

December 9, 2014

Mr. Matt Helgerson
Jordan Public Schools
500 Sunset Drive
Jordan, MN 55352



*Providing Trusted
Health & Safety Solutions*

**RE: Jordan Elementary School – Rooms 39, 67 and 69
Follow-up Airborne Fungal Sampling
IEA Project #201410785**

Dear Mr. Helgerson:

IEA is pleased to provide this report for the follow-up fungal air sampling conducted at Jordan Elementary School in Jordan, Minnesota, on December 4, 2014. The purpose of the sampling was to address occupant concerns regarding air quality in some classrooms.

SITE INFORMATION/OBSERVATIONS

Fungal air sampling conducted on November 14, 2014 indicated elevated fungal levels in Room 69 (see IEA report dated November 26, 2014, for details). Based on IEA's recommendations, the district conducted cleaning in Room 69, inspected the HVAC system serving the classroom, and used an infrared camera to look for evidence of moisture in the wall cavities. No evidence of moisture or fungal growth was found. IEA conducted follow-up air sampling to determine if airborne fungal levels were still elevated. IEA's observations are described below:

Room 69

- The room construction consists of carpet flooring, sheetrock and concrete block walls, and drop ceiling tiles with an open plenum above.
- No obvious visible fungal growth was observed.
- No odors were detected at the time of the assessment.

SAMPLE RESULTS AND DISCUSSION

IEA collected spore count air samples (Air-O Cell) in Rooms 39, 67, 69, and outdoors for comparison. The purpose for the air sampling was to determine if an airborne fungal concern was still present in Room 69. Room 67 was selected as an indoor comparison on the same air handler and Room 39 as a comparison on a different air handler. Two air samples were collected in Room 69, one by the supply air diffuser and one away from the diffuser. The analysis of the air samples was performed by EMSL Analytical, Inc. of Minneapolis, Minnesota.

A copy of the laboratory analysis report can be found in Appendix A. Sampling methodologies and existing guidelines can be found in Appendix B.

TOTAL SPORE COUNT AIR SAMPLES (AIR-O-CELL) SAMPLES

- ***Room 39***
The result identified a low level of fungal counts (spores) on the sample. *Cladosporium* spp. was the only organisms identified on the sample. *Cladosporium* spp. is typically associated with the migration of spores from outdoors. The result indicates normal conditions at the time of the assessment.

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- **Room 67**
The result identified a low level of fungal counts (spores) on the sample. *Cladosporium* spp. was the highest-ranked organism identified on the sample. The result indicates normal conditions at the time of the assessment.
- **Room 69 – Near Diffuser**
The result identified a low level of fungal counts (spores) on the sample. *Cladosporium* spp. was the highest-ranked organism identified on the sample. The result indicates normal conditions at the time of the assessment and suggests that there is not an airborne fungal concern associated with the HVAC system.
- **Room 69-Away from Diffuser**
The result identified a low level of fungal counts (spores) on the sample. *Cladosporium* spp. and *Aspergillus/Penicillium* were the only organisms identified on the sample. Although *Aspergillus/Penicillium* is often associated with water-impacted building materials, it was also detected in the outdoor sample and the level was not significant. The result indicates normal conditions at the time of the assessment.

CONCLUSIONS/RECOMMENDATIONS

No visible fungal issues were observed in Rooms 39, 67, and 69. The air sample results indicated normal conditions at the time of sampling.

Recommendations:

- Periodically recheck airborne fungal levels in Room 69 to confirm that conditions remain normal.

GENERAL COMMENTS

The analysis and opinions expressed in this report are based upon data obtained from Jordan Public Schools at the indicated locations. This report does not reflect variations in conditions that may occur across the site, property, or facility. Actual conditions may vary and may not become evident without further assessment.

The report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted indoor air quality practices. Other than as provided in the preceding sentence and in our EH&S Proposal #3929 dated July 14, 2014, including the General Conditions attached thereto, no warranties are extended or made.

If you have any questions, please contact our office at 763-315-7900.

Sincerely,
IEA, Inc.



Michael Prusinski
Environmental Technician
Indoor Environments Division



Leslie Cloonan, CIH, MPH, LEED AP O+M
Sr. Project Manager
Indoor Environments Division

MP:sda

Enc.

Appendix A

Laboratory Results



EMSL Analytical, Inc.

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Phone/Fax: (763) 449-4922 / (763) 449-4924
<http://www.EMSL.com> / minneapolislab@emsl.com

Order ID: 351407437
Customer ID: IFEA50
Customer PO:
Project ID:

Attn: Denice Kuchta
Inst. For Environmental Assessment
9201 West Broadway
Suite 600
Brooklyn Park, MN 55445

Phone: (763) 315-7900
Fax: (763) 315-7920
Collected:
Received: 12/05/2014
Analyzed: 12/05/2014

Proj: 201410785 - JORDAN ELEMENTARY

Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	351407437-0001			351407437-0002			351407437-0003		
Client Sample ID:	20398925			20398903			20398912		
Volume (L):	75			75			75		
Sample Location:	Room 69 (Near Diffuser)			Room 69 (Away From Diffuser)			Room 67		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	1	40	50	-	-	-
Basidiospores	-	-	-	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	2*	30*	75	1	40	50	2	80	72.7
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	2*	30*	27.3
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Bispora	1*	10*	25	-	-	-	-	-	-
Total Fungi	3	40	100	2	80	100	4	110	100
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
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	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

Jodie Bourgerie, Laboratory Manager
or Other Approved Signatory

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

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Minneapolis, Mn AIHA-LAP, LLC EMLAP 163162

Initial report from: 12/05/2014 15:31:44

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



EMSL Analytical, Inc.

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Proj: 201410785 - JORDAN ELEMENTARY

Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	351407437-0004			351407437-0005		
Client Sample ID:	20398969			20398896		
Volume (L):	75			75		
Sample Location:	Room 39			Outdoor		
Spore Types	Raw Count	Count/m ³	% of Total	Raw Count	Count/m ³	% of Total
Alternaria	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	3	100	17.2
Basidiospores	-	-	-	1	40	6.9
Bipolaris++	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-
Cladosporium	2	80	100	5	200	34.5
Curvularia	-	-	-	-	-	-
Epicoccum	-	-	-	3*	40*	6.9
Fusarium	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-
Myxomycetes++	-	-	-	6*	80*	13.8
Pithomyces	-	-	-	1	40	6.9
Rust	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-
Torula	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	2	80	13.8
Zygomycetes	-	-	-	-	-	-
Bispora	-	-	-	-	-	-
Total Fungi	2	80	100	21	580	100
Hyphal Fragment	-	-	-	3	100	17.2
Insect Fragment	-	-	-	-	-	-
Pollen	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

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

Jodie Bourgerie, Laboratory Manager
or Other Approved Signatory

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Minneapolis, Mn AIHA-LAP, LLC EMLAP 183182

Initial report from: 12/05/2014 15:31:44

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



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7437

IAQ Chain of Custody

Page 1 of 1

CLIENT NAME JORDAN PUBLIC SCHOOLS	PROJECT # 201410795	ANALYTICAL LAB EmsL	# OF SAMPLES @ \$	/sample
IEA CONTACT NAME MIKE PRUSINSKI	BUILDING NAME JORDAN ELEMENTARY	VERBAL RESULTS <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	# OF SAMPLES @ \$	/sample
PHONE # 763 315 7900	PROJECT NAME IAQ SAMPLING	WRITTEN SAMPLE RESULTS TO DENISE KUCHTA	# OF SAMPLES @ \$	/sample
			TOTAL \$	

Sample #	Sample Location	Sample Type						Media Type Specific agar, filter tube, etc.	Area (in ²) or VOL (L)	Instructions Type of analysis, analytical method requested, etc.	Comments & Observations Environmental factors--temp., RH, outdoor conditions, interior conditions, water stains, reported leaks, sample composition, etc.)
		Air	Bulk	Microbe	Swab	TF	Contact				
20398925	Room 69 (NEAR D.F.FUSKA)	X						Air-D-CELL	75 L	mool	
20398903	Room 69 (AWAY FROM D.F.FUSKA)	X						Air-D-CELL	75 L	mool	
20398912	Room 67	X						Air-D-CELL	75 L	mool	
20398969	Room 39	X						Air-D-CELL	75 L	mool	
20398996	OUT DOOR	X						Air-D-CELL	75 L	mool	

OTHER INFORMATION

SAMPLED BY MIKE PRUSINSKI	DATE 12/4/14	TIME	ANALYZED BY (COMPANY)	DATE	TIME
SHIPPED BY	DATE	TIME	TURNAROUND TIME 24 HR.	<input type="checkbox"/> NORMAL <input type="checkbox"/> RUSH <input type="checkbox"/> OTHER	
RECEIVED BY MIKE PRUSINSKI	DATE 12/5/14	TIME 8:00	PER MIKE P.		

Appendix B

Existing Guidelines and Sampling Methodology

Existing Guidelines/Health Concerns for Fungi

High levels of fungi in the indoor environment are known to cause a variety of human health concerns and may constitute one aspect of environmental sensitivity known as “sick building syndrome.” Several fungal species are known to be allergenic, toxigenic, and/or pathogenic if present at elevated levels. However, the most common type of response is allergic in nature and is manifested by irritation to the respiratory system and eyes, sneezing, sinus congestion, and rhinitis.

The presence of fungi on building materials as identified by a visual assessment or by bulk/surface sampling results does not necessitate that people will be exposed or exhibit health effects. In order for humans to be exposed indoors, fungal spores, fragments, or metabolites must be released into the air and inhaled, physically contacted (dermal exposure), or ingested. Whether or not symptoms develop in people exposed to fungi depends on the nature of the fungal matter (e.g., allergenic, toxic, or infectious), the amount of exposure, and the susceptibility of the exposed persons. Susceptibility varies with the genetic predisposition (e.g., allergic reactions do not always occur in all individuals), age, state of health, and concurrent exposures. For these reasons, and because measurements of exposure are not standardized and biological markers of exposure to fungi are largely unknown, it is not possible to determine “safe” or “unsafe” levels of exposure in general.⁽¹⁾

In mechanically-ventilated buildings with adequate filtration, the American Conference of Governmental Industrial Hygienists (ACGIH) has indicated that indoor bioaerosol levels should be less than the outdoor levels and the predominant species should be similar.⁽¹⁾ The publication also recommends the interpretation of bioaerosol data based on a combination of the following:

- ◆ indoor/outdoor concentration ratios,
- ◆ a comparison of species composition indoors and outdoors, and
- ◆ The presence of “indicator species” (those that indicate excessive moisture or a specific health hazard) isolated from the indoor environment.

1. New York City Department of Health, 2000. *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*.
2. ACGIH, 1999. *Bioaerosols: Assessment and Control*, §7.4.2 Fungi

Sampling Methodology

The total airborne fungal spore (spore trap) samples were collected with Air-O-Cell™ cassettes. This type of sampling involves impacting fungal spores and other structures onto a sticky medium. The samples provide an overview of the total number of airborne spores present (both viable and non-viable). A disadvantage of total spore trap samples is that some organisms have spores that are similar in appearance to each other and thus cannot be distinguished, as is the case with *Aspergillus* and *Penicillium* spores, which are reported as a group (*Aspergillus/Penicillium* like spores).

The air samples were collected with a Buck BioAire™ Bioaerosol Sampling Pump at a flow rate of 15 liters per minute. The samples were collected for 5 minutes for a total volume of 75 liters.

Sample analysis was performed by EMSL Analytical, Inc. of Minneapolis, Minnesota.