Soil and Land Use Technology, Inc.
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June 26, 2019

Prince George's County Public School (PGCPS)
Environmental Safety Office
13306 Old Marlboro Pike
Upper Marlboro, MD 20772

Attention: Alex Baylor
alex.baylor@pgcps.org

Subject: Indoor Air Quality Survey
Drew Freeman Middle School
2600 Brooks Drive
Hillcrest Heights, MD 20746

Mr. Baylor:

On May 31, 2019, a Soil and Land Use Technology, Inc. (SaLUT) Industrial Hygienist conducted an indoor air quality (IAQ) evaluation at Drew Freeman Middle School, a property maintained by Prince George's County Public Schools (PGCPS) located at 2600 Brooks Drive, Hillcrest Heights, MD. The inspection was performed in accordance with PGCPS contract number IFB 022-19.

Methodology

The IAQ evaluation conducted by SaLUT included a visual assessment, IAQ instrumentation screening, and a collection of interior air samples for mold in representative locations throughout the building. Additionally, one building exterior environmental air sample was taken for comparison.

Air-borne fungal spore samples were collected on *Air-O-Cell* cassettes using a Buck BioAire calibrated pump. The air samples were taken between three and five feet from the ground. In tandem with collecting mold samples, real-time readings for carbon dioxide, carbon monoxide, temperature and relative humidity were collected using a Fluke 975 Air Meter in representative areas within the facility. A MiniRAE 3000-photoionization detector (PID) was used to measure total volatile organic compounds (TVOC).

Respirable particulate in air (size classes PM2.5µ and PM10µ) was measured using the Particles Plus 8306 Handheld Particle Counter which was calibrated prior to sampling. The fungal spore air samples were delivered to EMSL Analytical, Inc. of Beltsville,

Maryland for analysis. Fungal spores and particulates in air samples were analyzed by Optical Microscopy (methods EMSL 05-TP-003 and ASTM D7391). The sample chain-of-custody and laboratory reports are attached.

Observations

The table below summarizes the main observations from the IAQ survey at Drew Freeman Middle School, visited on May 31, 2019.

Table 1-Observations

Location	Summary of Observations 5-31-2019
Classroom 103	2′ x 4′ ceiling tile and 1′ x 1′ tile floor; No visual signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces; Excessive dust on vent and black discoloration on ceiling tiles.
Classroom 107	2′ x 4′ ceiling tile and 8″ x 8″ tile floor; No visual signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces; Rusty diffusers, no major issues.
Classroom 113	2′x4′ ceiling tiles and 8″ x 8″ tile floor; No visual signs of microbial growth; No visible dust on floor/other furniture surfaces; Stains on ceiling tiles and unit ventilator; Dusty air vent.
Classroom 118 (Science Lab)	Concrete ceiling tiles and ceramic tile floor; No visual signs of microbial growth; No visible dust on floor/other furniture; Stains on the unit ventilator.
Classroom 201-E	2′ x 4′ ceiling tile and 1′ x 1′ tile floor; No visual signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces.
Classroom 207	2′x4′ ceiling tiles and wood tile floor; No visual signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces.
Classroom 209	No visual signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces.
Classroom 213	2′x4′ ceiling tiles and 8″x 8″ tile floor; No visual signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces.
Classroom 226	2′ x 4′ ceiling tile and 1′ x 1′ tile floor; No visual signs of microbial growth; No visible dust on floor/other furniture surfaces.
Accounting Office	2′ x 4′ ceiling tile and 1′ x 1′ tile floor; No visible signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces. Water damaged above the ceiling tile.

Location	Summary of Observations 5-31-2019
Auditorium	2′ x 4′ ceiling tile and 1′ x 1′ tile floor; No visible signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces. Stained ceiling tiles and dust on ceiling tiles.
Cafeteria	2′ x 4′ ceiling tile and 8″ x 8″ tile floor; No visible signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces.
Gymnasium	No visual signs of microbial growth, and no odor; No visible dust on floor/other furniture surfaces. No air handling unit observed for the gym, so windows were open during the assessment.

Measurements of Indoor Environmental Quality Parameters

Table 2 depicts a summary of average measurements of comfort parameters and respirable particulates.

Temperature

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) have published recommendations for year round acceptable temperatures in Standard 55-2010 *Thermal Environmental Conditions for Human Occupancy*. The winter comfort range is 20 to 24°C (68 to 75°F) and 23 to 26°C (73 to 79°F) is the summer comfort range. The temperature readings were within the ASHRAE recommended ranges in the representative spaces.

Relative Humidity (RH)

RH is a key factor for mold growth. Mold has the potential of growing on suitable surfaces with humidity levels above 60%. ASHRAE Standard 62.1-2010 *Ventilation for Acceptable Indoor Air Quality* recommends a maximum indoor RH of 65% to preclude the likelihood of condensation on cool surfaces encouraging mold growth. The RH readings were within the ASHRAE recommended ranges in the representative areas.

Carbon Dioxide (CO_2)

Under conditions of maximum occupancy, ASHRAE Standard 62.1-2010, Appendix C, infers that the acceptable CO_2 upper limit is the prevailing outdoor CO_2 concentration plus 700 parts per million (ppm). On the day of the space evaluation, the outdoor (building exterior) CO_2 concentration was approximately 572 ppm therefore indoor concentrations should not exceed approximately 1,272 ppm (700 + 572). The maximum average interior CO_2 concentration detected was 687 ppm in Classroom 226, a range within the ASHRAE recommendations, per Table 2 below.

Carbon Monoxide (CO)

CO is a colorless and odorless gas that is produced by the incomplete combustion of carbon containing fuels. Oil, gasoline, diesel fuels, wood, coke, and coal are major sources of CO. All registered CO concentrations were below the EPA National Ambient Air Quality Standard (NAAQS) of 9 ppm, per Table 2 below.

Respirable Particulates

Direct reading particulate monitoring did not identify a condition of concern. Particulate concentrations for two mass ranges with EPA ambient air quality guidelines (PM2.5 and PM10) were below their respective NAAQS levels. On May 31, 2019, the highest average PM2.5 concentration during the monitoring period was 0.003 mg/m^3 (3 $\mu g/m^3$) in the Cafeteria. This is compared to the NAAQS primary standard for PM2.5 of 12 $\mu g/m^3$ annual mean. The highest average PM10 concentration during the same period was 0.043 mg/m^3 (43 $\mu g/m^3$) in the Cafeteria. This is compared to NAAQS standard for PM10 of 150 $\mu g/m^3$ 24 hour average.

Total Volatile Organic Chemicals (TVOC)

LEED's standard of 500 $\mu g/m^3$ for TVOC (ANSI/ASHRAE Standard 62.1-2010) concentrations per the instrument's level of detection for a healthy commercial building were used as the standard for TVOCs for this survey. Concentrations below this value can be considered as "background levels" and, at such low concentrations, they are extremely unlikely to cause any adverse health conditions to the occupants. Generally, values below 3000 $\mu g/m^3$ are unlikely to cause more than mild irritation or headaches, but to date no recognized industry standard has been established for TVOCs. Perfumes, colognes, and air fresheners as well as certain cleaning chemicals can all cause temporary increases in TVOC readings. TVOC readings cannot be used to establish OSHA limits on specific VOCs or be attributed to specific compounds.

Table 2: Drew Freeman Middle School Instrumental Screening Levels
May 31, 2019

Sample Location	Temp ^{0}F	RH%	CO ppm	CO_2 ppm	PM 2.5 mg/m^3	PM 10 mg/m^3	TVOC ppm
Standards	ASHRAE 73 to 79°F*	ASHRAE <65%	NAAQS 9	ASHRAE 1,272	NAAQS 0.012	NAAQS 0.150	1.0
Classroom 103	74.2	57.1	0	654	0.001	0.021	0.1
Classroom 107	74.3	55.9	0	654	0.002	0.029	0
Classroom 113	74.4	54.3	0	634	0.002	0.034	0.1
Classroom 118	75.3	57.2	0	677	0.002	0.016	0
Classroom 201-E	75.5	56.4	0	623	0.003	0.015	0.1
Classroom 207	74.9	52.9	0	653	0.001	0.023	0
Classroom 213	73.4	53.1	0	603	0.002	0.026	0.1
Classroom 226	73.1	56.9	0	687	0.001	0.016	0
Accounting Office	74.5	50.8	0	624	0.001	0.024	0
Auditorium	75.7	55.9	0	639	0.002	0.025	0.1
Cafeteria	73.6	50.1	0	645	0.003	0.043	0.1
Gymnasium	73.4	54.3	0	685	0.003	0.016	0.1
Science Lab -118	75.2	53.4	0	669	0.002	0.024	0
Outside Exterior EV Sample	87.7	42.3	0	572	0.003	0.056	0

PM – Particulate Matter size
°F – Degrees Fahrenheit
CO – Carbon Monoxide
ppm – parts per million
µg/m^3 – micrograms per cubic meter
RH% - % Relative Humidity
CO_2 – Carbon Dioxide
*** - Summer Comfort Range**

Mold-in-Air Samples

There are no definitive regulations or standardized guidelines for addressing airborne mold in an indoor setting. If building systems (ventilation, envelope) are functioning properly, the indoor population profile should mimic what is encountered outdoors and the concentrations should be below the outdoor (building exterior) environmental sample levels.

Tables 3 summarizes airborne mold spore sampling results and locations. On May 31, 2019, total mold counts in representative samples (spore count/m^3 of air) in all the areas inspected were lower than the outdoor concentrations with the exception of Classrooms 103 and 113. Laboratory analysis follows this report (see attachment).

Table 3: Drew Freeman Middle School - Measurements of Mold-in-Air Samples May 31, 2019

Spore Types	Classroom 103	Classroom 107	Classroom 113	Classroom 201E
Alternaria (Ulocladium)	-	-	-	-
Ascospores	870	90	920	200
Aspergillus/Penicillium	-	-	830	-
Basidiospores	2,900	660	3,800	1,500
Bipolaris++	-	-	-	-
Chaetomium	-	-	-	-
Cladosporium	300	200	300	300
Curvularia	-	-	-	-
Epicoccum	-	-	10*	-
Fusarium	-	-	-	-
Ganoderma	-	-	40	-
Myxomycetes++	-	-	30*	-
Pithomyces++	-	-	-	-
Rust	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-
Unidentifiable Spores	-	-	-	-
Zygomycetes	-	-	-	-
Polythrincium	10*	-	-	-
Torula-like	10*	-	-	-
Hyphal Fragment	-	-	-	-
Insect Fragment	-	-	-	-
Pollen	-	-	-	-
Total Fungi	**4,090**	**950**	**5,930**	**2,000**

***Spore Counts per cubic meter of air (Counts/m^3).**
++Includes other spores with similar morphology.

Table 3: Drew Freeman Middle School - Measurements of Mold-in-Air Samples - Continued

May 31, 2019

Spore Types	Classroom 207	Classroom 213	Science Lab 118	Classroom 226	Gymnasium
Alternaria (Ulocladium)	40	-	-	-	-
Ascospores	-	100	200	300	300
Aspergillus/Penicillium	-	-	-	90	100
Basidiospores	520	480	830	1,700	1,400
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	40	40	400	10*	200
Curvularia	-	-	-	-	-
Epicoccum	-	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	-
Myxomycetes++	-	-	-	-	40
Pithomyces++	-	-	-	-	-
Rust	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
Polythrincium	-	-	-	-	-
Torula-like	-		-	-	-
Hyphal Fragment	-	-	-	-	40
Insect Fragment	-	-	-	-	-
Pollen	40*	-	10*	-	90
Total Fungi	**600**	**620**	**1,430**	**2,100**	**2,040**

***Spore Counts per cubic meter of air (Counts/m^3).**
++Includes other spores with similar morphology.

Table 3: Drew Freeman Middle School - Measurements of Mold-in-Air Samples - Continued

May 31, 2019

Spore Types	Accounting Office	Auditorium	Cafeteria	Outside Exterior EV Sample	Field Blank
Alternaria (Ulocladium)	-	-	-	10*	-
Ascospores	100	100	480	700	-
Aspergillus/Penicillium	-	-	700	40	-
Basidiospores	610	2,100	1,300	2,900	-
Bipolaris++	-	-	-	-	-
Chaetomium	-	-	-	-	-
Cladosporium	-	520	740	200	-
Curvularia	-	-	-	-	-
Epicoccum	-	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	-
Myxomycetes++	40	-	30*	-	-
Pithomyces++	-	-	-	-	-
Rust	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-
Zygomycetes	-	-	-	-	-
Polythrincium	-	-	-	-	-
Torula-like	-	-	-	-	-
Hyphal Fragment	40	10*	40	-	-
Insect Fragment	-	-	-	-	-
Pollen	-	-	-	-	-
Total Fungi	**750**	**2,720**	**3,250**	**3,850**	**Not Detected**

***Spore Counts per cubic meter of air (Counts/m^3).**
++Includes other spores with similar morphology.

Findings and Conclusions

The comfort parameters (i.e., temperature, RH, CO_2, and CO levels) and respirable particulates in the representative areas conform to ASHRAE and/or NAAQS guidelines with the exception of some temperature readings which were slightly lower than the ASHRAE comfort level. On May 31, 2019, total mold counts in representative area samples (spore count/m^3 of air) in all the areas inspected were lower than the outdoor concentrations, indicating no amplified mold growth with the exception of Classrooms 103 and 113.

Recommendations

Based on the observations, mold spore results, and the results of the indoor air quality parameters tested at Drew Freeman Middle School, SaLUT recommends the following measures to address the indoor air quality concerns documented:

1. Thoroughly clean air vents and replace stained ceiling tiles in Classrooms 103 and 113.

Thank you for the opportunity to provide industrial hygiene services for PGCPS. If you have any questions, please contact me at 301.595.3783.

Sincerely,

Chaminda Jayatilake, PE, CIH, CSP, CHMM
Certified Industrial Hygienist
Soil and Land Use Technology Inc. (SaLUT)

Attachment

Attachment - Mold Spore Sample Analytical Results and Chain-of-Custody Forms

Attachment

Mold Spore Sample Analytical Results and Chain-of-Custody Forms

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

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http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order: 061910922
Customer ID: SALU50
Customer PO:
Project ID:

Attn: Indika Jayatilake
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1818 New York Avenue, NE
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Phone: (301) 595-3783
Fax: (301) 595-3787
Collected: 05/31/2019
Received: 06/03/2019
Analyzed: 06/07/2019

Project: PGCPS IAQ/19-035 Drew FReeman MS 5100, Silver Hill Road, Suitland, MD 20746

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

Lab Sample Number:	061910922-0001			061910922-0002			061910922-0003		
Client Sample ID:	27951952			27951961			27951950		
Volume (L):	75			75			75		
Sample Location	Classroom 103			Classroom 213			Classroom 201E		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	20	870	21.3	3	100	16.1	5	200	10
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-
Basidiospores	66	2900	70.9	11	480	77.4	35	1500	75
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	8	300	7.3	1	40	6.5	6	300	15
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Polythrincium	1*	10*	0.2	-	-	-	-	-	-
Torula-like	1*	10*	0.2	-	-	-	-	-	-
Total Fungi	**96**	**4090**	**100**	**15**	**620**	**100**	**46**	**2000**	**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	-	-	2	-
Background (1-5)	-	1	-	-	1	-	-	2	-

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

Jeffrey Lau, Microbiology Laboratory Manager
or other approved signatory

Initial report from: 06/09/2019 10:28:28

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

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

Lab Sample Number:	061910922-0004			061910922-0005			061910922-0006		
Client Sample ID:	27951954			27951953			27951968		
Volume (L):	75			75			75		
Sample Location	Classroom 113			Science Lab 118			Gymnasium		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	21	920	15.5	4	200	14	7	300	14.7
Aspergillus/Penicillium	19	830	14	-	-	-	3	100	4.9
Basidiospores	88	3800	64.1	19	830	58	33	1400	68.6
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	6	300	5.1	9	400	28	4	200	9.8
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	1*	10*	0.2	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	1	40	0.7	-	-	-	-	-	-
Myxomycetes++	2*	30*	0.5	-	-	-	1	40	2
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Total Fungi	**138**	**5930**	**100**	**32**	**1430**	**100**	**48**	**2040**	**100**
Hyphal Fragment	-	-	-	-	-	-	1	40	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	1*	10*	-	2	90	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	2	-
Background (1-5)	-	2	-	-	2	-	-	2	-

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

Jeffrey Lau, Microbiology 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. Carle Place, NY AIHA-LAP, LLC--EMLAP Accredited #102344

Initial report from: 06/09/2019 10:28:28

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

Lab Sample Number:	061910922-0007			061910922-0008			061910922-0009		
Client Sample ID:	27951957			27951962			27951949		
Volume (L):	75			75			75		
Sample Location	Accounting Office			Classroom 107			Classroom 207		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	1	40	6.7
Ascospores	3	100	13.3	2	90	9.5	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-
Basidiospores	14	610	81.3	15	660	69.5	12	520	86.7
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	4	200	21.1	1	40	6.7
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	5.3	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Total Fungi	**18**	**750**	**100**	**21**	**950**	**100**	**14**	**600**	**100**
Hyphal Fragment	1	40	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	3*	40*	-
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.

Jeffrey Lau, Microbiology Laboratory Manager
or other approved signatory

Initial report from: 06/09/2019 10:28:28

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

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Tel/Fax: (516) 997-7251 / (516) 997-7528

http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order: 061910922
Customer ID: SALU50
Customer PO:
Project ID:

Attn: Indika Jayatilake
SaLUT
1818 New York Avenue, NE
Suite 218A
Washington, DC 20002

Phone: (301) 595-3783
Fax: (301) 595-3787
Collected: 05/31/2019
Received: 06/03/2019
Analyzed: 06/07/2019

Project: PGCPS IAQ/19-035 Drew FReeman MS 5100, Silver Hill Road, Suitland, MD 20746

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

Lab Sample Number:	061910922-0010			061910922-0011			061910922-0012		
Client Sample ID:	27951955			27951960			27951958		
Volume (L):	75			75			75		
Sample Location	Auditorium			Cafeteria			Classroom 226		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	3	100	3.7	11	480	14.8	7	300	14.3
Aspergillus/Penicillium	-	-	-	16	700	21.5	2	90	4.3
Basidiospores	49	2100	77.2	30	1300	40	39	1700	81
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	12	520	19.1	17	740	22.8	1*	10*	0.5
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	2*	30*	0.9	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-	-	-	-
Total Fungi	**64**	**2720**	**100**	**76**	**3250**	**100**	**49**	**2100**	**100**
Hyphal Fragment	1*	10*	-	1	40	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	2	-	-	1	-
Background (1-5)	-	1	-	-	2	-	-	2	-

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

Jeffrey Lau, Microbiology 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. Carle Place, NY AIHA-LAP, LLC--EMLAP Accredited #102344

Initial report from: 06/09/2019 10:28:28

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

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EMSL Order: 061910922
Customer ID: SALU50
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Attn: Indika Jayatilake
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1818 New York Avenue, NE
Suite 218A
Washington, DC 20002

Phone: (301) 595-3783
Fax: (301) 595-3787
Collected: 05/31/2019
Received: 06/03/2019
Analyzed: 06/07/2019

Project: PGCPS IAQ/19-035 Drew FReeman MS 5100, Silver Hill Road, Suitland, MD 20746

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

Lab Sample Number:	061910922-0013			061910922-0014		
Client Sample ID:	27951948			27951951		
Volume (L):	75					
Sample Location	Outside Exterior EV Sample			Field Blank		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	1*	10*	0.3	-	-	-
Ascospores	16	700	18.2	-	-	-
Aspergillus/Penicillium	1	40	1	-	-	-
Basidiospores	66	2900	75.3	-	-	-
Bipolaris++	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-
Cladosporium	5	200	5.2	-	-	-
Curvularia	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-
Rust	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-
Polythrincium	-	-	-	-	-	-
Torula-like	-	-	-	-	-	-
Total Fungi	**89**	**3850**	**100**	**-**	**No Trace**	**-**
Hyphal Fragment	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-
Pollen	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	44	-	-	0	-
Analyt. Sensitivity 300x	-	13*	-	-	0*	-
Skin Fragments (1-4)	-	1	-	-	-	-
Fibrous Particulate (1-4)	-	1	-	-	-	-
Background (1-5)	-	1	-	-	-	-

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

Jeffrey Lau, Microbiology 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.

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OrderID: 061910922

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Microbiology Chain of Custody

EMSL Order Number (*Lab Use Only*): 061910922

PHONE:
FAX:

Company Name: SaLUT Inc.	**EMSL-Bill to:** ☒ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 1818 New York Ave NE Suite 231	
City: Washington **State/Province:** DC	**Zip/Postal Code:** 20002 **Country:** USA
Report To (Name): Indika Jayatilake	**Telephone #:** 301-595-3783
Email Address: ijayatilake@salutinc.com	**Fax #:** **Purchase Order:**
Project Number/Location: PGCPS IAQ/19-035 Drew Freeman MS	**Please Provide Results:** ☐ Fax ☒ Email
Location Address: 5100, Silver Hill Road, Suitland, MD 20746	**Connecticut Samples:** ☐ Commercial ☐ Residential

**Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements*

Sterile, Sodium Thiosulfate Preserved Bottle Used: ☐ **Biocide Used in Source (specify):** ☐

Public Water Supply Samples: ☐ **Note: All results may automatically be reported to DOH if required by state.**

Turnaround Time (TAT) Options * - Please Check

☐ 3 Hour	☐ 6 Hour	☐ 24 Hour	☐ 48 Hour	☐ 72 Hour	☐ 96 Hour	☒ 1 Week	☐ 2 Week

Microbiology Test Codes

M001 Air-O-Cell
M030 Micro 5
M174 MoldSnap
M032 Allergenco-D
M041 Fungal Direct Examination
M169 Pollen ID & Enumeration
M280 Dust Characterization Level-1
M281 Dust Characterization Level-2
M005 Viable Fungi- Air Samples (Genus ID & Count)
M006 Viable Fungi- Air Samples (Includes *Penicillium, Aspergillus, Cladosporium, Stachybotrys* Species ID & Count)
M007 Culturable fungi - Surface Samples (Genus ID & Count)
M008 Culturable fungi - Surface Samples (Includes *Penicillium, Aspergillus, Cladosporium, Stachybotrys* Species ID & Count)
M009 Bacteria Culture Gram Stain & Count
M010 Bacteria Count & ID - 3 Most Prominent
M011 Bacteria Count & ID - 5 Most Prominent
M012 Pseudomonas aeruginosa (P/A***)

M024 Pseudomonas aeruginosa (MFT*)
M015 Heterotrophic Plate Count
M017 Total Coliform & E. coli (Colilert P/A***)
M018 Total Coliform & E. coli (MFT*)
M114 Total Coliform & E. coli Enumeration (Colilert MPN**)
M019 Fecal Coliform (MFT*)
M020 Fecal Streptococcus (MFT*)
M029 Enterococci (MFT*)
M129 Enterococci (Enterolert P/A***)
M180 Real Time qPCR-ERMI 36 Panel
M025 Sewage Screen –Water (MFT*)

M115 Sewage Screen - Water (P/A***)
M116 Sewage Screen - Water (MPN**)
M117 Sewage Screen - Swab (P/A***)
M013 Sewage Screen - Swab (MFT*)
M133 Methicillin-resistant Staph. aureus (MRSA)
M031 Rapid-growing non-TB Mycobacteria Detection & Enumeration
M014 Endotoxin Analysis
M044 Group Allergen (Cat, Dog, Cockroach, Dust Mite)
Other See Analytical Price Guide
Legionella Analysis Please use EMSL Legionella COC

*MFT= Membrane Filtration Technique
**MPN= Most Probable Number
***P/A= Presence/Absence

Name of Sampler: Jude Fonseka **Signature of Sampler:**

Sample #	Sample Location/Description	Sample Type	Potable/ NonPotable (only for waters)	Test Code	Volume/ Area	Date/Time Collected	Temperature (°C) (Lab Use Only)
27951952	Classroom 103	Air	☐P ☐NP	M001	75L	5/31/2019	
27951961	Classroom 213	Air	☐P ☐NP	M001	75L	5/31/2019	
27951950	Classroom 201E	Air	☐P ☐NP	M001	75L	5/31/2019	
27951954	Classroom 113	Air	☐P ☐NP	M001	75L	5/31/2019	
27951953	Science Lab 118	Air	☐P ☐NP	M001	75L	5/31/2019	
27951968	Gymnasium	Air	☐P ☐NP	M001	75L	5/31/2019	

Client Sample # (s): - **Total # of Samples:** 14 **Samples Received Chilled?** Yes / No

Relinquished (Client): **Date:** **Time:**

Received (Lab): Hakim Camara Walk-In **Date:** 6/3/2019 **Time:** 11:26

Comments/Special Instructions:

6/7/19

OrderID: 061910922

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Microbiology Chain of Custody

EMSL Order Number *(Lab Use Only)*:

PHONE:
FAX:

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Sample #	Sample Location/Description	Sample Type	Potable/ NonPotable	Test Code	Volume/ Area	Date/Time Collected	Temperature (°C) (Lab Use Only)
27951957	Accounting Office	Air	☐P ☐NP	M001	75L	5/31/2019	
27951962	Classroom 107	Air	☐P ☐NP	M001	75L	5/31/2019	
27951949	Classroom 207	Air	☐P ☐NP	M001	75L	5/31/2019	
27951955	Auditorium	Air	☐P ☐NP	M001	75L	5/31/2019	
27951960	Cafeteria	Air	☐P ☐NP	M001	75L	5/31/2019	
27951958	Classroom 226	Air	☐P ☐NP	M001	75L	5/31/2019	
27951948	Outside Exterior EV Sample	Air	☐P ☐NP	M001	75L	5/31/2019	
27951951	Field Blank	N/A	☐P ☐NP	N/A (3)	N/A	5/31/2019	
			☐P ☐NP				
			☐P ☐NP				
			☐P ☐NP				
			☐P ☐NP				
			☐P ☐NP				
			☐P ☐NP				
			☐P ☐NP				
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			☐P ☐NP				
			☐P ☐NP				
			☐P ☐NP				
			☐P ☐NP				

Comments/Special Instructions:

6/7/19