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CTEH[®]

THE SCIENCE OF READYSM

FORT MYERS HIGH SCHOOL

POST REMEDIATION ASSESSMENT

Fort Myers, Florida

October 16, 2022

Project #021453

Post Remediation Assessment

Prepared By

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Prepared on October 16, 2022

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1.0 Background

On September 28, 2022, Hurricane Ian made landfall in Cayo Costa, FL with winds of 155 miles per hour, two miles per hour short of a Category 5 hurricane. Over the course of two days, Ian moved across Florida, exiting on September 30, 2022, but not before causing major flooding and tornado-like damage in areas across the state.

In response to Hurricane Ian, CTEH, LLC® (CTEH) was requested by Cotton Global Disaster Solutions (Cotton) to assess structures associated with Lee County School District awarded to them under RFQ No. 22-7431TA for potential water intrusion. On October 14, 2022, industrial hygienists from CTEH and Universal Engineering Sciences (Universal) conducted post remediation verification (PRV) bioaerosol sampling and visually assessed the Fort Myers High School at 2635 Cortez Blvd, Fort Myers, FL 33901. All samples were collected under the supervision of a licensed mold assessor from Universal. The assessments were requested by Lemoine to assess the potential presence of airborne mold spores, and were conducted in both the impacted and non-impacted buildings.

Heating, ventilation, and air-conditioning (HVAC) for each room is provided by a HVAC system on the roof of the building.

At the time all rooms were sampled, there were no visible signs of mold in the rooms; however, there were two rooms that had visible moisture impact so sampling did not occur in those locations. Those rooms are located at:

- Auditorium
- Classroom 232

The airborne bioaerosol sampling in all other rooms confirmed mold spores were consistent with what would be found outdoors or in a typical building environment.

2.0 Exposure Standards and Guidelines

Currently, there are no generally accepted occupational or public health standards for interpreting airborne microbiological sample results. Individual susceptibility varies with genetic predisposition, age, state of health, concurrent exposures, and previous sensitization. Due to these challenges, it is not possible to determine an indoor spore concentration that can guarantee all individuals will be asymptomatic. Guidelines published by the American Industrial Hygiene Association (AIHA) recommend comparing the indoor and outdoor air sampling results. In general, the types of fungi and their airborne concentrations found indoors should be similar (in non-problem buildings) to outdoor air.^[1] Differences in the airborne levels or types of fungi may indicate the presence of moisture sources and resultant fungal growth.

3.0 Methods and Equipment

All collected samples were sent under chain-of-custody to EMSL Analytical, Inc., an AIHA-accredited laboratory.* All monitoring equipment was factory calibrated at the manufacturers recommended interval or prior to sampling.

Bioaerosol samples were collected indoors and outdoors using Zefon Air-O-Cell sampling cassettes attached to an SKC QuickTake 30 air sampling pump. Prior to sampling, the pump was calibrated to a flowrate of approximately 15 L/min, as specified by the sampling media manufacturer, using a Bios Defender 510 DryCal. Each sample was collected for a five-minute duration resulting in a sampled air volume of approximately 75 Liters.† Samples were analyzed by microscopic examination using method EMSL 05-TP-003/ASTM D7391 to determine mold spore genus and spore concentration. This method does not differentiate between viable and non-viable spore types.

3.1 Visual Inspection

A visual inspection was conducted in accessible portions of the classrooms, school common areas, and above drop ceilings as necessary.

3.2 Psychrometric Assessment

A psychrometric assessment was conducted utilizing a Protimeter Hygromaster L (Model #: POL7750L) Hygrometer in both the impacted and non-impacted buildings.

4.0 Results

Laboratory reports for all samples are provided in **Appendix A**.

5.0 Conclusions and Recommendations

The inspections and tests were performed on October 14, 2022, by industrial hygienists from CTEH and Universal. The results of the post-remediation inspection revealed no visible mold growth in the areas sampled, but did reveal two rooms that had visible moisture impact. Cotton was notified of these locations and advised to investigate the potential source of this impact further, and that isolation of the rooms and additional remediation actions prior to permitting re-occupancy to this school location may be warranted. The post-remediation inspection also revealed psychrometric (i.e., atmospheric) readings above 55 Grains of Moisture per Pound of Air (GPP), as well as a single *Stachybotrys* spore (Raw Count = 1; Count/M³ = 40) in the Student Affairs room, but it was not present with *Chaetomium* or levels of *Aspergillus/Penicillium*

* AIHA Laboratory Accreditation Program (AIHA-LAP) – Environmental Microbiology; AIHA Environmental Microbiology Proficiency Analytical Testing Program (AIHA-EMPAT) Participant; CDC Elite – *Legionella*

† See laboratory reports in the appendix for exact flowrates and collected volumes.

above background. However, these items may warrant further investigation / dehumidification techniques to inhibit microbial growth.

The results of the air testing in all other assessed rooms are considered normal and typical and do not indicate the presence of elevated airborne mold spores.

While some areas of the Fort Myers High School may be fit for re-occupancy at this time, the presence of impacted areas may warrant a more thorough investigation, and it is recommended that, at a minimum, the rooms that these contained visible moisture impact are retested following further investigation and remediation activities prior to removing occupancy restrictions.

6.0 References

[1] (AIHA), American Industrial Hygiene Association. *Facts About Mold*. Edited by American Industrial Hygiene Association (AIHA). Falls Church, Virginia: AIHA, 2011.

Appendix A

Laboratory Reports



EMSL Analytical, Inc.

5700 Memorial Highway, Suite 122 Tampa, FL 33615

Tel/Fax: (813) 280-8752 / (813) 280-8753

<http://www.EMSL.com> / tampalab@emsl.com

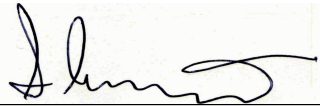
EMSL Order: 932205766
Customer ID: CTEH99
Customer PO:
Project ID:

Attention: David Watts CTEH Center for Toxicology & Env. Health 5120 North Shore Drive North Little Rock, AR 72118	Phone: (501) 366-0852 Fax: (501) 614-2835 Collected Date: 10/14/2022 Received Date: 10/15/2022 06:15 AM Analyzed Date: 10/15/2022
Project: 021453	

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

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	932205766-0001 FMHS1014MS001 75 HALL F236			932205766-0002 FMHS1014MS003 75 HALL B224			932205766-0003 FMHS1014MS004 75 B223		
Spore Types	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	1	40	33.3	1	40	44.4
Aspergillus/Penicillium	1	40	13.8	1	40	33.3	-	-	-
Basidiospores	1	40	13.8	-	-	-	1	40	44.4
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	5	200	69	-	-	-	-	-	-
Curvularia	1*	10*	3.4	-	-	-	1*	10*	11.1
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	1	40	33.3	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Corynespora	-	-	-	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-	-	-	-
Total Fungi	8	290	100	3	120	100	3	90	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	2*	30*	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	1	-	-	1	-

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



Gerald Iannuzzi, Laboratory Manager
or other Approved Signatory

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Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	932205766-0004 FMHS1014MS005 75 B203			932205766-0005 FMHS1014MS006 75 F234			932205766-0006 FMHS1014MS009 75 G165		
Spore Types	Raw Count	Count/M ³	% of Total	Raw Count	Count/M ³	% of Total	Raw Count	Count/M ³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	1	40	15.4	2	90	100	3	100	47.6
Basidiospores	2	90	34.6	-	-	-	2	90	42.9
Bipolaris++	-	-	-	-	-	-	1*	10*	4.8
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	2	90	34.6	-	-	-	1*	10*	4.8
Curvularia	1	40	15.4	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Corynespora	-	-	-	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-	-	-	-
Total Fungi	6	260	100	2	90	100	7	210	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	2	-

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

Gerald Iannuzzi, Laboratory Manager
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Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	932205766-0007 FMHS1014MS010			932205766-0008 FMHS1014MS011			932205766-0009 FMHS1014MS012		
	75	75	75	Student Affairs			C154		
	303								
Spore Types	Raw Count	Count/M ³	% of Total	Raw Count	Count/M ³	% of Total	Raw Count	Count/M ³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	1*	10*	2.3	-	-	-
Aspergillus/Penicillium	4	200	83.3	3	100	23.3	2	90	100
Basidiospores	1	40	16.7	2	90	20.9	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	1	40	9.3	-	-	-
Curvularia	-	-	-	3	100	23.3	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	1	40	9.3	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	1*	10*	2.3	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	1	40	9.3	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Corynespora	-	-	-	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-	-	-	-
Total Fungi	5	240	100	13	430	100	2	90	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	1*	10*	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	2	-	-	1	-

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

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Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	932205766-0010 FMHS1014MS014 75 140			932205766-0011 FMHS1014MS015 75 C124			932205766-0012 FMHS101BG001 75 BG001		
Spore Types	Raw Count	Count/M ³	% of Total	Raw Count	Count/M ³	% of Total	Raw Count	Count/M ³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	6	300	11.5
Aspergillus/Penicillium	1	40	33.3	-	-	-	3	100	3.8
Basidiospores	1	40	33.3	-	-	-	3	100	3.8
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	33.3	3	100	100	46	2000	76.3
Curvularia	-	-	-	-	-	-	1	40	1.5
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Corynespora	-	-	-	-	-	-	1	40	1.5
Nigrospora	-	-	-	-	-	-	1	40	1.5
Total Fungi	3	120	100	3	100	100	61	2620	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	1	40	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
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	-

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

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Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	932205766-0013 FMHS101BG002 75			932205766-0014 FMHS101FB001 FB		
	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total
Spore Types						
Alternaria (Ulocladium)	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-
Basidiospores	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-
Cladosporium	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-
Rust	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-
Corynespora	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-
Total Fungi	-	-	-	-	No Trace	-
Hyphal Fragment	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-
Pollen	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	0	-
Analyt. Sensitivity 300x	-	13*	-	-	0*	-
Skin Fragments (1-4)	-	-	-	-	-	-
Fibrous Particulate (1-4)	-	-	-	-	-	-
Background (1-5)	-	-	-	-	-	-

932205766-0013 - Not Submitted

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

Gerald Iannuzzi, Laboratory Manager
or other Approved Signatory

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