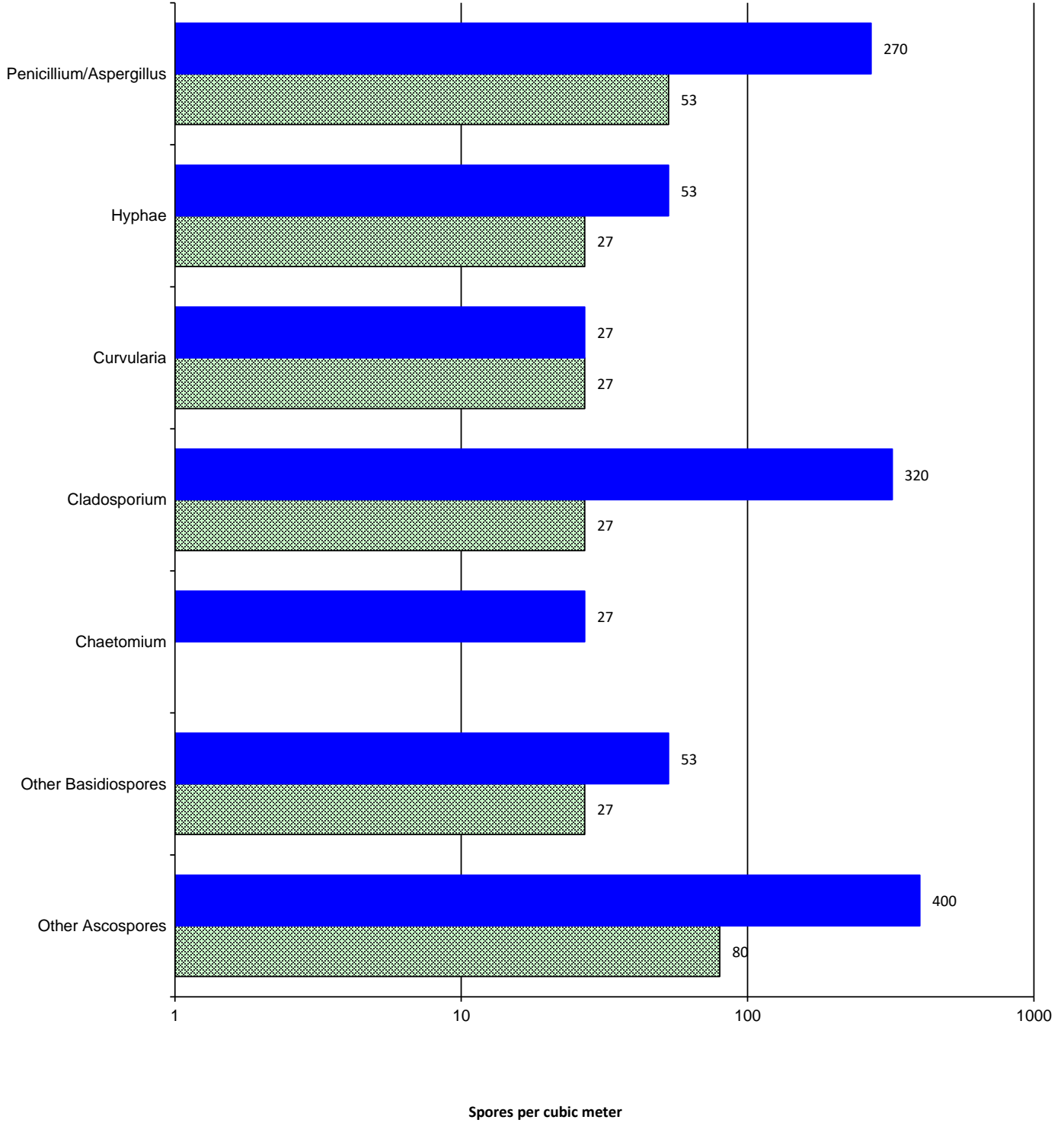
▨ Hallway
■ Front Door/Control





Chain of Custody # 1698672

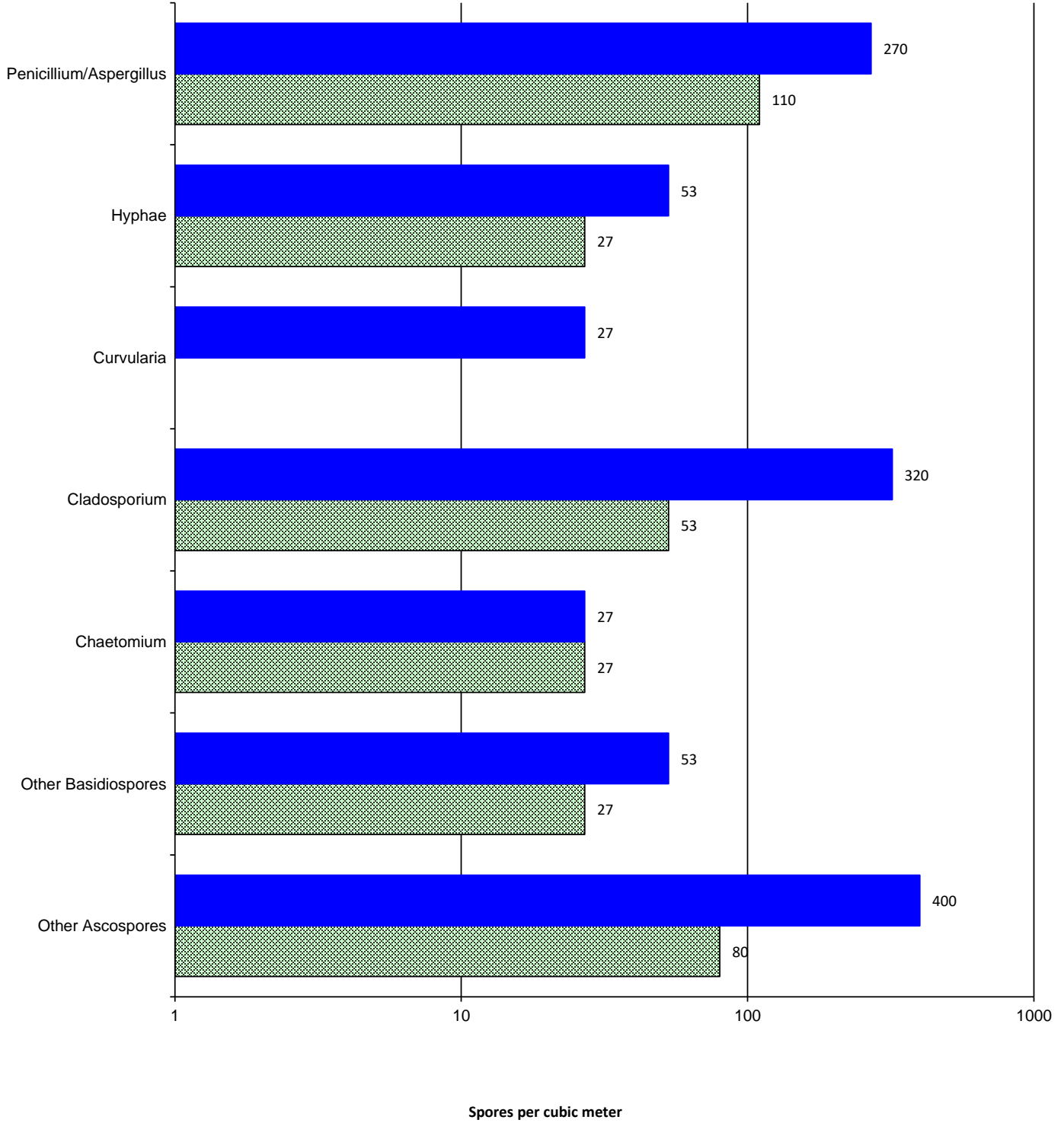
Hall Bath
Front Door/Control





Chain of Custody # 1698672

Master Bath
Front Door/Control



Identification	Outdoor Habitat	Indoor Habitat	Possible Allergic Potential Not an opinion or interpretation	Comments
Chaetomium	Growing on dung, dead leaves, wood.	Cellulose substrates, especially wallboard, cardboard and wood. Not normally seen growing indoors unless the building material has been wetted. Unusual / Not Normal to be growing indoors.	Type I (hay fever and asthma) allergies.	Chaetomium is a water-indicating mold. Spores of this type of mold should not be observed in significantly higher numbers in the air above background/control. If growth and/or significantly higher than background/control spore numbers are reported, corrective action should be considered to reduce the source of water, moisture levels and/or spore numbers in the living space.
Cladosporium	The most common spore type reported in the air worldwide. Found on dead and dying plant litter, and soil.	Commonly found on wood and wallboard. Commonly grows on window sills, textiles and foods.	Type I (hay fever and asthma), Type III (hypersensitivity pneumonitis) allergies.	A very common and important allergen source both outdoors and indoors.
Curvularia	Commonly found everywhere on soil and plant debris.	Capable of growing on many cellulolytic substrates like wallboard and wood.	Type I (hay fever and asthma) and common cause of allergenic sinusitis.	
Hyphae	Common everywhere.	All substrates.	None known.	Hyphae are the "root-like" food absorption strands common to nearly all fungi. They sometimes can become airborne.
Ascospores	Common everywhere. Constitutes a large part of the airspora outside. Can reach very high numbers in the air outside during the spring and summer. Can increase in numbers during and after rainfalls.	Very few of this group grow inside. The notable exception is Chaetomium, Ascotricha and Peziza.	Little known for most of this group of fungi. Dependent on the type (see Chaetomium and Ascotricha).	
Basidiospores	Commonly found everywhere, especially in the late summer and fall. These spores are from Mushrooms.	Mushrooms are not normally found growing indoors, but can grow on wet lumber, especially in crawlspaces. Sometimes mushrooms can be seen growing in flower pots indoors.	Some allergenicity reported. Type I (hay fever, asthma) and Type III (hypersensitivity pneumonitis).	Among the group of Mushrooms (Basidiomycetes) are dry rot fungi Serpula and Poria that are particularly destructive to buildings.
Penicillium/Aspergillus	Common everywhere. Normally found in the air in small amounts in outdoor air. Grows on nearly everything.	Wetted wallboard, wood, food, leather, etc. Able to grow on many substrates indoors.	Type I (hay fever and asthma) allergies and Type III (hypersensitivity pneumonitis) allergies.	This is a combination group of Penicillium and Aspergillus and is used when only the spores are seen. The spores are so similar that they cannot be reliably separated into their respective genera.



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Indoor Air Quality Testing

Introduction

The fungi are a large group of organisms that include mold. In nature, the fungi and mold help breakdown and recycle nutrients in the environment. Mold are the most common type of fungi that grow indoors. Mold are microscopic organisms that live on plants, in the soil, and on animals, in fact almost anywhere food and moisture are available. Mold is everywhere present in the outdoor and normal indoor environments. It is in the air and on surfaces as settled dust. Exposure to mold is inevitable in everyday life. Thus, exposure to mold is considered part of a normal activity for most people. Only environments for which extraordinary preparations have been taken don't have mold present in the air or on surfaces.

Understanding Mold

Under the right conditions (moisture, a food source, and time) mold will grow, multiply and produce spores. Mold grows throughout nature as well as the built environment. Mold reproduces by microscopic cells called "spores" that can be spread easily through the air. Mold spores are always present in the indoor and outdoor air. There are mold that can grow on any organic substrate including wood, paper, carpet, food, ceiling tiles, dried fish, carpet, or any surface where dust has accumulated. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem remains undiscovered or un-addressed. There is no practical way to eliminate all mold spores in the indoor environment. The way to control indoor mold growth is to control the amount of moisture available to the mold.

Mold growth can become a problem in your home or office where there is sufficient moisture and the right foodstuff is available. The key to preventing mold growth is to prevent all moisture problems. Of course, hidden mold can grow when there is water available behind walls, sinks, floors, etc. Indications of hidden moisture problems are discoloration of ceiling or walls, warped floors or condensation on the windows or walls.

Controlling Moisture

The most critical step in solving a mold problem is to accurately identify and fix the source(s) of moisture that allowed the growth to occur. In order to prevent mold from growing, it is important that water damaged areas be dried within a 24-48 hour period. If a small amount of mold is present in the home, the mold can be cleaned up with a mild detergent and the excess water or moisture removed. It is not necessary to try and kill the mold or its spores. You can carefully remove the moldy materials if necessary. There are many common sources of excess moisture that can contribute to indoor mold growth. Some of the primary means of moisture entry into homes and buildings are water leakage (such as roof or plumbing leaks), vapor migration, capillary movement, air infiltration, humidifier use, and inadequate venting of kitchen and bath humidity. The key to controlling moisture is to generally reduce indoor humidity within 35% - 60% (depending what climate you live in) and fix all leaks whatever their cause.

Mold Growth Sources

If the source of moisture is not easily detected or you have a hidden water leak, mold testing can be helpful. Often a roof leak or a plumbing leak can be identified as the source. The difficulty arises when there is an odor present or when an occupant shows signs of mold exposure but no visible mold can be seen. Excess water intrusion can also lead to dry rot of lumber and cause a serious structural defect in buildings.

Health Related Risks

Based on the Institute of Medicine and the National Academy of Sciences, dampness and mold in homes is associated with increases in several adverse health effects including cough, upper respiratory symptoms, wheeze, and exacerbation of asthma. Mold and fungi contain many known allergens and toxins that can adversely affect your health. Scientific evidence suggests that the disease of asthma may be more prevalent in damp affected buildings. Dampness and mold in homes, office buildings and schools represent a public health problem. The Institute of Medicine concluded, "When microbial contamination is found, it should be eliminated by means that not only limit the possibility of recurrence but also limit exposure of occupants and persons conducting the remediation".



Mold Sampling Methods

The goal of sampling is to learn about the levels of mold growth and amplification in buildings. There are no EPA or OSHA standards for levels of fungi and mold in indoor environments. There are also no standard collection methods. However, several generally accepted collection methods are available to inspectors to study mold (and bacteria) in indoor environments. Comparison with reference samples can be a useful approach. Reference samples are usually taken outdoors and sometimes samples can be taken from “non-complaint” areas. In general, indoor fungal concentrations should be similar to or lower than outdoor levels. High levels of mold only found inside buildings often suggest indoor amplification of the fungi. Furthermore, the detection of water-indicating fungi, even at low levels, may require further evaluation. There are several types of testing methods that can detect the presence of mold. They can be used to find mold spores that are suspended in air, in settled dust, or mold growing on surfaces of building materials and furnishings. There are different methods that can identify types of live mold and dead mold in a sampled environment. Mold spores can be allergenic and toxic even when dead.

All sampled material obtained in the laboratory is analyzed using modern microscopic methods, standard and innovative mycological techniques, analyzed at 630 – 1,000 times magnification.

Testing for mold with an accredited laboratory is the best way to determine if you have mold and what type of mold it is.

Sampling Methods

Surface sampling can be useful for differentiating between mold growth and stains of various kinds. This type of sampling is used to identify the type of mold growth that may be present and help investigate water intrusion. Surface sampling can help the interpretation of building inspections when used correctly. The following are the different types of surface samples that are commonly used to perform a direct examination of a specific location. Spore counts per area are not normally useful.

Tape (or tape-lift)

These samples are collected using clear adhesive tape or adhesive slide for microscopic examination of suspect stains, settled dust and spores. Tape lifts are an excellent, non-destructive method of sampling. The laboratory is usually able to determine if there is current of former mold growth or if only normally settled spores were sampled.

Bulk

This is a destructive test of materials (e.g., settled dust, sections of wallboard, pieces of duct lining, carpet segments, return-air filters, etc.) to determine if they contain or show mold growth. Bulk sampling collects a portion of material small enough to be transported conveniently and handled easily in the laboratory while still representing the material being sampled. A representative sample is taken from the bulk sample and can be cultured for species identification or analyzed using direct microscopy for genus identification. The laboratory is usually able to determine if there is current of former mold growth or if only normally settled spores were sampled.

Swab

A sterile cotton or synthetic fiber-tipped swab is used to test an area of suspected mold growth. Samples obtained using this method can be cultured for species identification or analyzed using direct microscopy for genus identification. The laboratory is usually able to determine if there is current of former mold growth or if only normally settled spores were sampled. Identified spores are generally reported as “present/absent”.

Carpet (filter-type) Cassette

A carpet cassette is used with a portable air pump (flow rate usually doesn't matter) to collect mold, pollen and other particulates. Samples obtained using this method can be cultured for species identification or analyzed using direct microscopy for genus identification. This method is usually used to determine a presence or absence of water-indicating mold in a carpet. The laboratory is usually able to determine if there is current of former mold growth or if only normally settled spores were sampled.

Air Cassette

Air samples are possibly the most common type of environmental sample that investigators collect to study bioaerosols (mold, pollen, particulates). The physics of removing particles from the air and the general principles of good sample collection apply to all airborne materials, whether biological or other origin. Therefore, many of the basic principles investigators use to identify and quantify other airborne particulate matter can be adapted to bioaerosol sampling. Common to all aerosol samplers is consideration of collection efficiency. The following are the two most common forms of air sampling methods.

Data Interpretation

Information (data) on mold in buildings can consist of the simple observation of fungal growth on a wall, analytical measurements from hundreds of environmental samples, or the results of a survey of building occupants with and without particular building-related conditions. Data interpretation is the process whereby investigators make decisions on (a) the relevance to human exposure of environmental observations and measurements, (b) the strength of associations between exposure and health status, and (c) the probability of current or future risks. These interpretation steps are followed by decisions on what measures can be taken to interrupt exposure and prevent future problems.

Remediation of Mold

Prevention of mold growth indoors is only possible if the factors that allow it to grow are identified and controlled. When prevention has failed and visible growth has occurred in a home or building, remediation and/or restoration may be required. The extent of the mold growth will determine the scope of the remediation required. The goal of remediation is to remove or clean mold-damaged material using work practices that protect occupants by controlling the dispersion of mold from the work area and protect the workers from exposure to mold. You should consult a professional when contemplating fixing a large area of mold growth. Generally, remediation requires (a) removal of porous materials showing extensive microbial growth, (b) physical removal of surface microbial growth on non-porous materials to typical background levels, and (c) reduction of moisture to levels that do not support microbial growth. Identification of the conditions that contributed to microbial proliferation in a home or building is the most important step in remediation. No effective control strategy can be implemented without a clear understanding of the events or building dynamics responsible for microbial growth. Following the completion of the remediation process, mold testing should be performed to obtain clearance.

Symptoms of Mold Exposure

The most common symptoms of mold exposure are runny nose, eye irritation, cough, congestion, and aggravation of asthma. Individuals with persistent health problems that appear to be related to mold or other types of air quality contaminant exposure should see their physicians for a referral to specialists who are trained in occupational/environmental medicine or related specialties and are knowledgeable about these types of exposures. Decisions about removing individuals from an affected area must be based on the results of such medical evaluation. Mold is naturally present in outdoor environments and we share the same air between the indoor and outdoor, it is impossible to eliminate all mold spores indoors.

Ten Things You Should Know About Mold

- 1) Potential health effects and symptoms associated with mold exposures include allergic reactions, asthma, and other respiratory problems.
- 2) There is no practical way to completely eliminate mold and mold spores in the indoor environment. The way to control indoor mold growth is to control moisture.
- 3) If mold is a problem in your home or building, you must clean up the mold and eliminate sources of moisture.
- 4) To prevent mold growth any source of a water problem or leak must be repaired.
- 5) Indoor humidity must be reduced (generally below 60%) to reduce the chances of mold growth by: adequately venting bathrooms, dryers, and other moisture-generating sources to the outside; using air conditioners and de-humidifiers; increasing ventilation; and using exhaust fans whenever cooking, dishwashing and cleaning.
- 6) Clean and dry any damp or wet building materials and furnishings within 24-48 hours to prevent mold growth.
- 7) Clean mold off of hard surfaces with water and detergent and dry completely.
- 8) Prevent condensation: reduce the potential for condensation on cold surfaces (e.g., windows, piping, exterior walls, roof, or floors) by adding insulation.
- 9) In areas where there is a perpetual moisture problem on the floor, do not install carpeting
- 10) Mold can be found almost anywhere. Mold can grow on wood, paper, carpet, foods; almost anything can support some mold growth provided there is moisture, time to grow and food to eat.



References & Resources

- Bioaerosols: Assessment and Control, Janet Macher, Sc.D., M.P.H., Editor. 1999. ACGIH, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634.
- Health Implications of Fungi in Indoor Environments, Edited by R.A. Samson. 1994. Elsevier Science, P.O. Box 945, Madison Square Station, New York, NY 10159-0945.
- Damp Indoor Spaces and Health, Institute of Medicine of the National Academies, Washington, DC, 2004
- Field Guide for the Determination of Biological Contaminants in Environmental Samples, 2nd Edition, Edited by L-L. Hung, et al. AIHA, Fairfax, VA, 2005.
- Recognition, Evaluation, and Control of Indoor Mold, Edited by B. Prezant, et al. AIHA, Fairfax, VA, 2008.

Useful Websites

- www.acgih.org/resources/links.htm
American Conference of Governmental Industrial Hygienists - information on Indoor Air Quality and useful links
- www.cal-iaq.org
California Indoor Air Quality Program - California Indoor Air Quality resources and useful links
- www.health.state.ny.us/environmental/indoors/air/mold.htm
New York State Department of Health - New York state recommendations for IAQ, indoor mold inspections, remediation, and prevention
- <http://www.nyc.gov/html/doh/html/epi/moldrpt1.shtml>
Guidelines for Assessment and Remediation of Fungi in Indoor Environments – a good reference for mold clean up and removal
- orf.od.nih.gov/PoliciesAndGuidelines/ORFPolicies/MoldPrevPolicy.htm
National Institutes of Health - information mold prevention and remediation
- <http://www.niehs.nih.gov/health/topics/agents/mold/index.cfm>
National Institute of Environmental Health Sciences - information on mold
- www.epa.gov/mold/
United States Environmental Protection Agency website on mold and moisture
- www.aaaai.org/nab/index.cfm?p=faq
American Academy of Allergy, Asthma, and Immunology – information on mold and allergies and outdoor allergens
- <http://www.aanma.org/?s=mold>
Allergy & Asthma Network – information for homes about allergies and asthma
- <http://www.homeenergyresourcecenter.org>
Minnesota Department of Commerce Energy Information Center – good information on moisture control in homes
- <http://eetd.lbl.gov/ie/>
Governmental Indoor Environment Department – good information on indoor health, comfort and energy efficiency in buildings
- <http://www.osha.gov/dts/shib/shib101003.html>
Occupational US Department of Labor (OSHA) - A Brief Guide to Mold in the Workplace

Cadmus Environmental

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Houston, Texas 77077

713.252.8549

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Mold Protocol Report



Client: John Greco

ADDRESS: 1227 Ball/Ave H

Email: jgreco@wba-law.com

DATE: December 12, 2023

Prepared by
Wendy V. Cadmus

Handwritten signature of Wendy V. Cadmus

Texas Mold Assessment Consultant
License #MAC1055

Handwritten signature of Wendy V. Cadmus

Background Information

The client requested this inspection as part of his pre-purchase due diligence.

This inspection was conducted in accordance with state regulations as well as current industry guidelines and practices. This assessment is not a certificate, assurance, warranty or guarantee of future conditions or performance, but is an assessment of the conditions present and detected on the date of this inspection.

Please note that while this inspection may point to possible moisture source(s), ultimately the identification and elimination of all moisture sources triggering mold growth is the responsibility of the client and/or property owner with the assistance of their contractors whether they are plumbing, roofing or HVAC, etc. It is critical that the moisture source be eliminated otherwise mold growth can return.

Inspection:

Hall Ceiling: The general home inspector observed an area of potential water damage and possible active moisture elevation on the hallway ceiling below the access door leading to the flat roof facing the back of the house. An air sample was taken in the impacted space.

- Laboratory analysis of this air sample did not detect hidden mold growth.
- It needs to be determined if there is an active leak in this area.

Dining Room: The seller reported that a leak appeared in the dining room ceiling in the area below the front flat roof. They had the roof replaced and have not experienced any further leak issues.

I noted what appeared to be previous water damage in the area where the leak appeared. I stood on a ladder and tapped on the ceiling in this area with a pole. Then I ran an air sample from the top of the 6 foot ladder.

- Laboratory analysis of this air sample detected elevated levels of Stachybotrys, Chaetomium and Aspergillus/Penicillium, which indicates that there is hidden mold growth here.
- Please refer to the diagram later in this report for details on materials removal and cleaning.

Wendy V. Cadman

Hall Bathroom Sink Cabinet:

Mold spotting was observed inside the sink cabinet for the hall bathroom, which suggests that there is a moisture issue behind the wall. The primary bathroom shower appears to back up to this sink cabinet so the moisture issue could be from plumbing for this sink cabinet or the primary shower.

- Laboratory analysis of this air sample detected a high elevation of airborne *Aspergillus/*Penicillium, which indicates that there is hidden mold growth here beyond the visible surface spotting inside this cabinet.
- Please refer to the diagram later in this report for details on materials removal and cleaning.



Surface mold growth was observed inside the hall bathroom sink cabinet. A high elevation of airborne *Aspergillus/*Penicillium was detected in an air sample taken inside this cabinet.



Primary Bathroom Cabinet:

Some mold spotting was observed inside some drawers and a cabinet between the two sink cabinets in the primary bathroom. An air sample was taken inside the cabinet with mold spotting.

- Laboratory analysis of this air sample detected a moderate elevation of airborne mold spores were detected.
- The visible spotting in this area and the airborne mold spores suggests that there is a moisture issue behind this portion of the cabinets. Please refer to the diagram later in this report for recommendations.



Orange mold spotting (right photo) was observed inside the lower drawers and cabinet between the two sink cabinets (above photo).

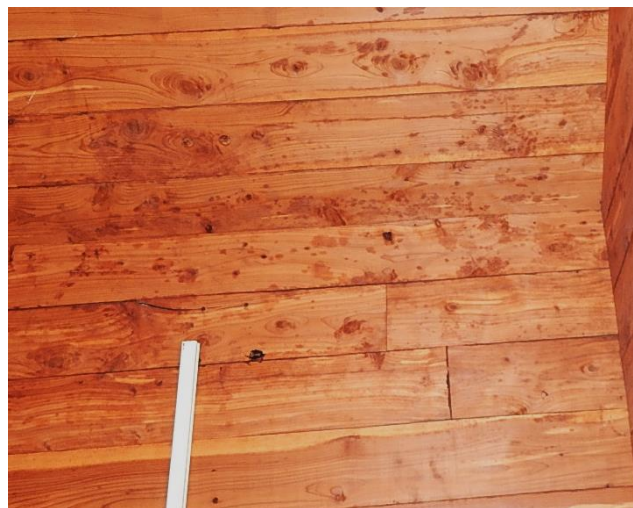


Stairs Closet and Hall Cabinet: Orange mold spotting was observed on wood surfaces in the first hall cabinet beside the primary bedroom and in the stairs closet. An air sample was taken inside the stairs closet.

- Laboratory analysis of this air sample detected the presence of 4 raw Chaetomium spores, which is above the typical tolerance level of 2 raw spores or lower.
- I recommend cleaning the surfaces in the stairs closet and first cabinet with a fungicide, such as Mold Control by Concrobium. I also recommend wiping down and/or vacuuming all dust/debris from the closet.



Orange mold spotting (right photo) was observed on a hall cabinet shelf (above right photo). The photos below show orange mold spotting on the wood (below right) and some exposed sheetrock (below left) in the stairs closet.



Lab Results

Air Samples	
Location	Results
Exterior	Baseline
Hall Ceiling	Normal – No Hidden Mold Detected
Dining Room – near Ceiling	Hidden Mold Detected: Aspergillus/Penicillium: 910 spores/m³ Stachybotrys and Chaetomium: 3 raw spores**
Hall Bathroom Sink Cabinet	Elevated Levels of Airborne Mold Spores: Aspergillus/Penicillium: 24,000 spores/m³ Chaetomium: 4 raw spores**
Primary Bathroom Cabinet	Moderate Elevation Detected: Aspergillus/Penicillium: 960 spores/m³
Stairway Closet	Moderate Elevation: Chaetomium: 4 raw spores**

****Stachybotrys and Chaetomium both have more toxigenic potential, so their levels are reported in raw spores rather than spores/m³. The tolerance levels for these particular molds are:**

Chaetomium: 2 raw spores or fewer
Stachybotrys: 0 raw spores

Wendy V. Cadman

Client: Cadmus Environmental
 Contact: Wendy Cadmus
 Project: Ball/Avenue H
 Date of Sampling: 12-12-2023
 Date of Receipt: 12-12-2023
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 Eurofins EMLab P & K
 6110 West 34th Street, Houston, TX 77092
 713-290-0221 Fax

Summary of Sample Analysis Results

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

Air Sample Summary:

The MoldSCORE™ was in the HIGH range for the following area(s): ST3. A high MoldSCORE™ indicates a high likelihood of mold growth in the area tested at the time of the inspection. If mold growth is in fact present, it should be cleaned or physically removed using appropriate controls and precautions by a trained professional and any associated water source that led to the problem should also be corrected.

The MoldSCORE™ was in the MODERATE range for the following area(s): ST1, ST2, ST4, ST5. A moderate MoldSCORE™ means that the results are inconclusive, and suggests that a more detailed inspection by a trained professional may make sense if there are any other reasons to believe that mold growth could be a problem in this room.

Please see the sections titled "Detailed Results of the Air Sample Analysis" and "Understanding Your Air Sample Analysis Results" for important additional information.

Location	MoldSCORE™			Exposure Level						
ST1: Downstairs Hall * see p. 4 for details	Lower ≤110	Higher 200	Higher 300	Mold Score	Lower ≤200	1K	10K	Higher ≥70K	Location spores/m ³	Outside spores/m ³
				158					1,100	890
ST2: Dining Room * see p. 5 for details	Lower ≤110	Higher 200	Higher 300	Mold Score	Lower ≤200	1K	10K	Higher ≥70K	Location spores/m ³	Outside spores/m ³
				227					2,000	890
ST3: Hall Bathroom * see p. 6 for details	Lower ≤110	Higher 200	Higher 300	Mold Score	Lower ≤200	1K	10K	Higher ≥70K	Location spores/m ³	Outside spores/m ³
				300					24,000	890
ST4: Primary Bathroom Cabinet * see p. 7 for details	Lower ≤110	Higher 200	Higher 300	Mold Score	Lower ≤200	1K	10K	Higher ≥70K	Location spores/m ³	Outside spores/m ³
				233					1,200	890
ST5: Stairs Closet * see p. 8 for details	Lower ≤110	Higher 200	Higher 300	Mold Score	Lower ≤200	1K	10K	Higher ≥70K	Location spores/m ³	Outside spores/m ³
				217					1,000	890

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Wendy V. Cadmus

Client: Cadmus Environmental
 Contact: Wendy Cadmus
 Project: Ball/Avenue H
 Date of Sampling: 12-12-2023
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Detailed Results of the Air Sample Analysis

Location Lab ID-version: † 16962977-1	Overall Mold Source Assessment* (Likelihood spores originated inside)				Overall Exposure Level (Shown on a log scale)				Outside †16962982-1	
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	Higher 10K	>70K	Location spores/m ³ raw ct	Outside spores/m ³ raw ct
ST1: Downstairs Hall									890	19

Indicators of Mold Growth
Indoors

Indicator	Indicator Mold Source Assessment* (Likelihood spores originated inside)				Indicator Exposure Level (Shown on a log scale)				Outside	
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	Higher 10K	>70K	Location spores/m ³ raw ct	Outside spores/m ³ raw ct
A) Penicillium/Aspergillus types**									<13	0
B) Cladosporium species spores									270	5
C) Basidiospores									430	8
D) "Marker" spore types***									<13	0
E) "Other" spore types****, *****									39	3

Other Sample Information

Sample clarity & visibility

	Good	Moderate	Poor
Location	X		
Outside		X	

*Good = background debris is light enough to pose no difficulty in analyzing air samples.
 **Poor = background debris so heavy that it poses a significant difficulty in analyzing the air sample accurately. Results are most likely lower limits.

Comments

Location	None
Outside	None

* Rated on a scale from low to high. A MoldSCORE™ rating of <150 is low and indicates a low probability of spores originating inside. A MoldSCORE™ rating of >250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A MoldSCORE™ between 150 and 250 indicates a moderate likelihood of indoor fungal growth. Eurofins EMLab P&K's MoldSCORE™ analysis is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the MoldSCORE™ analysis on other samples (like wall cavity samples) will lead to misleading results.

** The spores of *Penicillium* and *Aspergillus* (and others such as *Acremonium* and *Paeciliomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by spore trap sampling methods. Also some species with very small spores are easily missed, and may be undercounted. The *Penicillium/Aspergillus* indicator operates on the assumption that the majority of the spores in this category are, in fact, *Penicillium* or *Aspergillus*.

*** The spores reported in this category come from many different mold types. As a result, the mold types represented by the counts for the "Location" sample may be different than the mold types represented by the counts for the outside sample. The totals shown are the summation of the rounded values for the spore types in the category and may contain more than two significant figures.

**** The spores of smuts, *Periconia*, and myxomycetes look similar and cannot generally be distinguished by spore trap analysis. Smuts are plant pathogens and are not likely to be on indoor surfaces. *Periconia* is rarely found growing indoors. However, myxomycetes, the spores of which look similar, can occasionally grow indoors. Because there is a small probability of indoor sources, these spore types are indicated in the "other" spore types category. False positives may result if the spores are smuts, not myxomycetes.

†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".

Total spores/m³ has been rounded to two significant figures to reflect analytical precision.
 The analytical sensitivity is the spores/m³ divided by the raw count, expressed in spores/m³, per spore and per sample.

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EMLab ID: 3479020, Page 4 of 19

Wendy V. Cadmus

Client: Cadmus Environmental
 Contact: Wendy Cadmus
 Project: Ball/Avenue H
 Date of Sampling: 12-12-2023
 Date of Receipt: 12-12-2023
 Date of Report: 12-13-2023

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Detailed Results of the Air Sample Analysis

Location Lab ID-version: † 16962978-1	Overall Mold Source Assessment* (Likelihood spores originated inside)				Overall Exposure Level (Shown on a log scale)				Outside †16962982-1		
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	Higher 10K	>70K spores/m ³	Location raw ct	spores/m ³	raw ct
ST2: Dining Room									50	890	19

Indicators of Mold Growth
Indoors

Indicator	Indicator Mold Source Assessment* (Likelihood spores originated inside)				Indicator Exposure Level (Shown on a log scale)				Outside		
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	Higher 10K	>70K spores/m ³	Location raw ct	spores/m ³	raw ct
A) <i>Penicillium/Aspergillus</i> types**									17	<13	0
B) <i>Cladosporium</i> species spores									12	270	5
C) Basidiospores									0	430	8
D) "Marker" spore types*** 1) <i>Chaetomium</i> 2) <i>Stachybotrys</i>									3	<13	0
E) "Other" spore types****,***** 1) Smuts, <i>Periconia</i> , <i>Myxomycetes</i> 2) <i>Curvularia</i> 3) <i>Nigrospora</i> 4) <i>Pestalotiopsis</i>									12	39	3

Other Sample Information

Sample clarity & visibility

	Good	Moderate	Poor
Location		X	
Outside		X	

*Good = background debris is light enough to pose no difficulty in analyzing air samples.
 **Poor = background debris so heavy that it poses a significant difficulty in analyzing the air sample accurately. Results are most likely lower limits.

Comments

Location	None
Outside	None

* Rated on a scale from low to high. A MoldSCORE™ rating of <150 is low and indicates a low probability of spores originating inside. A MoldSCORE™ rating of >250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A MoldSCORE™ between 150 and 250 indicates a moderate likelihood of indoor fungal growth. Eurofins EMLab P&K's MoldSCORE™ analysis is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the MoldSCORE™ analysis on other samples (like wall cavity samples) will lead to misleading results.

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*** The spores reported in this category come from many different mold types. As a result, the mold types represented by the counts for the "Location" sample may be different than the mold types represented by the counts for the outside sample. The totals shown are the summation of the rounded values for the spores types in the category and may contain more than two significant figures.

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 The analytical sensitivity is the spores/m³ divided by the raw count, expressed in spores/m³, per spore and per sample.

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EMLab ID: 3479020, Page 5 of 19

Wendy V. Cadmus

Client: Cadmus Environmental
 Contact: Wendy Cadmus
 Project: Ball/Avenue H
 Date of Sampling: 12-12-2023
 Date of Receipt: 12-12-2023
 Date of Report: 12-13-2023

MoldREPORT
 Eurofins EMLab P & K
 6110 West 34th Street, Houston, TX 77092
 713-290-0221 Fax

Detailed Results of the Air Sample Analysis

Location Lab ID-version: † 16962979-1	Overall Mold Source Assessment* (Likelihood spores originated inside)				Overall Exposure Level (Shown on a log scale)				Outside †16962982-1			
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	10K	Higher >70K	Location spores/m ³ raw ct	spores/m ³ raw ct		
ST3: Hall Bathroom									24,000	463	890	19

Indicators of Mold Growth
Indoors

Indicator	Indicator Mold Source Assessment* (Likelihood spores originated inside)				Indicator Exposure Level (Shown on a log scale)				Outside			
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	10K	Higher >70K	Location spores/m ³ raw ct	spores/m ³ raw ct		
A) <i>Penicillium/Aspergillus</i> types**									24,000	448	< 13	0
B) <i>Cladosporium</i> species spores									270	5	270	5
C) Basidiospores									< 13	0	430	8
D) "Marker" spore types*** 1) <i>Chaetomium</i>									53	4	< 13	0
E) "Other" spore types****,***** 1) <i>Pestalotiopsis</i> 2) <i>Curvularia</i> 3) <i>Nigrospora</i> 4) <i>Pithomyces</i> 5) <i>Smuts, Periconia, Myxomycetes</i>									79	6	39	3

Other Sample Information

Sample clarity & visibility

	Good	Moderate	Poor
Location	X		
Outside		X	

*Good = background debris is light enough to pose no difficulty in analyzing air samples.
 **Poor = background debris so heavy that it poses a significant difficulty in analyzing the air sample accurately. Results are most likely lower limits.

Other "normal trapping" spores***

Exposure Level (Highly unlikely to be from indoors)				Location		Outside	
Lower <200	1K	10K	Higher >70K	spores/m ³ raw ct	spores/m ³ raw ct	spores/m ³ raw ct	spores/m ³ raw ct
				< 13	0	160	3

Sample volume (liters)	Location	Outside
	75	75

Comments

Location	None
Outside	None

* Rated on a scale from low to high. A MoldSCORE™ rating of <150 is low and indicates a low probability of spores originating inside. A MoldSCORE™ rating of >250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A MoldSCORE™ between 150 and 250 indicates a moderate likelihood of indoor fungal growth. Eurofins EMLab P&K's MoldSCORE™ analysis is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the MoldSCORE™ analysis on other samples (like wall cavity samples) will lead to misleading results.

** The spores of *Penicillium* and *Aspergillus* (and others such as *Acremonium* and *Paeciliomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by spore trap sampling methods. Also some species with very small spores are easily missed, and may be undercounted. The *Penicillium/Aspergillus* indicator operates on the assumption that the majority of the spores in this category are, in fact, *Penicillium* or *Aspergillus*.

*** The spores reported in this category come from many different mold types. As a result, the mold types represented by the counts for the "Location" sample may be different than the mold types represented by the counts for the outside sample. The totals shown are the summation of the rounded values for the spores types in the category and may contain more than two significant figures.

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Total spores/m³ has been rounded to two significant figures to reflect analytical precision.
 The analytical sensitivity is the spores/m³ divided by the raw count, expressed in spores/m³, per spore and per sample.

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EMLab ID: 3479020, Page 6 of 19

Wendy V. Cadmus

Client: Cadmus Environmental
 Contact: Wendy Cadmus
 Project: Ball/Avenue H
 Date of Sampling: 12-12-2023
 Date of Receipt: 12-12-2023
 Date of Report: 12-13-2023

MoldREPORT
 Eurofins EMLab P & K
 6110 West 34th Street, Houston, TX 77092
 713-290-0221 Fax

Detailed Results of the Air Sample Analysis

Location Lab ID-version: † 16962980-1	Overall Mold Source Assessment* (Likelihood spores originated inside)				Overall Exposure Level (Shown on a log scale)				Outside †16962982-1			
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	Higher 10K	>70K	Location spores/m ³	raw ct	Outside spores/m ³	raw ct
ST4: Primary Bathroom Cabinet									1,200	25	890	19

Indicators of Mold Growth
Indoors

Indicator	Indicator Mold Source Assessment* (Likelihood spores originated inside)				Indicator Exposure Level (Shown on a log scale)				Outside			
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	Higher 10K	>70K	Location spores/m ³	raw ct	Outside spores/m ³	raw ct
A) <i>Penicillium/Aspergillus</i> types**									960	18	<13	0
B) <i>Cladosporium</i> species spores									210	4	270	5
C) Basidiospores									<13	0	430	8
D) "Marker" spore types***									<13	0	<13	0
E) "Other" spore types****, ***** 1) Smuts, Periconia, Myxomycetes 2) Nigrospora									40	3	39	3

Other Sample Information

Sample clarity & visibility

	Good	Moderate	Poor
Location		X	
Outside		X	

*Good = background debris is light enough to pose no difficulty in analyzing air samples.
 *Poor = background debris so heavy that it poses a significant difficulty in analyzing the air sample accurately. Results are most likely lower limits.

Other "normal trapping" spores***

		Exposure Level (Highly unlikely to be from indoors)				Outside	
Lower <200	1K	Higher 10K	>70K	Location spores/m ³	raw ct	Outside spores/m ³	raw ct
				<13	0	160	3

	Location	Outside
Sample volume (liters)	75	75

Comments

Location	None
Outside	None

* Rated on a scale from low to high. A MoldSCORE™ rating of <150 is low and indicates a low probability of spores originating inside. A MoldSCORE™ rating of >250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A MoldSCORE™ between 150 and 250 indicates a moderate likelihood of indoor fungal growth. Eurofins EMLab P&K's MoldSCORE™ analysis is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the MoldSCORE™ analysis on other samples (like wall cavity samples) will lead to misleading results.

** The spores of *Penicillium* and *Aspergillus* (and others such as *Acremonium* and *Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by spore trap sampling methods. Also some species with very small spores are easily missed, and may be undercounted. The *Penicillium/Aspergillus* indicator operates on the assumption that the majority of the spores in this category are, in fact, *Penicillium* or *Aspergillus*.

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EMLab ID: 3479020, Page 7 of 19

Wendy V. Cadmus

Client: Cadmus Environmental
 Contact: Wendy Cadmus
 Project: Ball/Avenue H
 Date of Sampling: 12-12-2023
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 Date of Report: 12-13-2023

MoldREPORT
 Eurofins EMLab P & K
 6110 West 34th Street, Houston, TX 77092
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Detailed Results of the Air Sample Analysis

Location Lab ID-version: † 16962981-1	Overall Mold Source Assessment* (Likelihood spores originated inside)				Overall Exposure Level (Shown on a log scale)				Outside †16962982-1		
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	Higher 10K	>70K spores/m ³	Location raw ct	spores/m ³	raw ct
STS: Stairs Closet									45	890	19

Indicators of Mold Growth
Indoors

Indicator	Indicator Mold Source Assessment* (Likelihood spores originated inside)				Indicator Exposure Level (Shown on a log scale)				Outside		
	Lower <110	200	Higher 300	Mold Score	Lower <200	1K	Higher 10K	>70K spores/m ³	Location raw ct	spores/m ³	raw ct
A) <i>Penicillium/Aspergillus</i> types**									5	<13	0
B) <i>Cladosporium</i> species spores									2	270	5
C) Basidiospores									0	430	8
D) "Marker" spore types*** 1) <i>Chaetomium</i>									4	<13	0
E) "Other" spore types****,***** 1) <i>Curvularia</i> 2) <i>Torula</i> 3) <i>Nigrospora</i> 4) <i>Pithomyces</i> 5) Smuts, <i>Periconia</i> , <i>Myxomycetes</i>									30	39	3

Other Sample Information

Sample clarity & visibility

	Good	Moderate	Poor
Location		X	
Outside		X	

*Good = background debris is light enough to pose no difficulty in analyzing air samples.
 *Poor = background debris so heavy that it poses a significant difficulty in analyzing the air sample accurately. Results are most likely lower limits.

Comments

Location	None
Outside	None

* Rated on a scale from low to high. A MoldSCORE™ rating of <150 is low and indicates a low probability of spores originating inside. A MoldSCORE™ rating of >250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A MoldSCORE™ between 150 and 250 indicates a moderate likelihood of indoor fungal growth. Eurofins EMLab P&K's MoldSCORE™ analysis is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the MoldSCORE™ analysis on other samples (like wall cavity samples) will lead to misleading results.

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Affected Areas Requiring Remediation

- Dining Room Ceiling
- Hall Powder Bathroom
- Primary Bathroom


Less than 25 contiguous square feet of mold damaged building materials were visible at the time of this inspection and so, based upon Texas Mold and Remediation Rules, remediation work performed on this building does not have to be registered with the state of Texas.


Remediation in these areas should be performed under limited containment as described in this protocol.

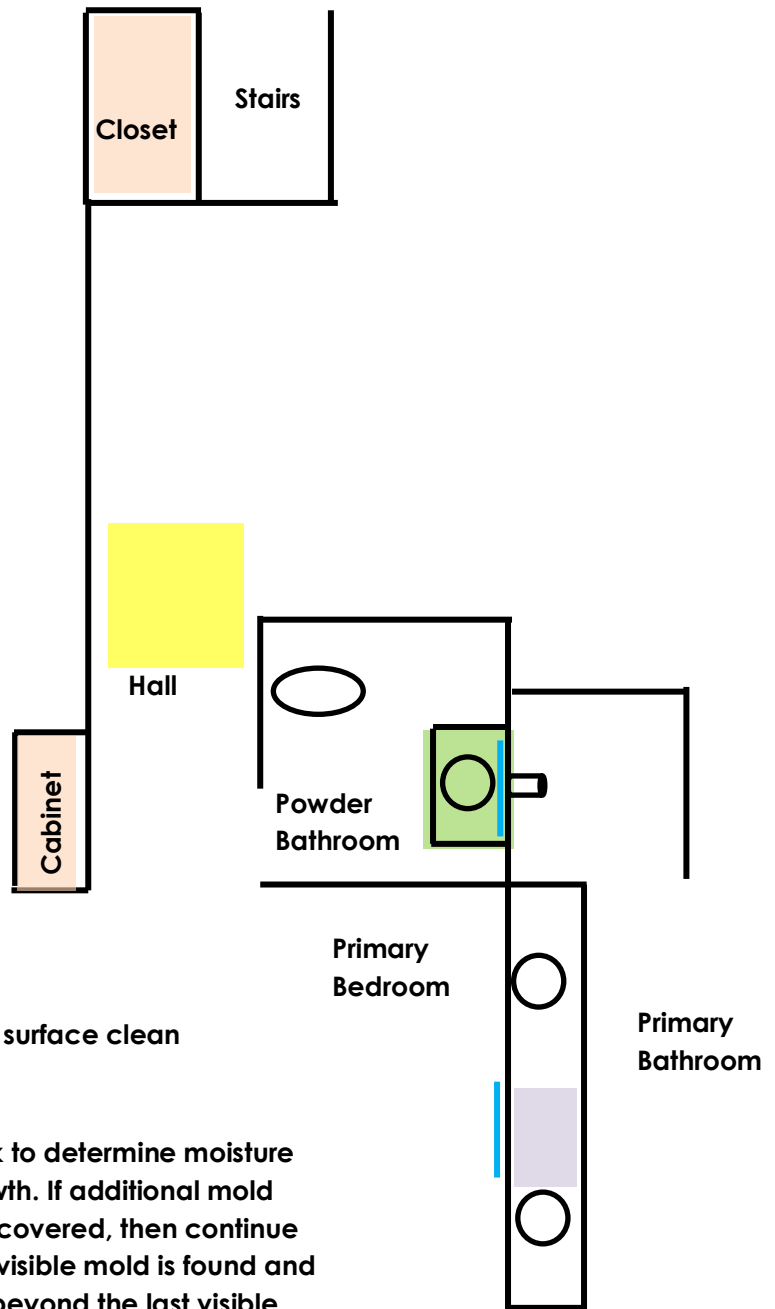
- Remove damaged porous building materials as indicated in the diagram and clean all non-porous or semi-porous materials remaining in the remediation area. **As always,** if additional mold damaged building materials are observed, beyond what is specified in the diagram, then this material should also be appropriately remediated.
- **Stairway Closet and Cabinet:** Surface clean all orange mold spotting using a fungicide, such as Mold Control by Concrobium. Vacuum/wipe down all surface to eliminate dust and debris that can harbor mold spores.
- **Hallway Ceiling:** Repair ceiling and determine if there is an active leak or if it is a thermal anomaly from the doorway above.

Approximate materials removal: 30 – 60 sq. feet of sheetrock/insulation


HVAC system: All air filters serving the impacted areas should, at a minimum, be replaced after remediation though I would recommend that the filters be checked prior to remediation to check for dust and debris accumulation. For any filters with dust accumulation, I would also recommend replacing them prior to remediation. The client may also elect to have the HVAC system(s) cleaned during the remediation process.

 Surface clean all wood with orange spotting using a fungicide. Clean these spaces by vacuuming or wiping down to remove all particulate.

 Assess the ceiling for possible active leak, repair as necessary.



 Pull out sink cabinet/furniture and surface clean all visible mold on the interior.

 Remove the bottom 3' of sheetrock to determine moisture source and eliminate all mold growth. If additional mold damaged porous materials are discovered, then continue removing these materials until last visible mold is found and then create a 1' – 2' clean border beyond the last visible mold growth. Hard materials, such as non-porous or semi-porous materials can be surface scrubbed to clean.

 Orange mold spotting was observed in the drawers and cabinet. Surface clean to remove mold spotting.

Open the wall behind it (from the bedroom side if possible) to determine what moisture source is triggering this mold.

Note: The following detailed instructions are written for use by a licensed mold remediation contractor since they are required by their license to follow the steps included in a protocol during remediation. If the property owner elects to DIY or hire a general contractor these steps are probably more arduous than will be followed but can provide some guidance in the work.

General Items That Apply to All Remediation Projects

Remediation contractors and all other parties involved with removal and remediation of water damaged and mold contaminated materials as specified in or arising from this Protocol must conduct that work in accordance with generally accepted practices for that industry. Those practices may include, but are not limited to, guidance provided by the Environmental Protection Agency (*Mold Remediation in Schools and Commercial Buildings*) and IICRC S500 – *Standard and Reference Guide for Professional Water Damage Restoration*, and/or IICRC S520 – *Standard and Reference Guide for Professional Mold Remediation* (Institute of Inspection, Cleaning and Restoration, Vancouver, Washington), as revised or amended; and all other applicable local, state and federal requirements.

Prior to the Start of Remediation

- 1 Submit any Pre-Approval Items (Health and Safety Plan, MSDSs for any chemicals used).
- 2 Obtain all necessary permits.
- 3 Establish Controlled Access Work Area(s).
- 4 Ensure entire building (areas that will be contained and areas that will not be contained) is de-humidified, so that relative humidity remains below 65%. Ensure dehumidifier hoses are routed to existing drains and not out windows, doors, etc.

During Remediation

- 1 Double-bag all mold contaminated materials (gypsum board, carpet, wood, etc.) in 6 mil poly bags, goose neck and tape the bags, and then HEPA-vacuum the bags prior to removal from the containment area. Material that is too large for bagging should be double-wrapped and taped. Sharp objects should be blunted or taped to reduce the likelihood of piercing bags or wrapping.
- 2 Monitor remediation progress by observation and testing.
- 3 **Detergent solutions** should be used when removing visible mold or stains from structural components, finish surfaces, or furniture.
- 4 Visibly damaged, highly porous materials such as gypsum board or particle board should be removed rather than cleaned. If there is any carpet/padding adjacent or within the impact area, then this porous material should be removed. Any discolored carpet tack strips should be removed.
- 5 Structural components and finish surfaces within the remediation area and the interior surfaces of the containment should be **wire brushed and HEPA-vacuumed** prior to post-remediation clearance assessment.
- 6 All exterior walls and ceilings exposed to the attic should be sealed with a heavy poly barrier to prevent exterior air from infiltrating the containment.
- 7 Use your professional judgement about sealing additional walls or structural items.

All building materials should be completely dry prior to post remediation inspection and testing.

Inspection of the remediation area by the project supervisor is critical prior to scheduling post remediation testing.

After Remediation

- 1 Dehumidification equipment should continue to be operated prior to clearance sampling and until test results have shown successful completion of remediation. If delays in rebuild are expected, steps should be taken to ensure that relative humidity levels continue to be controlled within the project.
- 2 After debris removal and cleaning are complete, the HEPA-filtered air scrubbers should be operated in recirculation mode for 24 - 48 hours.
- 3 Antimicrobial coatings may not be applied until the project achieves clearance.

Project Specific Remediation Requirements

Personal Protective Equipment Plan:

- Respiratory Protection: N-95 Respirators should be worn by remediation workers as a minimum.
- Eye Protection: Safety Goggles with indirect venting.
- Body Covering: Tyvek or similar type disposable fabric suit, including attached hood and shoe covers.
- Hand Protection: Leather or fabric gloves to protect from cuts and abrasions.

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Containment Requirements:

It may be necessary to use any of the containment protocols described below, on this project. Individual rooms or project areas will list containment requirements specific to that area.

Surface (Limited) Containment

- a. Use single-layer 6 mil poly sheeting on floor surfaces, and at least 4 mil poly sheeting on all other surfaces, except those surfaces to be remediated. In some instances it may be necessary to erect a framed containment rather than placing poly sheeting directly on surfaces. In some instances it may be necessary for containment to be installed above a drop ceiling grid. Entrances should be typical slit entry design with a flap or zipper entry on the outside of the slit.
- b. Seal all air conditioning supply vents and return air vents in the containment.
 - All exterior walls and ceiling exposed to the attic should be sealed with a heavy poly barrier to prevent exterior air from infiltrating the containment.
 - Use your professional judgement about sealing additional walls or structural items.
- c. Maintain negative pressure at all times by the use of a HEPA-filtered air scrubber exhausted to the outside the containment, preferably outside the building. Inspect or test the negative pressurization daily. If negative pressure fails during remediation, stop work immediately and make repairs.
- d. Place notification signs as required in TAC 295.322(e).
- e. When removal and cleaning is complete the air scrubbers should be switched to recirculating mode for 24 – 48 hours.
- f. Leave containment in place until written certification of clearance is provided by Cadmus or another licensed mold assessment consultant.

No Containment Required

- a. If no containment is required in a work area, this will be stated in the description.

Use of Disinfectants, Biocides and Antimicrobial Coatings per TAC 295.321(h) and TAC 295.323(c)

These products may be used on remediated surfaces on this project, but they may not be used in or on HVAC system components due to the nature of the building occupancies. If they are used, they must be registered by the Environmental Protection Agency (EPA), and the remediation contractor shall follow all manufacturers' label directions when using the product. These products must be labeled for their specific use and location. **Antimicrobial coatings may not be applied until the project achieves clearance.**

Certificate of Mold Damage Remediation

The Texas Mold Assessment and Remediation Rules (**295.327(b)(1) and (2)** in part) require the licensed mold assessor (Cadmus) to provide to the licensed mold remediator a Certificate of Mold Damage Remediation which includes the following:

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“(1) a statement by a licensed mold assessment consultant (not the licensed mold remediator) that based on visual, procedural, and analytical evaluation, the mold contamination identified for the project has been remediated as outlined in the mold remediation protocol; and (2) a statement on the certificate that the underlying cause of the mold has been remediated, if the licensed mold assessment consultant determines that the underlying cause of the mold has been remediated so that it is reasonably certain that the mold will not return from that same cause.”

The licensed mold remediator shall then provide the Certificate of Mold Damage Remediation to the property owner according to **295.327(b)**, and according to **295.327(d)**, “If a property owner sells the property, the property owner shall provide to the buyer a copy of each remediation certificate that has been issued for the property under this section.”

This Protocol is based on the assumption that conditions that caused excessive moisture and resulting mold growth, have been corrected or will be corrected as part of the remediation.

Clearance Criteria- testing during remediation

With the client's permission, Cadmus may inspect the remediation project while it is in progress to confirm that remediation is being performed in accordance with this Protocol. Cadmus may use visual inspection, photographs or analytical tools to perform such inspections.

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Post Remediation Assessment and Clearance

Confirmation of Cause and Origin Repair

The underlying cause of the mold growth and moisture source must have been successfully repaired. Compliance with this criterion may be met by one of the following methods:

- Repairs must be made by licensed, insured building contractors in trades appropriate to the repairs. This may include but is not limited to roofing, plumbing, foundation repairs, and air conditioning design and cleaning.

We will require verification, either verbal or written, of these repairs in advance of our clearance inspection.

Note: Per TAC 295.324(b) Underlying cause of mold. Post-remediation assessment shall, to the extent feasible, determine that the underlying cause of the mold has been remediated so that it is reasonably certain that the mold will not return from that remediated cause. The homeowner or responsible party is required to address the moisture issue, it is not the responsibility of the mold consultant to address the moisture issue.

Prior to certifying clearance, Cadmus will:

- inspect for visible mold and wood rot;
- inspect structural materials for the presence of elevated moisture content;
- collect surface swab samples for microscopic and microbiological analysis to determine if elevated mold spore levels are present in the project area;
- collect spore trap air samples to determine if elevated mold spore levels are present in the project area;
- Inspect to determine if the underlying cause of the mold growth has been successfully remediated or repaired. This may include, but is not limited to, performance of various tests to determine if moisture sources have been corrected.
- It may be necessary to make cuts in containment sheeting to inspect the walls and collect swab samples from exterior wall studs, sill plates, etc.
- **After debris removal and cleaning are complete, the HEPA-filtered air scrubbers should be operated in recirculation mode for a minimum of 24 – 48 hours with a 48 hour post remediation scrub being ideal if time allows.**

To certify clearance the following three conditions must be met:

1. No visible mold or wood rot in the remediation area;
2. No elevated moisture content in structural materials as measured with an appropriate moisture meter;
3. The following **sampling results criteria** must be met:

Indoor Air Microscopic Evaluation

Total spores per cubic meter (m³) of air in each indoor air sample must be similar to or less than the total spore average of the outdoor samples. Further standards may also be imposed based on the pre-remediation air and surface sample results.

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Total *Aspergillus/Penicillium*-like spores in indoor samples must be similar to or less than the average of *Aspergillus/Penicillium*-like spores in the outdoor air samples and additionally should be lower than 500 spores/m³.

Clearance Sampling Strategy

Surface Samples:

- If any visually questionable areas are identified during the clearance inspection, then surface swab sample will be collected of the questionable area.

Air Samples

- A minimum of one outside air sample will be collected.
- A minimum of one air sample will be collected from the containment area. An air sample may also be taken from outside containment.

Samples outside Containment

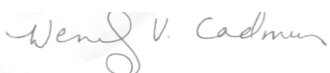
- Cadmus reserves the right to perform sampling inside the building but outside of remediation containment to confirm that containment was effective in preventing the release of mold spores outside of containment. These samples will be evaluated in accordance with **sample results criteria** shown above.

Note: Per TAC 295.324(c) (3): "Where visual inspection reveals deficiencies sufficient to fail clearance, analytical methods need not be used." (Additionally, if elevated moisture content is found in structural materials as measured with an appropriate moisture meter, this will be sufficient to fail clearance without collecting mold samples.)

Project Coordination between Remediation Company and Consultant

Coordination between the project's Assessment Consultant and the Remediation Contractor is essential in achieving a complete remediation project and first-time clearance post-remediation evaluation. The Remediation Contractor should immediately contact the Assessment Consultant if any of the following circumstances occur:

- Additional water damage and/or mold amplification is encountered that may alter the Scope of Work.
- Any time there is concern regarding the containment area construction, extent of demolition and/or effectiveness of the sanitization process.



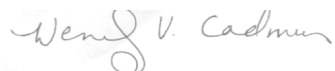
Please contact me if you have any questions on information in this report.

Very truly yours,

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A handwritten signature in black ink that reads "Wendy V. Cadmus". The signature is written in a cursive style and is positioned in the bottom left corner of the page.

Health Concerns

The degree of risk from exposure to mold is determined by a person's general health and pre-existing sensitivity to mold, as well as the concentration of the mold bloom.

Harvard Preserve January 16, 2007

Mold spores are present throughout our outdoor environment and provide a useful function in recycling organic materials. Every building has mold spores and fragments present within their interior and so we all have contact with mold on a daily basis both outdoors and indoors. The most common negative reaction is an allergic response of sneezing, eye irritation and runny nose, etc similar to seasonal allergies. Some molds produce airborne toxins called mycotoxins that can cause serious breathing difficulties, dizziness, and flu-like symptoms and bleeding in the lungs even with healthy individuals if the size of growth and exposure time is high enough. The elderly, infants, pregnant women, immune-compromised individuals, chemotherapy patients and individuals with respiratory problems are the most susceptible to infections and disease that can result from too much exposure to toxic and pathogenic molds. The size of the area of mold growth and the frequency of exposure to the mold can affect response. For example, Farmer's Lung is an allergic disease caused by breathing in the dust from moldy hay.

Preventing and Eliminating Mold

Mold needs moisture and organic material to grow. Since mold growth can occur within 24 – 48 of water intrusion conditions identifying and eliminating the source of moisture and removing any remaining moisture needs to occur as soon as possible.

If you find mold growth in your home the best course of action is dry up any moisture and identify and eliminate the source of moisture. The mold growth needs to be removed either through cleaning or by replacing the material, depending upon the building material affected and the size of the growth. Hard surfaces, such as tile, concrete and metal can be cleaned using a sponge and a mixture of water and detergent. Even if mold has gone dormant from a lack of moisture or organic food, it needs to be cleaned because once moisture returns it will resume growth.