



# EA GROUP

Environmental Analysis  
and Management

March 29, 2024

Mr. Sean Brown  
**Shaker Heights City School District**  
3654 Lee Road  
Shaker Heights, Ohio 44120

RE: **Limited Air Quality Assessment**  
Room 228, Shaker Heights High School, 15911 Aldersyde Drive, Shaker Heights, Ohio  
OH46001

## Description of Work

EA Group, Mentor, Ohio was contracted by Shaker Heights City School District to perform a limited air quality assessment in Room 228 of the Shaker Heights High School facility, which included visual inspection and air sampling and surface wipe sampling for fungal (mold) structures. The assessment was performed on March 12, 2024 by EA Group's Certified Indoor Environmentalist (CIE) Scott Landis. Assessment areas were limited to Room 222 (Control 1), Room 228, and Room 230 (Control 2). Outdoor conditions were used for comparison.

## General Observations

An active roof leak in Room 228 has affected the ceiling and wall plasters and ceiling tiles. From past survey information, the affected materials were not determined to be asbestos-containing materials (ACM). Inspection of the designated areas with Tramex® moisture meter and a FLIR infrared camera was completed to the extent possible and confirmed moisture present on the wall and ceiling building materials in the corner of Room 228, as shown on Figure 1, attached. The roof was patched but it is unknown if it fully addressed the leaks. Water staining was observed, but no obvious suspect mold growth was noted. No odors were noticed during inspection.

## Air and Surface Wipe Sampling for Fungal Structures

Bioaerosol samples were secured to assess total concentrations of airborne fungal structures (viable and non-viable spores, fragments, etc.) at Shaker Heights High School facility in Room 222 (Control 1), Room 228, and Room 230 (Control 2), and outdoors. Samples were secured on 37-mm Air-O-Cell cassettes, which have a slit opening to control air flow and a sticky surface that captures both viable and non-viable fungal spores and non-viable fungal particles, as well as other airborne particulates. The cassettes are analyzed by microscopic methods, with results expressed as total fungal structures per cubic meter (FS/m<sup>3</sup>) of air.

Results are summarized in Table 1, attached, and detailed in the laboratory report in Appendix A.

As shown in Table 1, total fungal spore concentrations indoors in all areas were lower than outdoors, with no obvious amplification of any individual type. While the concentration of *Penicillium/Aspergillus*-type spores in Room 228 were higher other indoor areas and outdoors, it is



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**Shaker Heights City School District**

Limited Air Quality Assessment

Room 228, Shaker Heights High School, 115911 Aldersyde Drive, Shaker Heights, Ohio  
OH46001

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not considered a significant amplification indicative of active growth due to water damaged building materials.

No fungal spores were detected in the surface wipe samples from Room 228.

**Summary of Significant Findings and Recommendations**

Other than wall and ceiling plaster which continue to retain moisture and should be addressed, no adverse indoor air quality conditions were identified. Total fungal spore concentrations indoors were lower than outdoors, with no significant amplification of any one type. No fungal spores were detected in the surface wipe samples from Room 228.

Verification that roof leaks have been addressed, drying of the ceiling plaster, and a thorough cleaning following any rebuilding activities should serve to address the concerns. The affected materials were previously determined to be non-ACM (no asbestos detected).

**LIMITATIONS TO THIS REPORT**

1. EA Group's report reflects only the conditions that existed at the time of the assessment, and airborne contaminant levels may vary over time.
2. Any reports or remediation plans produced for the project site are limited to the portion(s) of the building identified in EA Group's Scope of Work Agreement.
3. Any exposure data recorded during the assessment may not be sufficiently broad to assess the suitability of the indoor air quality for all individuals, particularly those who are extremely sensitive to certain chemical or biological substances or who have immune system deficiencies.
4. EA Group makes use of guidelines and recommendations developed by the American Industrial Hygiene Association (AIHA) and the American Conference of Governmental and Industrial Hygienists (ACGIH) for the assessment of indoor fungi. At this time there are no governmental regulations or standards that apply to fungal exposures.
5. Any data, information, interpretations, or recommendations contained in EA Group's reports are presented solely as a basis and guide to the existing conditions as evaluated at the project site and limited to the portion(s) of the building identified in EA Group's Scope of Work Agreement. As with all indoor air quality evaluations, any opinions expressed herein are subject to revision in light of new information that may be developed in the future, and no warranties are expressed or implied.



March 29, 2024

**Shaker Heights City School District**

Limited Air Quality Assessment

Room 228, Shaker Heights High School, 115911 Aldersyde Drive, Shaker Heights, Ohio  
OH46001

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This report has not been prepared for use by any party other than our Client. It may not contain sufficient information for the purposes of other parties or other uses. If any significant changes are made to site conditions, resident activities, equipment, etc. described in this report, any conclusions or recommendations contained herein may be invalid, unless the changes are reviewed by EA Group and the conclusions or recommendations are modified or approved in writing.

If there are any questions or concerns regarding the information provided, please contact the undersigned. Thank you for consulting EA Group.

Sincerely,

**EA Group**

Timothy S. Bowen,  
Vice President/Technical Director

Scott Landis,  
Certified Indoor Environmentalist

**Table 1. Summary of Air and Surface Wipe Sample Results for Fungal Structures  
Shaker Heights City School District  
Shaker Heights High School, Shaker Heights, Ohio**

**March 12, 2024 Sampling**

Location 46001-	Outdoors; North Side	Room 222 [Control 1]	Room 228	Room 230 [Control 2]
<b>Fungal Spore / Sample I.D.</b>	<b>031224-04A</b>	<b>031224-01A</b>	<b>031224-02A</b>	<b>031224-03A</b>
<i>Cladosporium</i>	320	190		27
Ascospores	67			13
<i>Penicillium/Aspergillus</i> types	67	13	170	40
Basidiospores	40	53	13	13
<i>Smuts/Myxomycetes/Periconia</i>			13	
<b>Total Fungal Spores</b>	<b>490</b>	<b>250</b>	<b>200</b>	<b>93</b>
Hyphal Fragments				
Pollen	67			13
Debris Rating		3+	3+	3+

Results expressed as fungal structures per cubic meter of air (FS/m<sup>3</sup>)

Debris Rating:

Background debris is indication of amount of non-biological particulate matter (dust) present on slide; graded from 1+ to 4+, with 4+ indicating largest amount. Counts with 4+ may be higher than reported.

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Surface/Location 46001-	Room 228; Plaster Wall at 8' Elevation	Room 228; Plaster Ceiling
<b>Fungal Spore / Sample I.D.</b>	<b>031224-01S</b>	<b>031224-02S</b>
<b>Total Fungal Spores</b>	<b>&lt;40</b>	<b>&lt;40</b>
Hyphal Fragments	<40	<40

Results expressed as fungal structures per square inch of surface area (FS/in<sup>2</sup>)

Hyphal fragments are components of fungal growth (akin to roots and branches of a tree)

High concentrations in surface samples considered indicative of active fungal growth



**EA GROUP**

Environmental Analysis  
and Management

**APPENDIX A**

Laboratory Analytical Report(s)

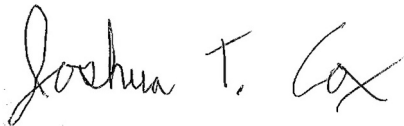
Report for:

**Mr. Tim Bowen**  
**EA Group**  
7118 Industrial Park Blvd.  
Mentor, OH 44060

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Regarding: Eurofins Aerotech Built Environment Testing, Inc.  
Project: OH46001; Shaker HB Schools  
EML ID: 3572103

Approved by:



Business Unit Manager  
Joshua Cox

Dates of Analysis:

Spore trap analysis: 03-15-2024

Service SOPs: Spore trap analysis (EB-MY-S-1038)  
AIHA-LAP, LLC accredited service, Lab ID #102297

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All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received and tested. Information supplied by the client which can affect the validity of results: sample air volume.

Eurofins Aerotech Built Environment Testing, Inc. ("the Company"), a member of the Eurofins Built Environment Testing group of companies, shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Eurofins Aerotech Built Environment Testing, Inc.'s LabServe® reporting system includes automated fail-safes to ensure that all AIHA-LAP, LLC quality requirements are met and notifications are added to reports when any quality steps remain pending.

Client: EA Group  
 C/O: Mr. Tim Bowen  
 Re: OH46001; Shaker HB Schools

Date of Sampling: 03-12-2024  
 Date of Receipt: 03-13-2024  
 Date of Report: 03-15-2024

**SPORE TRAP REPORT: NON-VIABLE METHODOLOGY**

Location:	40001-031224-01A: Rm 222				40001-031224-02A: Rm 228				40001-031224-03A: Rm 230				40001-031224-04A: Outdoors			
Comments (see below)	None				None				None				None			
Lab ID-Version‡:	17460336-1				17460337-1				17460338-1				17460339-1			
Analysis Date:	03/15/2024				03/15/2024				03/15/2024				03/15/2024			
Sample volume (liters)	75				75				75				75			
Background debris (1-4+)	3+				3+				3+				3+			
	raw ct.	Count/m3	DL/m3*	%	raw ct.	Count/m3	DL/m3*	%	raw ct.	Count/m3	DL/m3*	%	raw ct.	Count/m3	DL/m3*	%
Hyphal fragments																
Pollen									1	13	13	n/a	5	67	13	n/a
<b>§ TOTAL FUNGAL SPORES</b>	19	250	n/a	100	15	200	n/a	100	7	93	n/a	100	37	490	n/a	100
Ascospores									1	13	13	14	5	67	13	14
Basidiospores	4	53	13	21	1	13	13	7	1	13	13	14	3	40	13	8
Chaetomium																
Cladosporium	14	190	13	74					2	27	13	29	24	320	13	65
Penicillium/Aspergillus types	1	13	13	5	13	170	13	87	3	40	13	43	5	67	13	14
Pithomyces																
Rusts																
Smuts, Periconia, Myxomycetes					1	13	13	7								
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Zygomycetes																

**Comments:**

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.

The analytical sensitivity is the spores/m<sup>3</sup> divided by the raw count, expressed in spores/m<sup>3</sup>, per spore and per sample.

\*The detection limit/limit of detection (DL) per cubic meter (m<sup>3</sup>) has been rounded to two significant figures to reflect analytical precision.

‡Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

‡ 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 Fungal Spores has been rounded to two significant figures to reflect analytical precision.

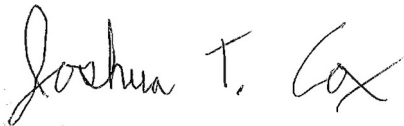
Report for:

**Mr. Tim Bowen**  
**EA Group**  
7118 Industrial Park Blvd.  
Mentor, OH 44060

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Regarding: Eurofins Aerotech Built Environment Testing, Inc.  
Project: OH46001; Shaker HB Schools  
EML ID: 3572103

Approved by:



Business Unit Manager  
Joshua Cox

Dates of Analysis:

Quantitative spore count direct exam: 03-15-2024

Service SOPs: Quantitative spore count direct exam (EM-MY-S-1041)  
AIHA-LAP, LLC accredited service, Lab ID #102297

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All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the samples as received and tested.

Eurofins Aerotech Built Environment Testing, Inc. ("the Company"), a member of the Eurofins Built Environment Testing group of companies, shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Eurofins Aerotech Built Environment Testing, Inc.'s LabServe® reporting system includes automated fail-safes to ensure that all AIHA-LAP, LLC quality requirements are met and notifications are added to reports when any quality steps remain pending.



Client: EA Group  
 C/O: Mr. Tim Bowen  
 Re: OH46001; Shaker HB Schools

Date of Sampling: 03-12-2024  
 Date of Receipt: 03-13-2024  
 Date of Report: 03-15-2024

**QUANTITATIVE SPORE COUNT REPORT**

Location:	40001-031224-01S: RM 228 - Wall				40001-031224-02S: Rm 228 - Ceiling			
Comments (see below)	A				A			
Sample type	Swab sample				Swab sample			
Lab ID-Version‡:	17460334-1				17460335-1			
Analysis Date:	03/15/2024				03/15/2024			
Background debris (1-4+)	4+				4+			
Sample size	1 in2				1 in2			
Reporting unit	1 in2				1 in2			
Dilution	1:40				1:40			
	Count	Count/sample	Count/unit	%	Count	Count/sample	Count/unit	%
Hyphal fragments		< 40	< 40	n/a		< 40	< 40	n/a
<b>§ TOTAL FUNGAL SPORES</b>		< 40	< 40	100		< 40	< 40	100
Cladosporium								
Curvularia								
Epicoccum								
Fusarium								
Myrothecium								
Nigrospora								
Other colorless								
Penicillium/Aspergillus types								
Pithomyces								
Rusts								
Smuts, Periconia, Myxomycetes								
Stachybotrys								
Stemphylium								
Torula								
Ulocladium								
Zygomycetes								

**Comments:** A) No spores detected.

‡ 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 Fungal Spores has been rounded to two significant figures to reflect analytical precision.  
 Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample, indicating a raw count of <1 spore.

The limit of detection is 1 spore per area analyzed; Analytical Sensitivity is 1 spore per unit times the dilution factor.

Where tape lifts are performed for bulk sample analysis, the unit reported is specific to the area of tape analyzed.

Client: EA Group  
 C/O: Mr. Tim Bowen  
 Re: OH46001; Shaker HB Schools

Date of Sampling: 03-12-2024  
 Date of Receipt: 03-13-2024  
 Date of Report: 03-15-2024

**MoldRANGE™: Extended Outdoor Comparison**  
**Outdoor Location: 40001-031224-04A, Outdoors**

Fungi Identified	Outdoor data	Typical Outdoor Data for: March in Ohio† (n‡=1728)						Typical Outdoor Data for: The entire year in Ohio† (n‡=23400)					
		very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
<b>Generally able to grow indoors*</b>													
Alternaria	-	7	7	13	38	53	15	13	13	47	130	210	50
Bipolaris/Drechslera group	-	7	7	13	13	13	2	7	7	13	27	53	9
Chaetomium	-	6	7	13	27	49	4	7	7	13	27	53	4
Cladosporium	320	27	52	110	370	690	70	53	130	750	2,700	4,900	88
Curvularia	-	7	7	13	13	13	2	7	11	20	53	93	14
Nigrospora	-	7	7	13	13	27	5	7	11	20	53	80	20
Penicillium/Aspergillus types	67	27	40	80	220	440	56	38	53	150	400	750	57
Stachybotrys	-	-	-	-	-	-	< 1	7	7	13	40	100	1
Torula	-	7	7	13	42	66	2	7	12	22	53	80	10
<b>Seldom found growing indoors**</b>													
Ascospores	67	27	38	110	400	900	61	53	110	530	1,900	3,600	84
Basidiospores	40	40	53	240	1,300	3,000	84	100	270	1,900	7,800	15,000	94
Rusts	-	7	10	13	32	53	3	7	13	27	80	150	24
Smuts, Periconia, Myxomycetes	-	7	7	13	40	67	28	13	13	44	130	240	61
<b>§ TOTAL SPORES/m3</b>	<b>490</b>												

†The 'Typical Outdoor Data' represents the typical outdoor spore levels for the location and time frame indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically, and if enough data is not available to make a statistically meaningful assessment, it is indicated with a dash.

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

\* The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

\*\* These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

‡n = number of samples used to calculate data.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor data" are based on the results of the analysis of samples delivered to and analyzed by Eurofins EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. In addition, Eurofins EMLab P&K may not have received and tested a representative number of samples for every region or time period. Eurofins EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

East: (866) 871-1984  
 Central: (800) 651-4802  
 West: (866) 888-6653

WEATHER		Fog	Rain	Snow	Wind	Clear
LEVEL	None					
	Light					
	Moderate					
	Heavy					



REQUESTE

Non-Culturable		Cultur.	
Spore Trap	Tape, Swab, Bulk	BioCassette™ Ar Swab, Water, Bulk, Dust, Soil, Contact Plate	
Spore Trap Analysis	Other biological particles - supplement	1-Media Surface Fungi (Genus ID + Asp. spp.)	Asbestos in Air - PCM Airborne Fiber Count (NIOSH 7400)
Direct Microscopic Exam (Qualitative)	Quantitative spore count direct exam	Culturable Air Fungi (Genus ID + Asp. spp.)	Asbestos Bulk - PLM
Dust Characterization		Gram Stain and Counts (Culturable Air and Surface Bacteria)	Lead (Pb) - Flame AA
		Legionella culture	PCR (please specify test)
		Total Coliform, E.coli (Presence/Absence)	Allergens (please specify test)
		QuantTray-Sewage Screen	
		OTHER: (please specify test)	

**CONTACT INFORMATION**

Company: EA GROUP  
 Contact: TIM BOWEN  
 Phone: 440-951-3574

Address: 7118 INDUSTRIAL PK. BLVD.  
 Special Instructions:

**PROJECT INFORMATION**

Project ID: DH 46001  
 Project Description: SHAKER HS. SCHOOLS  
 Project Zip Code: 31224  
 PO Number: [Signature]

**TURN AROUND TIME CODES - (TAT)**

STD - Standard (Default)  
 ND - Next Business Day  
 SD - Same Business Day  
 WH - Weekend/Holiday/ASAP

Rushes received after 2pm or on weekends, will be considered received the next business day. Please alert us in advance of weekend analysis needs.

SAMPLE ID	DESCRIPTION	Sample Type (Below)	TAT (Above)	Total Volume/Area (as applicable)	NOTES (Time of day, Temp, RH, etc.)
46001					
-031224-01A	Rm 222	ST	STD	75 Liters	
-02A	Rm 228				
-03A	Rm 230				
-04A	OUTDOORS				
-015	Rm 228 - WFLU	SW		1 SWIN	
-025	Rm 228 - CEILING	SW			

818103775069 818103775069

**SAMPLE TYPE CODES**

BC - BioCassette™	CP - Contact Plate	T - Tape	O - Other:
A1S - Andersen	ST - Spore Trap	SW - Swab	
SAS - Surface Air Sampler	B - Bulk	SO - Soil	
NP - Non-potable Water	P - Potable Water	D - Dust	

**RELINQUISHED BY**

[Signature]

**DATE & TIME**

3-12-24 / 1520

**RECEIVED BY**

Dyan Zamora

**DATE & TIME**

3/13/24  
945am