

April 23, 2015

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



**RE: Jordan Elementary School – Rooms 69 and 73 and Kitchen
Culturable Fungal Air Sampling
IEA Project #201410785**

Dear Mr. Helgerson:

IEA, Inc. is pleased to provide this report for the routine fungal air sampling conducted in Room 69, Room 73, and the Kitchen at Jordan Elementary School in Jordan, Minnesota, on April 13, 2015. The purpose for the air sampling was to document airborne fungal conditions due to indoor air quality concerns.

OBSERVATIONS

No evidence of moisture or fungal growth was observed in the tested classrooms. Two stained ceiling tiles were observed in the kitchen area. No visible fungal growth was observed in the kitchen.

SAMPLE RESULTS AND DISCUSSION

IEA collected culturable fungal air samples in rooms 69 and 73, in the Kitchen, and outdoors for comparison. The analysis of the air samples was performed by Prestige EnviroMicrobiology, Inc. of Voorhees, New Jersey.

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

CULTURABLE FUNGAL AIR SAMPLE RESULTS

Room 69

- The result identified a low level of fungal counts (spores) on the sample (12 colony forming units per cubic meter of air [CFU/m³]) compared to an outdoor level of 260 CFU/m³. The result indicates normal conditions at the time of the assessment.

Room 73

- The result identified a low level of fungal counts on the sample (12 CFU/m³) compared to the outdoor level. The result indicates normal conditions at the time of the assessment.

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Kitchen

- The result identified a low level of fungal counts on the sample (24 CFU/m³) compared to the outdoor level. The result indicates normal conditions at the time of the assessment.

CONCLUSIONS/RECOMMENDATIONS

Stained ceiling tiles were observed in the kitchen area. No evidence of moisture or fungal growth was observed in the tested classrooms. The air sample results indicate normal conditions at the time of sampling.

Recommendations (for Kitchen Area)

- Determine cause of moisture staining on ceiling tiles and repair, if ongoing.
- Replace stained ceiling tiles.

GENERAL COMMENTS

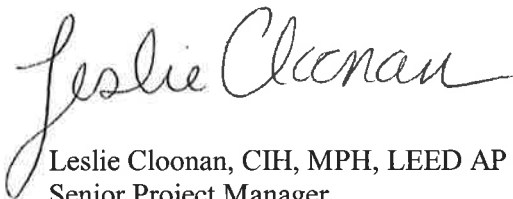
The analysis and opinions expressed in this report are based upon data obtained from Jordan Public Schools at the indicated locations. This report does not reflect variations in conditions that may occur across the site, property, or facility. Actual conditions may vary and may not become evident without 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 George Rosburg in our Mankato office at 507-345-8818, or Leslie Cloonan in our Brooklyn Park office at 763-315-7900.

Sincerely,

IEA, Inc.



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

LC/wb 042315

Enc.

Appendix A

Laboratory Results

Prestige EnviroMicrobiology, Inc

AIHA Environmental Microbiology PAT Program participant

EMLAP Laboratory ID Number 192810

Website: www.prestige-em.com

Analytical Test Report

Client: Institute for Environmental Assessment, IEA, 9201 West Broadway North, Suite 600, Brooklyn Park, MN

Client Project: 201410785

Sample date: 4-13-2015

Submittal date: NA

Date samples received: 4-15-2015

Inoculation date: 4-13-2015

Samples submitted by: Leslie Cloonan

Date analysis completed: April 22, 2015

Prestige report number: 150415-06

Culture Method (P006): Culture Analysis of Andersen Samples for Airborne Fungi

Prestige # Client sample ID Location	Air vol. (m ³)	Medium used	Fungal Identification	Colony counts	CFU/ m ³	Percentage
150415-06-038 041315LC-01 Outdoors	0.0849	DG18	<i>Alternaria alternata</i> <i>Cladosporium</i> spp. <i>Pithomyces chartarum</i>	2 19 1	24 220 12 Total 260	9% 86% 5%
150415-06-039 041315LC-02 Room 69-S side of room	0.0849	DG18	<i>Penicillium</i> sp.	1	12 Total 12	100%
150415-06-040 041315LC-03 Room 73-N side of room	0.0849	DG18	<i>Cladosporium</i> sp.	1	12 Total 12	100%
150415-06-041 041315LC-04 Kitchen	0.0849	DG18	<i>Cladosporium</i> spp.	2	24 Total 24	100%

Report approved: _____


Theresa Lehman, MPH, Lab Director

Technical Manager: _____


Chin S Yang, Ph.D.

Analyst: _____

Chin S. Yang, Ph.D.

1. The samples in this report were received in good, acceptable conditions. Prestige EnviroMicrobiology has not performed sample collection for the sample items listed in this report. Results relate only to the items tested.

Prestige EnviroMicrobiology, Inc

AIFA Environmental Microbiology PAT Program participant

EMLAP Laboratory ID Number 192810

Website: www.prestige-em.com

2. Concentrations and percentages are rounded to the nearest two significant digits. Total percentage may not add up to 100% due to rounding. Percentage is for each group of fungal structures/fungi in total population.
3. Abbreviations where applicable: CMA = cornmeal agar, DG18 = Dichloran 18% glycerol agar, MEA = 2% malt extract agar, PCA = plate count agar, TSA = tryptic soy agar, ND = not detected, NA = not applicable.
4. All culture samples are incubated at $25 \pm 0.5^\circ\text{C}$ unless otherwise indicated.
5. The detection limit of this analysis is one fungal colony, one bacterial colony or one fungal structure. The analytical sensitivities vary from analysis to analysis or by air volume. For calculation of your analytical sensitivities, please visit our webpage <http://prestige-em.com/index-tech.htm> or contact us by calling 856-767-8300 or by email info@Prestigeem.com.

IAQ Chain of Custody

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CLIENT NAME Jordan PS	PROJECT # 201410785	ANALYTICAL LAB Prestige	# OF SAMPLES @ \$	/sample
IEA CONTACT NAME Leslie Cleaman	BUILDING NAME Jordanes	VERBAL RESULTS <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	# OF SAMPLES @ \$	/sample
PHONE # 763-315-7900	FAX # -792	WRITTEN SAMPLE RESULTS TO Denise Kochta	# 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	Microvac	Swab	TT	Contact				
0413154-01	Outdoors	X						DG-18	84.9	P006	
-02	Room 69 - S side of room	X						DG-18	84.9	P006	on child's desk front-center
-03	Room 73 - N side of room	X						DG-18	84.9	P006	on child's desk front by teacher's desk
-04	Kitchen	X						DG-18	84.9	P006	on counter by cafeteria

OTHER INFORMATION

SAMPLED BY <i>Leslie Cleaman</i>	ANALYZED BY (COMPANY)	ANALYST	DATE	TIME
SHIPPED BY	TURNAROUND TIME <input type="checkbox"/> NORMAL <input type="checkbox"/> RUSH <input type="checkbox"/> OTHER			
RECEIVED BY				

Appendix B

Sampling Methodology and Existing Guidelines

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 Methodologies

Fungal Air Samples – Culturable

Culturable airborne fungal samples were collected with a single-stage Andersen impact sampler, and DG-18 agar sample plates. The sampler was calibrated at 28.3 liters per minute, and was run for three minutes per sample for a total volume of 84.9 liters. The edge of each sample plate was sealed with masking tape to protect against cross-contamination. An outdoor reference sample was also collected.

Sample analysis was performed by Prestige EnviroMicrobiology, Inc. of Voorhees, New Jersey.