ESI Environmental Solutions, Inc.

www.esi4u.com (410)-867-6262

Discovery Environmental Inspection Report

Project Contact Information

Alex Baylor Environmental Specialists Environmental Safety Office 13306 Old Marlboro Pike Upper Marlboro, MD 20772 301-952-6760 alex.baylor@pgcps.org	William W. Hall Academy 100,000 Ft^2	Vinny Gigliotti Certified Indoor Environmentalist Environmental Solutions, Inc. 6114 Drum Point Rd Deale, MD 20751 410-867-6262 Vinny@esi4u.com

Property Location

5200 Marlboro Pike, Capitol Heights, MD 20743

Date of Inspection 2/28/2019

Prepared By: Vinny Gigliotti

Certified Indoor Environmentalist (CIE)

Dear Mr. Baylor,

The results of the inspection and testing performed at William W. Hall Academy are concluded, and the findings are enclosed. I want to thank you for allowing ESI the opportunity to service your indoor environmental needs. Included in this report are the observations, lab results, and recommendations from ESI's inspection and testing.

Background Information

The Prince Georges County Public School Environmental Team has taken a proactive approach in cleaning the above-mentioned school to ensure there are no health or environmental risks related to microbial and biological hazards. Historically elevated levels of humidity, condensation from pipes, periodic steam leaks and outdated HVAC systems, may have contributed to water damage ceiling tiles and colonization of mold spores in various area of the school.

Purpose

ESI was engaged to inspect the school in a random sufficient manner. Classrooms, administration offices, and common area building materials and contents, will be visually inspected for water damage and microbial growth.

In each location inspected, the indoor air quality will be tested for elevated levels of carbon dioxide and carbon monoxide, in addition to measuring the relative humidity and temperature. Microbial / biological hazards within the breathable air space will also be tested.

Based upon the visible assessment, instrument readings and lab results, ESI will determine if additional remediation in required.

Observations and instrument readings

The following table is designed for this project. Some of the fields may not be filled in due to not being applicable during the time of the inspection. You will notice either a 'YES' or 'NO' in the table. 'YES' indicates that mold and /or water damage was detected and 'NO' indicates it was not. If 'YES' is noted, remediation recommendation will be included for the area inspected. Please note that the cubic feet of air in the rooms inspected is an approximate number.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
H100	2378007	N/A	23.4	69.9	724	000	9,205	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	2	8	6	0	6	4
No	No	No	No	No	No	N/A	No	No

Observation Notes

- There were no signs of mold growth or elevated levels of moisture detected within this location.
- The remediation and cleaning efforts were completed successfully, and the indoor air quality should pose no health or environmental risk, as the total spore count was 80 spores per cubic meter of air.

Recommendations

None

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
H112	2374514	N/A	20.0	69.6	534	000	9,505	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	9	8	4	0	6	4
No	No	No	No	No	No	N/A	No	No

Inspected

- Light accumulations of dust were seen on the diffusors.
- There were no signs of mold growth or elevated levels of moisture detected within this location.
- The indoor air quality should pose no health or environmental risk, as the spore count was 40 spores per cubic meter of air.

Recommendations

None

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
G126	2377967	N/A	26.6	72.6	976	000	8,065	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	8	6	5	0	5	4
No	No	No	No	No	No		No	No

Observation Notes

- Light accumulations of dust were seen on the diffusors.
- Light staining was seen on the sink cabinetry.
- There were no signs of mold growth or elevated levels of moisture detected within this location.
- The indoor air quality should pose no health or environmental risk, as the spore count was 160 spores per cubic meter of air.

Recommendations

None

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
G108	2377972	N/A	23.0	74.3	**1107**	000	8,315	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	24	2	5	0	5	4
Yes	No	No	No	No	**Yes**	N/A	No	No

Observation Notes

- One ceiling tile was water stained.
- Water stains and discolorations were seen on the sink cabinetry.
- The Carbon Dioxide CO2 level in this room was slightly elevated at 1,107 ppm.
- The indoor air quality should pose no health or environmental risk, as the spore count was 40 spores per cubic meter of air.

Recommendations

- Remove and replace the water damaged ceiling tiles. The contaminated ceiling tiles should be placed in a sealed plastic bag for disposal.
- HEPA vacuum, then damp-wipe the sink cabinetry with an anti-microbial agent to remove water staining and discolorations.
- To reduce Carbon dioxide (CO2) levels, increase air exchange within this classroom. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
F117	2377977	N/A	15.2	73.5	471	000	6,085	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	**Windows**
2x4	CMU	0	1	13	1	0	2	4
No	No	N/A	No	No	No	N/A	No	No

Observation Notes

- Light accumulations of dust were seen on the diffusors and return register.
- There were no signs of mold growth or elevated levels of moisture detected within this location.
- The indoor air quality should pose no health or environmental risk, as the spore count was 40 spores per cubic meter of air.

Recommendations

None

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
F110	2377982	N/A	23.3	71.4	944	000	7,425	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	1	9	4	0	4	4
No	No	No	No	No	No	N/A	No	No

Observation Notes

- Light accumulations of dust were seen on the diffusors.
- Light water staining on the sink cabinetry.
- The indoor air quality should pose no health or environmental risk, as the spore count was 240 spores per cubic meter of air.

Recommendations

None

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
E105	2378011	N/A	19.7	73.7	871	000	7,815	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	2	2	7	5	0	4	4
No	No	No	No	No	No	N/A	No	No
Observation Notes								
• Light accumulations of dust were seen on the diffusors. • There were no signs of mold growth or elevated levels of moisture detected within this location. • The indoor air quality should pose no health or environmental risk, as the spore count was 80 spores per cubic meter of air.								
Recommendations								
None								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
C110 Lounge	2377991	N/A	13.6	71.9	434	000	5,940	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	**Windows**
2x4	CMU	0	0	4	2	0	4	4
Yes	No	N/A	N/A	No	No	N/A	No	No
Observation Notes								
• Two ceiling tiles were water stained. • Accumulations of dust were seen on the return register. • At the time of the assessment, water was leaking under the sink into a bucket. • The indoor air quality should pose no health or environmental risk, as no airborne mold spores were detected during the time of the inspection.								
Recommendations								
• Remove and replace the water damaged ceiling tiles. The contaminated ceiling tiles should be placed in a sealed plastic bag for disposal.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
A120	2378006	N/A	20.8	74.4	1,021	000	19,100	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	1	13	4	0	4	2
Yes	No	No	No	No	No	N/A	No	No

Observation Notes

- Two ceiling tiles were water stained.
- The Carbon Dioxide CO2 level in this room was slightly elevated at 1,021 ppm. The CO2 level may have been slightly increased due to the students recently occupying the classroom.
- The indoor air quality should pose no health or environmental risk, as the spore count was 40 spores per cubic meter of air.

Recommendations

- Remove and replace the water damaged ceiling tiles. The contaminated ceiling tiles should be placed in a sealed plastic bag for disposal.
- To reduce Carbon dioxide (CO2) levels, increase air exchange within this classroom. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
A100 Office	2378001	N/A	17.4	72.5	716	000	6,930	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2	CMU	0	0	8	4	0	4	0
No	No	N/A	N/A	No	No	N/A	No	N/A

Observation Notes

- Light accumulations of dust were seen on the diffusors.
- There were no signs of mold growth or elevated levels of moisture detected within this location.
- The indoor air quality should pose no health or environmental risk, as the spore count was 160 spores per cubic meter of air.

Recommendations

None

Interpretation of Lab Results

In the enclosed Air Cassette Analysis report, you will notice Fungal Identification, which is the species detected in the breathable airspace inside, and outside. The Raw count is the actual number of spores counted on the slide, and the Count/m3 are the spores per cubic meter of air. The other particles are non-living particles such as dander, mycelial fragments, pollens, etc.

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 symptoms develop in people exposed to fungi depends on the nature of the fungal material (e.g., allergenic, toxic, or infectious), the amount of exposure, and the susceptibility of exposed persons.

Susceptibility varies with genetic predisposition (e.g., allergic reactions do not always occur in all individuals), age, state of health, and concurrent exposures.

Air Sampling Lab Results

SanAir Technologies Laboratory

Name: Environmental Solutions, Inc
Address: 534-A Deale Road
Deale, MD 20751
Phone: 410-867-6262

Project Number: 5200 Marlboro Pike
P.O. Number:
Project Name: William W. Hall Academy
Collected Date: 2/28/2019
Received Date: 3/1/2019 10:15:00 AM

SanAir ID Number
19009435
FINAL REPORT
3/4/2019 11:04:58 AM

Analyst: Acharya, Uttam

Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19009435-001			19009435-002			19009435-003			19009435-004		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2377986			2378007			2374514			2377967		
Sample Identification	Outdoors			Classroom H100			Classroom H112			Classroom G126		
Sample Type	Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5		
Volume	25 Liters			25 Liters			25 Liters			25 Liters		
Analytical Sensitivity	40 Count/M³			40 Count/M³			40 Count/M³			40 Count/M³		
Background Density	1+			1+			1+			2		
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Dander	4	160	n/a	72	2880	n/a	11	440	n/a	115	4600	n/a
Fibers				1	40	n/a				3	120	n/a
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Aspergillus/Penicillium	1	40	50				1	40	>99	3	120	75
Basidiospores				2	80	>99						
Cladosporium species												
Smuts/Myxomycetes	1	40	50							1	40	25
TOTAL	**2**	**80**		**2**	**80**		**1**	**40**		**4**	**160**	

Signature: Uttam Acharya Date: 3/4/2019 Reviewed: Johnathan Wilson Date: 3/4/2019

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Analyst: Acharya, Uttam

Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19009435-005			19009435-006			19009435-007			19009435-008		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2377972			2377977			2377982			2378011		
Sample Identification	Classroom G108			Classroom F117			Classroom F110			Classroom E105		
Sample Type	Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5		
Volume	25 Liters			25 Liters			25 Liters			25 Liters		
Analytical Sensitivity	40 Count/M³			40 Count/M³			40 Count/M³			40 Count/M³		
Background Density	1+			1+			2			1+		
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Dander	57	2280	n/a	11	440	n/a	55	2200	n/a	38	1520	n/a
Fibers	1	40	n/a	1	40	n/a	1	40	n/a			
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Aspergillus/Penicillium	1	40	>99	1	40	>99	5	200	83	1	40	50
Basidiospores							1	40	17	1	40	50
Cladosporium species												
Smuts/Myxomycetes												
TOTAL	**1**	**40**		**1**	**40**		**6**	**240**		**2**	**80**	

Signature: Uttam Acharya Date: 3/4/2019 Reviewed: Johnathan Wilson Date: 3/4/2019

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3/4/2019 11:04:58 AM

Analyst: Acharya, Uttam

Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19009435-009			19009435-010			19009435-011			
Analysis Using STL	107C			107C			107C			
Sample Number	2377991			2378006			2378001			
Sample Identification	Lounge / Kitchen C110			Classroom A120			General Office A100			
Sample Type	Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5			
Volume	25 Liters			25 Liters			25 Liters			
Analytical Sensitivity	40 Count/M³			40 Count/M³			40 Count/M³			
Background Density	1+			2			2			
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	
Dander	19	760	n/a	123	4920	n/a	54	2160	n/a	
Fibers				3	120	n/a				
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	
Aspergillus/Penicillium										
Basidiospores				1	40	>99	2	80	50	
Cladosporium species							2	80	50	
Smuts/Myxomycetes										
TOTAL				**1**	**40**		**4**	**160**		

Signature: Uttam Acharya Date: 3/4/2019 Reviewed: Johnathan Wilson Date: 3/4/2019

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Organism Descriptions

The descriptions of the organisms presented are derived from various reference materials. The laboratory report is based on the data derived from the samples submitted and no interpretation of the data, as to potential, or actual, health effects resulting from exposure to the numbers of organisms found, can be made by laboratory personnel. Any interpretation of the potential health effects of the presence of this organism must be made by qualified professional personnel with first hand knowledge of the sample site, and the problems associated with that site.

Dander - Comprised of human and/or animal skin cells. Counts may be higher in carpeted rooms and in rooms with more traffic.
Health Effects: May cause allergies.

Fibers - This category can include clothing, carpet, and insulation fibers.

Aspergillus/Penicillium - These spores are easily aerosolized. Only through the visualization of reproductive structures can the genera be distinguished. Also included in this group are the spores of the genera Acremonium, Phialophora, Verticillium, Paecilomyces, etc. Small, round spores of this group lack the necessary distinguishing characteristics when seen on non-viable examination.
Health Effects: Can cause a variety of symptoms including allergic reactions. Most symptoms occur if the individual is immunocompromised in some way (HIV, cancer, etc). Both Penicillium and Aspergillus spores share similar morphology on non-viable analysis and therefore are lumped together into the same group.

Basidiospores - From the Subphylum Basidiomycotina which contains the mushrooms, shelf fungi, and a variety of other macrofungi. They are saprophytes, ectomycorrhizal fungi or agents of wood rot, which may destroy the structure wood of buildings. It is extremely difficult to identify a specific genera of mushrooms by using standard culture plate techniques. Some basidiomycete spores can be identified by spore morphology; however, some care should be exercised with regard to specific identification. The release of basidiospores is dependant upon moisture, and they are dispersed by wind.
Health Effects: Many have the potential to produce a variety of toxins. Members of this group may trigger Type I and III fungal hypersensitivity reactions. Rarely reported as opportunistic pathogens.

Cladosporium species - The most commonly identified outdoor fungus. The outdoor numbers are reduced in the winter and are often high in the summer. Often found indoors in numbers less than outdoor numbers. It is commonly found on the surface of fiberglass duct liner in the interior of supply ducts. A wide variety of plants are food sources for this fungus. It is found on dead plants, woody plants, food, straw, soil, paint and textiles. Often found in dirty refrigerators and especially in reservoirs where condensation is collected, on moist window frames it can easily be seen covering the whole painted area with a velvety olive green layer.
Health Effects: It is a common allergen. It can cause mycosis. Common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchiospasms, chronic cases may develop pulmonary emphysema. Illnesses caused by this genus can include phaeohyphomycosis, chromoblastomycosis, hay fever and common allergies.
References: Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control. London and New York: Taylor & Francis,2001.

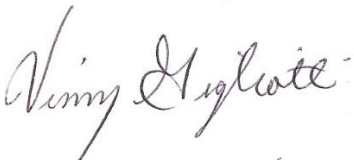
Smuts/Myxomycetes - Smuts and Myxomycetes are parasitic plant pathogens. They are typically grouped together due to their association with plants, the outdoors and because they share similar microscopic morphology.
Health Effects: Can produce type I fungal hypersensitivity reactions.
References: Martin, G.W., C.J. Alexopoulos, and M.L. Farr. The Genera of Myxomycetes. Iowa City, Iowa: University of Iowa Press, 1983.

Conclusions/Recommendations

The areas of the school assessed during the inspection were relatively clean besides the minor recommendations listed above, such as ceiling tile replacement and slightly elevated CO2 levels. The samples in this report indicate a normal fungal ecology for the specific locations tested. Based on the visual inspection and lab results, there are no health or environmental risks related to the remediated areas of the school. Please refer to the attached lab results for identification and spore count per location.

I hope you found our service beneficial. If you have any questions or concerns, please feel free to contact me at 410-867-6262.

Respectfully,



Vinny Gigliotti (CIE)
Environmental Solutions, Inc.

Industry References

Since the 1993 New York City Department of Health (NYCDOH) document (Assessment and remediation of *Stachybotrys Atra* in Indoor Environments) was produced, several other guidance documents have been written. This report was developed in accordance with and including:

- *Fungal Contamination in Buildings: A Guide to Recognition and Management* (Health Canada, 1995).
- *Control of Moisture Problems Affecting Biological Indoor Air Quality* (Flannigan and Morey, 1996).
- *Bioaerosols: Assessment and Control* (American Conference of Government Industrial Hygienists [ACGIH], 1999).
- *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (NYCDOH, 2000). [external link]
- *Mold Remediation in Schools and Commercial Buildings* (U.S. EPA, 2001).
- *Report of the Microbial Growth Task Force* (The American Industrial Hygiene Association, 2001).
- *Fungal Contamination: A manual for investigation, remediation and control (BECi) 2005*.
- *29 CFR 1910, Occupational Safety and Health Standards for General Industry, U.S. Department of Labor*
- Institute of Inspection, Cleaning and Restoration Certification Standard IICRC S520 *29 CFR 1926, Occupational Safety and Health Standards for the Construction Industry*, U.S. Department of Labor
- *40 CFR 61, National Emission Standards for Hazardous Air Pollutants (NESHAP), U.S. Environmental Protection Agency*
- *ACR 2006, Assessment, Cleaning and Restoration of HVAC Systems, National Air Duct Cleaners Association, 2006**
- *ASHRAE Standards 62.1 or 62.2*
- *ASTM D-1653, Standard Test Methods for Water Vapor Transmission of Organic Coating Films*
- *Bioaerosols: Assessment and Control,* American Conference of Governmental Industrial Hygienists, 1999
- *Field Guide for Determination of Biological Contaminants in Environmental Samples, American Industrial Hygiene Association, 2005*
- *A Guide for Mold Remediation in Schools and Commercial Buildings, US Environmental Protection Agency, 2001 Protecting the Built Environment: Cleaning for Health, Michael A. Berry Ph.D., 1993*
- *IICRC S100 Standard and Reference Guide for Professional Carpet Cleaning, Fourth Edition, Institute of Inspection, Cleaning and Restoration Certification, (S100)**
- *IICRC S300 Standard and Reference Guide for Professional Upholstery Cleaning, First Edition, Institute of Inspection, Cleaning and Restoration Certification, (S300)**
- *ANSI/IICRC S500 Standard and Reference Guide for Professional Water Damage Restoration, Third Edition, Institute of Inspection, Cleaning and Restoration Certification, (S500)**