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THALIA MARAH HALL

INDOOR AIR QUALITY ASSESSMENT

Jackson, MS

August 9, 2024

Project #044882

Indoor Air Quality Assessment

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Prepared on August 14, 2024

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Summary

On August 9, 2024, an Industrial Hygienist from CTEH® conducted an indoor air quality assessment for the Thalia Marah Hall at 255 E Pascagoula Street, Jackson, Mississippi. As a part of the assessment, the industrial hygienist collected air samples for mold spores and conducted real-time air monitoring for temperature and relative humidity. A visual inspection was also conducted in accessible areas of the facility as well as heating, ventilation, and air conditioning (HVAC) systems in the building. Thermal imaging was conducted in areas to determine if moisture was present in building materials.

Initial Inspection

The total indoor spore levels were above the outdoor levels in five cases and *Penicillium/Aspergillus* exceeded outdoor levels in all cases. Elevated concentrations of *Penicillium/Aspergillus* were reported in Main auditorium sample sites #2 & #5, basement floor storage room, and ground floor sample location #11. Sample #11 was collected in the west room across from refreshment station and couch seating. This floor, especially this room, exhibited strong fungal odors. Many of the return-air grates contained a visible presence of dust, debris and suspect mold growth. There was significant multi species biofouling of wood surfaces on this floor. The wood surfaces of doors, furniture, and synthetic baseboards being the most heavily affected. The main auditorium hall presented significant fungal biofouling in carpeting, surface contamination of wood armrests and handrails, and exceedances in spore trap samples #2 and #5. A five-point sampling strategy was employed in this environment because of cubic volume and stratification concerns. The sampling methodology should have captured the most unbiased fungal data in terms of randomness and proximities to visual fungal biofilms. Surface contamination of carpet and hard surfaces on second floor balcony was visibly less than first floor locations. This is supported by the laboratory analyses. The soft surfaces of seats and curtain upholstery were closely examined, and no visible growth was determined. Because of the spore load in these locations, it is likely that spores are present on these soft surfaces but environment and labile carbon restrictions are preventing primary hyphae tube growth and colony formation. The laboratory report is provided in **Appendix A**.

Fungal spore traps confirmed that the atmospheric spore load was on average greater than the outdoor control. The most prominent genera were the *Penicillium* and *Aspergillus*. *Cladosporium* was located in the heavily impacted ground floor west room (sample #11), sample site #6 (second floor lobby), but was not located in basement storage room (sample site #9). Alternaria was also present at sampling location #6 (second floor lobby).

Indoor environmental parameters were collected, and relative humidity measurements ranged from 50.5% rH to 61.5% rH. Limits were established by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE), and above the United States Environmental Protection Agency (USEPA)

recommended range of 30 to 60% relative humidity. Locations with elevated levels of humidity are at a higher risk for mold growth developing.

The inspection of the primary HVAC air handler unit in the mechanical room was not done as the system was still running and site manager could not shut down. There was a typical presence of accumulated dust and debris common to air handler units and return air grates. Otherwise, the examination of the accessible areas of the supply and return-air ducts were found to be in good condition except for ground floor supply air diffusers, especially sampling site 11 (heavily impacted room).

1.0 Background

CTEH® was contacted by the City of Jackson Mississippi to conduct an indoor air quality (IAQ) assessment at the Thalia Marah Hall Performing Arts Theater at 255 E Pascagoula Street, Jackson, Mississippi. The initial assessment was requested due to recent staff complaints regarding malodors, visible fungal growth, and diminished HVAC capabilities. This industrial hygiene assessment was conducted to determine mold concentrations in the affected areas of the building and the identification of possible odor or mold sources in the occupied spaces.

1.1 CTEH® Activities

On August 9, 2024, a CTEH® Industrial Hygienist collected mold air samples from 10 locations in the facility as well as one outdoor location. Each location where mold sampling was conducted consisted of spore trap air sampling for non-viable mold spores and viable mold air sampling. The viable mold sampling indicates what types of live molds (currently growing) are present, as well as identifies the individual types of molds. Temperature and humidity were monitored at each indoor location where mold air sampling was conducted.

Assisting with the inspection was Judson Vance. Mr. Vance is the facilities manager and was extremely helpful in navigating the suspect and prominently impacted areas of the site. A photo log of identifiable areas of concern and observations is attached in **Appendix B**.

2.0 Observations

During the assessment, visible dirt, debris, and suspect mold growth was observed on many surfaces. Overt and established fungal biofilms were present throughout the carpet on the first-floor auditorium. Pervasive contamination of wood surfaces was also present on the first floor of the main auditorium. Malodor and significant growth were observed on the ground floor Lobby and refreshment area. The wood and synthetic surfaces of furniture in the area were inundate with established fungal growth from putative secondary colonizers. The most impacted room, sampling location #11, was also located on this floor. The odor and atmospheric organic load influenced breathing while sampling. This area contained

the second visual assessment of dematiaceous fungal genera, located at two locations on synthetic baseboards. Fungal growth was observed on wooden door surfaces which exhibited stable and established fungal structures. All this is indicative of a catastrophic loss of HVAC functionalities leading to atmospheric disruption conducive to fungal establishment and proliferation.

The Occupational Safety and Health Administration (OSHA) has promulgated standards designed to protect the health and safety of workers (OSHA 29 CFR 1910.1000); however, there are currently no officially promulgated occupational or public health standards for interpreting airborne bioaerosol sample results. Guidelines published by the American Conference of Governmental Industrial Hygienist (ACGIH) recommend comparing the indoor and outdoor air sampling results (ACGIH, 1999). In general, the types of mold and their airborne concentrations found indoors should be similar (in non-problem buildings) to the outdoor air. Differences in either airborne concentrations or types of mold may indicate the presence of moisture sources and resultant mold growth.

ASHRAE has published Standard 62.1-2016, *Ventilation for Acceptable Indoor Air Quality*, which outlines the minimum requirements for HVAC system design and function to help ensure indoor air quality is acceptable to human occupants and is intended to minimize the potential for adverse health effects. According to ASHRAE 62.1-2016, the minimum amount of properly filtered and conditioned outside air that should be supplied to a typical office space is 20 cfm per person.

2.1 Real-Time Air Monitoring

The CTEH® Industrial Hygienist collected environmental data using IAQ 15 Connect Pro Portable (spore trap) and Protimeter moisture meter and Hygrometer instruments at multiple locations in the building. These instruments were employed at each sampling location. These psychometric parameters are indicators of the efficiency of a building's HVAC system as well as overall comfort in the building.

Table 5.1a Environmental Air Monitoring Locations

Location	Sample ID	Sample Date	Temperature (˚F)	Humidity (%)	GPP
1st floor front of auditorium seating center	1	08/09/2024	90.7	50.5	123.5
1st floor front of auditorium seating SW corner seat	2	08/09/2024			
1st floor auditorium- West middle section-seat #2	3	08/09/2024			
1st floor auditorium- East middle section-seat #11	4	08/09/2024	90.9	55.3	121.7
1st floor auditorium far back wall directly in front of control/observation booth	5	08/09/2024			
3rd floor Balcony-middle section			91.3	57.1	123.9
2nd floor center of lobby	6	08/09/2024	90.5	55.0	118.5
3rd floor Balcony-middle section	7	08/09/2024	91.4	56.6	125.6
Hallway behind stage water fountain	8	08/09/2024			
Ground floor room West of refreshments station			90.5	56.4	121.9
Southeast basement storage	9	08/09/2024			
Outside Loading Dock	10	08/09/2024	89.0	58	119.2
Ground floor room West of refreshments station	11	08/09/2024	87.8	61	121.0
Pit hydraulics*	-	08/09/2024	89.2	61.5	127.6

*unofficial sampling location but it was indicated that this was a source of constant moisture. Mix of hydraulic fluids and water present on floor

2.2 Bioaerosol Sampling

A total of 11 bioaerosol (spore trap) air samples were collected during the inspection on August 9, 2024. For comparison, one sample was collected from outdoors. Locations for each sample are provided in **Table 5.2** hereafter.

Table 5.2a Spore Trap Sample Locations

Sample ID	Sample Type	Sample Date	Location
1	Spore Trap	08/09/24	1st floor front of auditorium seating center
2	Spore Trap	08/09/24	1st floor front of auditorium seating SW corner seat
3	Spore Trap	08/09/24	1st floor auditorium- West middle section-seat #2
4	Spore Trap	08/09/24	1st floor auditorium- East middle section-seat #11
5	Spore Trap	08/09/24	1st floor auditorium far back wall directly in front of control/observation booth 3rd floor Balcony-middle section
6	Spore Trap	08/09/24	2nd floor center of lobby
7	Spore Trap	08/09/24	3rd floor Balcony-middle section Outside Loading Dock
8	Spore Trap	08/09/24	Hallway behind stage water fountain Ground floor room West of refreshments station
9	Spore Trap	08/09/24	Southeast basement storage
10	Spore Trap	08/09/24	Outside Loading Dock
11	Spore Trap	08/09/24	Ground floor room West of refreshments station

Bioaerosol air samples were collected using a IAQ 15 Connect Pro connected to a Zefon Air-O-Cell cassette. As recommended by Zefon, each sample was collected over a five-minute period at a flow rate of 15 liters per minute (LPM), resulting in a total air sample volume of 75 liters (L). EMSL Analytical, Inc. analyzed the spore trap samples by optical microscopy using method EMSL 05-TP-003, ASTM D7391 to determine the genus of any mold spores present along with the total spores per cubic meter of air (spores/m^3).

2.3 Visual Inspection

A visual inspection was conducted in all areas that were accessible. These areas included offices, mechanical systems, mechanical rooms, guest rooms, common areas, and above the drop ceiling. Thermal imaging was also used in these areas to help identify moisture sources. The thermal imaging camera can identify areas where moisture could be accumulating. Due to moisture's evaporative cooling properties, the areas where moisture is present tend to be cooler in temperature, unless a hot water leak is found. Carpet was measured for moisture, ceiling tiles were surveyed with FLIR thermal imager, and psychrometric readings were taken throughout facility. Historical refences for previous leaks in the structure were provided by Judson Vance. He also provided a qualitative timeline for visual emergence of fungal communities juxtaposed with outside atmospheric events. And, in an important observational reference, provided visual descriptions of high moisture events occurring on all surfaces inside the facility. This is conducive to condensation events providing moisture for fungal establishment and growth.

3.0 Results and Discussion

3.1 Initial Inspection Results and Discussion

The analytical laboratory reports are provided in **Appendix A**.

3.1.1 Real-Time Air Monitoring

Relative humidity measurements of all floors ranged from 50.5% to 61.5%, the USEPA recommended range of 30% to 60% relative humidity as well as the AHRAE limit of 65%. The relative humidity range for all measures except 2, location #11 and basement pit hydraulics room areas were within acceptable limits. However, the actual weight of water in the atmospheric was elevated throughout the facility ranging from 119.2 GPP-127.6 GPP. This is indicative of the atmosphere being laden with H2O and susceptible to pronounced condensation events with the lack of roper HVAC control. This condensation could lead to rapid fungal establishment and proliferation. Fungal Isopleths with follow this path of available water condensate in relation to water activity of the system and can deviate if optimal temperature is present.

3.1.2 Bioaerosol Sampling-Mold Spores

Overall the total spore concentration for the indoor air samples are exceeding the outdoor levels, the rear of the main auditorium floor had elevated levels of *Penicillium/Aspergillus* and the ground floor west room (site #11) sitting/lobby area contained elevated *Penicillium/Aspergillus/Cladosporium*. The presence of the *Penicillium/Aspergillus* in the main auditorium room may be attributed to the age of the carpeting and a lack of adequate carpet cleaning due to heavy foot traffic and soiling of the carpet. This debris contamination of high traffic carpeted areas provides a varied array of nutrients (labile carbon) that aids in fungal growth when the appropriate water activity and temperature levels are reached.

4.0 Conclusions

On average the indoor fungal levels exceeded the outdoor levels. Elevated *Penicillium/Aspergillus* was detected at sampling locations #2, #5, #9, and #11, Main 1st floor auditorium, Basement storage, and ground floor west room, respectively. Sources of fungal contaminations were likely both endogenous and from the immediate outside environment. Proposed as hypothesis is the atmospheric rain events coupled with indoor condensation from lack of climate control and temperature/nutrient sources being optimal on surfaces facilitated the primary proliferation event. Community structures maintained growth from optimal conditions after this point. There was evidence of moisture or water intrusion from previous roof leak at East side escalators, East second floor lobby area which may contribute to mold growth or malodors in the building. There were several other visible water stains on ceiling tiles documented throughout the facility. It is likely that the primary water intrusion is atmospheric and external through high humidity events encroaching inside without HVAC control and stabilization. There is a persistent roof look in loading dock area directly in front of HVAC/mechanical control room. However, it appears that the bay doors adjacent remain open to aid in air circulation during the day and this leak is outside the controlled environment.

The presence of *Cladosporium* in indoor environments is not unusual and may be associated with accumulated dust and poor housekeeping on certain flat surfaces. Air handling units which collect dust and debris over time may develop Cladosporium due to favorable conditions for mold growth.

Additional notes: From anecdotal evidence and through comments from the site manager, the presence of fungi was not visible to the degree present now on the date of Friday July 26, 2024. This date correlates with a recent rain event in that area. On the July 29, 2024 the presence of fungal structures were visible on the carpet. Judson Vance made the note that when arriving that morning it looked like the entirety of the floors were wet. This was just surface wetness but was noted as significant. This could be evidence of the temperature dropping below the dewpoint temperature for that atmosphere and creating significant condensate for initiation of microbial metabolisms.

Based on the information gathered during the initial inspection, including visual observations and sampling data, it is recommended that the following actions be considered at Thalia Marah Hall:

1. Immediate stabilization of indoor environment and repair of the HVAC system.

2. Removal of carpet from stage North until the end of the first section. The fungal communities are pronounced in this substrate visually, this is indicative of the presence of non-visible hyphae growth underneath and through the carpet substratum. This will remain a reservoir for future contamination. The second half of the 1st floor section in main auditorium may be able to be cleaned but exploratory samples should be taken to discount or confirm subsurface fungal spread. The carpeting in the 1st floor main auditorium should be cleaned if removal and replacement is

not an immediate option. Cleaning of the carpeting may be accomplished using a steam injection and water extraction device which will clean any soiled or stained areas yet remove residual moisture from the carpeting. Hard surfaces in the conference room, such as tables and chairs should be damp-wiped using a mild detergent solution. A HEPA-equipped air filtration device (AFD) should be operated in the conference room during all cleaning activities to reduce the amount of aerosolized dust and potential mold spores.

3. All hard surfaces should be damp wiped with a mild detergent and fungicidal solution. This includes floors, walls, return and supply air vents, chair armrests, handrails, hard portions of seatbacks, furniture, counter tops and flat surfaces.

4. All soft upholstery surfaces should be cleaned with appropriate mild detergent and fungicidal solution where appropriate to use. Steam injection can be a first stage to this process for immediate removal of organics and fungal mass.

5. Fungal growth on hard metal surfaces should be vigorously cleaned with mild detergent and fungicidal solution. No bleach for stainless steel surfaces. Hard metal surfaces can also be wet-wiped using soap and water. This would include the fan blades, housing, and supporting metal components. The air handler unit must be taken offline and de-energized during all servicing and cleaning activities.

6. Contact cleaning of the supply air diffusers in the ceilings on the ground, 2nd, and 3rd floors. This may be accomplished by simply removing the spring-loaded portion of the diffuser and cleaning using a mild detergent solution. The surrounding ceiling may be also damp-wiped using a mild detergent solution.

7. The interior of the interior ground floor air handler unit should be contact cleaned where accumulated dust and mold growth was present in the fan housing compartment. The surfaces of the insulation can be damp-wiped using a mild detergent solution. Hard metal surfaces can also be wet-wiped using soap and water. This would include the fan blades, housing, and supporting metal components. The air handler unit must be taken offline and de-energized during all servicing and cleaning activities.

8. All surfaces in the ground floor Lobby area should be disinfected and wiped down with mild detergent and fungicidal solution. Careful attention should be paid to Sampling site #11 room and adjacent wall surfaces. Furniture should be thoroughly cleaned. Wooden doors with significant fungal impact should be removed and replaced. All based boards need to be cleaned with mild detergent and fungicidal solution and I would recommend the removal and replacement of the two sections most impacted by dematiaceous

9. It is recommended there be a final air quality clearance survey post implementation of remediation strategy to assess surfaces and to conduct a reduced spore trap survey. As well as to conduct a psychrometric survey to ensure HVAC is performing to specifications.

10. A HEPA-equipped air filtration device (AFD) should be operated in all fungal impacted locations during all cleaning activities to reduce the amount of aerosolized dust and potential mold spores.

5.0 References

ACGIH. Bioaerosols: assessment and control. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists. 1999.

AIHA. Facts About Mold. American Industrial Hygiene Association. December, 2011.

ASHRAE (2016) *Ventilation for acceptable indoor air quality*, Atlanta, GA: American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (ANSI/ASHRAE Standard 62.1-2016).

OSHA. Air contaminant--permissible exposure limits. 29 CFR 1910.1000

Appendix A

Thalia Marah Hall

CTEH Project Number: 044882

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Laboratory Reports

Thalia Marah Hall

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EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
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http://www.EMSL.com / cinnmicrolab@emsl.com

EMSL Order: 372413224
Customer ID: CTEH99
Customer PO:
Project ID:

Attention: Christopher Flood
CTEH Center for Toxicology & Env. Health
5120 North Shore Drive
North Little Rock, AR 72118

Project: Thalia

Phone: (501) 801-8500
Fax: (501) 614-2835
Collected Date: 08/09/2024
Received Date: 08/10/2024 11:30 AM
Analyzed Date: 08/10/2024

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

Lab Sample Number:	372413224-0001			372413224-0002			372413224-0003		
Client Sample ID:	1			2			3		
Volume (L):	75			75			75		
Sample Location:	Main Hall storage			Main Hall			Main Hall		
Spore Types	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium++	102(175)	7180	93.1	112(336)	13800	97.9	53	2200	94
Basidiospores	2	80	1	2	80	0.6	3	100	4.3
Bipolaris++	-	-	-	1	10*	0.1	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	11	450	5.8	5	200	1.4	1	40	1.7
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-	-	-	-
Total Fungi	**188**	**7710**	**100**	**344**	**14090**	**100**	**57**	**2340**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	41	-	-	41	-	-	41	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	1	-

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

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

Vincent Iuzzolino

Vincent Iuzzolino, M.S., Laboratory Manager
or other Approved Signatory

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

Initial report from: 08/12/2024 10:27 AM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

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Project: Thalia

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

Lab Sample Number:	372413224-0004			372413224-0005			372413224-0006		
Client Sample ID:	4			5			6		
Volume (L):	75			75			75		
Sample Location:	Main Hall			Main Hall Back			Lobby Area		
Spore Types	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	2	30"	1.4
Ascospores	-	-	-	-	-	-	1	40	1.9
Aspergillus/Penicillium++	91	3700	86.7	185(370)	15200	99.7	13	530	25.2
Basidiospores	-	-	-	-	-	-	8	300	14.3
Bipolaris++	-	-	-	-	-	-	1	10"	0.5
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	14	570	13.3	1	40	0.3	27	1100	52.4
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	2	80	3.8
Myxomycetes++	-	-	-	-	-	-	1	10"	0.5
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-	-	-	-
Total Fungi	**105**	**4270**	**100**	**371**	**15240**	**100**	**55**	**2100**	**100**
Hyphal Fragment	-	-	-	-	-	-	1	40	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	41	-	-	41	-	-	41	-
Analyt. Sensitivity 300x	-	13"	-	-	13"	-	-	13"	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

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

Vincent Iuzzolino, M.S., Laboratory Manager
or other Approved Signatory

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Project: Thalia

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

Lab Sample Number:	372413224-0007			372413224-0008			372413224-0009		
Client Sample ID:	7			8			9		
Volume (L):	75			75			75		
Sample Location:	Main Hall Upstairs			Stage Hallway			Storage Area		
Spore Types	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium++	3	100	26.3	23	940	85.5	107(183)	7510	100
Basidiospores	2	80	21.1	2	80	7.3	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	4	200	52.6	2	80	7.3	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Cercospora++	-	-	-	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-	-	-	-
Total Fungi	**9**	**380**	**100**	**27**	**1100**	**100**	**183**	**7510**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	41	-	-	41	-	-	41	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

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

Vincent Iuzzolino, M.S., Laboratory Manager
or other Approved Signatory

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

Initial report from: 08/12/2024 10:27 AM

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-0262
http://www.EMSL.com / cinnmicrolab@emsl.com

EMSL Order: 372413224
Customer ID: CTEH99
Customer PO:
Project ID:

Attention: Christopher Flood
CTEH Center for Toxicology & Env. Health
5120 North Shore Drive
North Little Rock, AR 72118

Project: Thalia

Phone: (501) 801-8500
Fax: (501) 614-2835
Collected Date: 08/09/2024
Received Date: 08/10/2024 11:30 AM
Analyzed Date: 08/10/2024

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

Lab Sample Number:	372413224-0010			372413224-0011					
Client Sample ID:	10			11					
Volume (L):	75			75					
Sample Location:	Outside Door			1st Floor Impacted Room					
Spore Types	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**			
Alternaria (Ulocladium)	5	200	3.5	1	10*	0			
Ascospores	5	200	3.5	1	40	0			
Aspergillus/Penicillium++	-	-	-	249(1490)	61100	34.6			
Basidiospores	43	1800	31.1	5	200	0.1			
Bipolaris++	1	40	0.7	-	-	-			
Chaetomium++	-	-	-	-	-	-			
Cladosporium	56	2300	39.8	175(2800)	115000	65.2			
Curvularia	3	100	1.7	-	-	-			
Epicoccum	-	-	-	-	-	-			
Fusarium++	-	-	-	-	-	-			
Ganoderma	2	80	1.4	1	40	0			
Myxomycetes++	10	410	7.1	-	-	-			
Pithomyces++	3	100	1.7	-	-	-			
Rust	1	10*	0.2	-	-	-			
Scopulariopsis/Microascus	-	-	-	-	-	-			
Stachybotrys/Memnoniella	-	-	-	-	-	-			
Unidentifiable Spores	-	-	-	-	-	-			
Zygomycetes	-	-	-	-	-	-			
Cercospora++	13	530	9.2	-	-	-			
Nigrospora	1	10*	0.2	-	-	-			
Total Fungi	**143**	**5780**	**100**	**4298**	**176390**	**100**			
Hyphal Fragment	2	80	-	-	-	-			
Insect Fragment	-	-	-	1	40	-			
Pollen	-	-	-	-	-	-			
Analyt. Sensitivity 600x	-	41	-	-	41	-			
Analyt. Sensitivity 300x	-	13*	-	-	13*	-			
Skin Fragments (1-4)	-	1	-	-	1	-			
Fibrous Particulate (1-4)	-	1	-	-	1	-			
Background (1-5)	-	2	-	-	1	-			

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

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

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

Vincent Iuzzolino

Vincent Iuzzolino, M.S., Laboratory Manager
or other Approved Signatory

Initial report from: 08/12/2024 10:27 AM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

Thalia Marah Hall

CTEH Project Number: 044882

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Appendix B

Photo Log

Thalia Marah Hall

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Photo 1

Fungal growth on carpet in front row directly in front of stage. Significant growth observed.

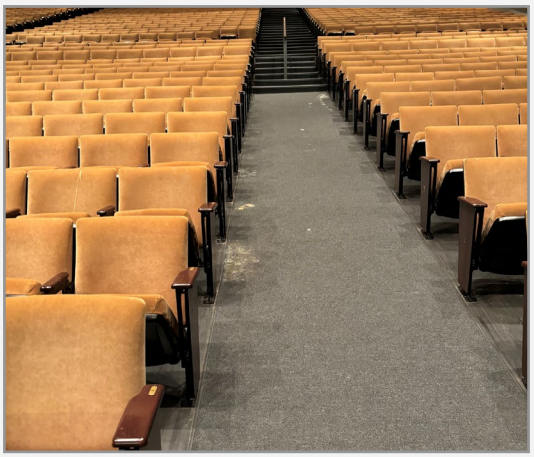

Photo 2

Facing North toward lobby from stage. Fungal growth extends up gradient to lobby doors.

Photo 3

Spore trap air sampling with air-o-cell and IAQ 15-first row, middle section.

Photo 4

Sampling location and sample #7 Balcony seating facing stage.

Photo 5

Represenative armrest of fungal growth on first floor auditorium hard surfaces (wood)

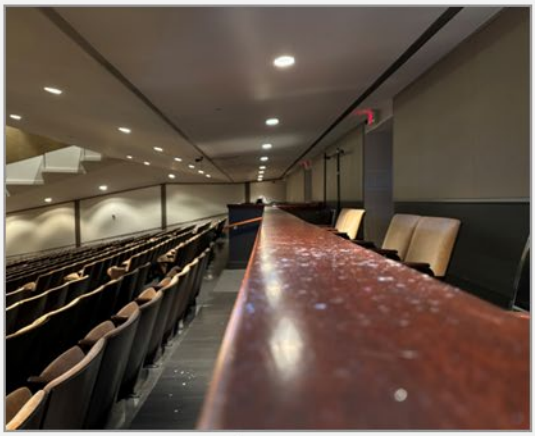

Photo 6

Directly East of sample location and sample# 5- fungal growth present on wood surfaces

Photo 7

Fungal contamination of armrest but no visible on upholstery. Middle section close to stage.

Photo 8

Fungal growth hard surfaces moving North from stage-still no visible upholstery contamination

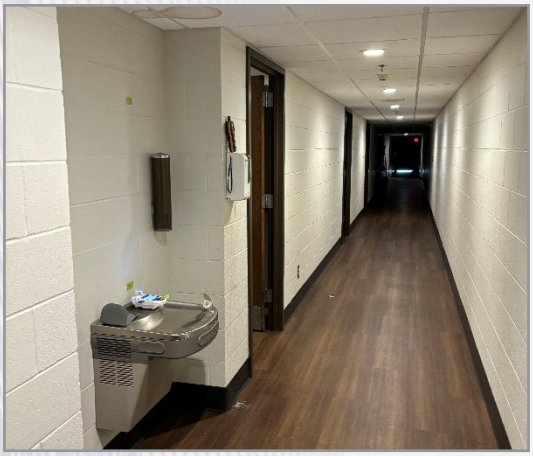

Photo 9

Sampling location and sample #8 next to water fountain. Visible stain on ceiling tile.

Photo 10

Facing East from photo #9. Same hallway. Visible surface contamination of painted metal on top of refrigerator.

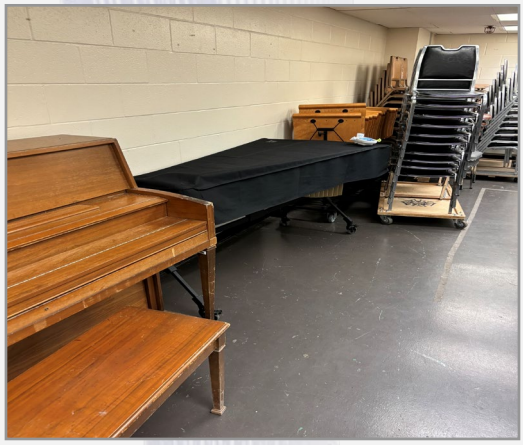

Photo 11

Sampling location and sample #9. Southeast basement storage. Surface growth on chairs and piano.

Photo 12

Chair surface from photo #11 location.

Photo 13

Ground floor lobby west of center of lobby and refreshment/couch seating area. Wooden door significantly contaminated. Room represents sampling site #11

Photo 14

Same door from photo #13. Large spore mass on surface.

Photo 15

Facing North and accross from site #11 in photo 14. Dematiacious fungal growth on sythetic base boards

Photo 16

Close up of photo 15 for reference.

Photo 17

In room representing Sampling Site #11. Mix of AMG and dust on supply diffuser.

Photo 18

Ceiling tiles water stained and presumed AMG in the same room as photo 11 representing Sampling site #11

Photo 19

Sampling Site # 11 further indication of moisture intrusion in this room from ceiling tile stains. Significant odor.

Photo 20

Hallway directly East of restricted room Site #11- sythetic baseboards exhibiting fungal growth from dematiacious colonizers

Photo 21

Ground floor lobby, East of highly impacted Site #11, pervasive colonization of couch surfaces with fungal growth

Photo 22

Ground floor lobby couch with additional fungal growth-different vantage point

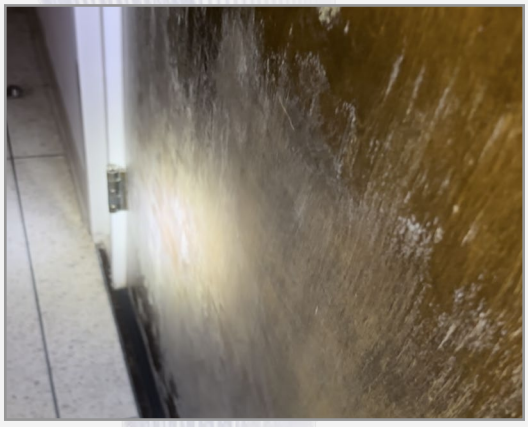

Photo 23

Sister room to Site #11, Ground floor lobby, East door. Significant fungal growth on wood door surface

Photo 24

Moving East from photo 11 door, ground floor lobby. Chairs are contaminated with fungal structures.


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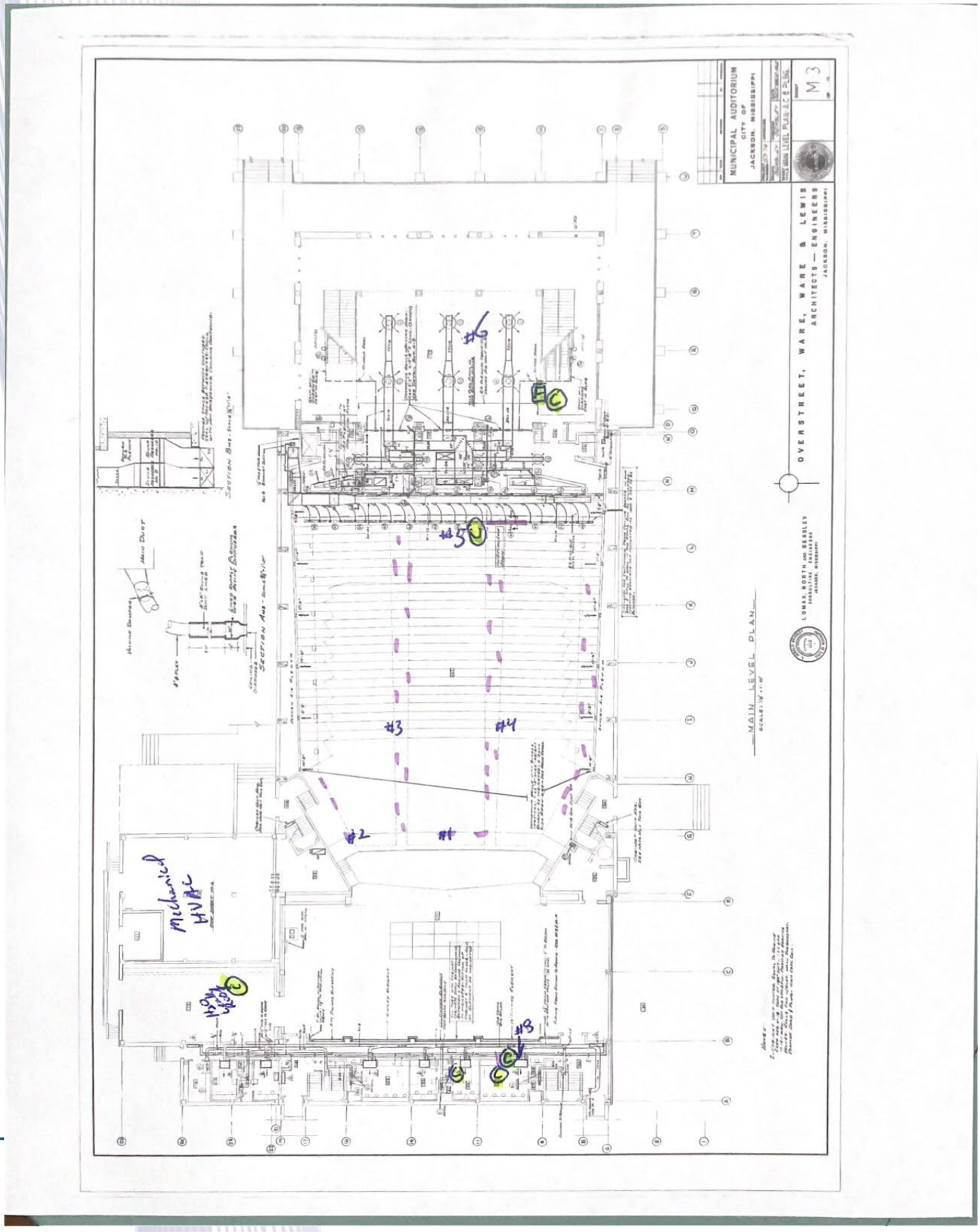

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