

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 Paca Elementary School 54,868 Ft ²	Vinny Gigliotti Certified Indoor Environmentalist Environmental Solutions, Inc. 6114 Drum Point Rd Deale, MD 20751 410-867-6262 Vinny@esi4u.com
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Property Location

7801 Sherriff Rd, Landover, MD 20785

Date of Inspection: 4/25/2019



Prepared By: Vinny Gigliotti & Ryan Fitzgerald

Certified Indoor Environmentalist (CIE)

Dear Mr. Baylor,

The results of the inspection and testing performed at William Paca Elementary School 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 4/25/2019 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 Historically elevated levels of humidity, condensation from pipes, periodic steam leaks and outdated HVAC systems, may have contributed to water damage ceiling tiles and colonization of mold spores in various area of the school.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 visual assessment, instrument readings and lab results, ESI will determine if additional remediation is 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.	
Classroom #105	2428525	No	37.6	75.9	1,622	001	8,680	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x6	CMU	2	41	5	4	1	0	6
No	No	No	No	No	No	No	N/A	No
Observation Notes								
<ul style="list-style-type: none"> • Accumulations of dust and debris were seen on the fins of the window A/C units. • The Carbon Dioxide CO2 level in this room was slightly elevated at 1,622 ppm. The CO2 level may have been increased due to the room being occupied. • The total spore count was 600 Count/M³ and should not pose environmental or exposure risks at these levels. 								
Recommendations								
<ul style="list-style-type: none"> • To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. 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.	
Classroom #116	2428545	No	43.5	76.8	3,237	001	8,990	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x6	CMU	1	28	6	4	1	0	6
No	No	No	No	No	No	No	N/A	No
Inspected								
<ul style="list-style-type: none"> • Accumulations of dust and debris were seen on the fins of the window A/C units. • The Carbon Dioxide CO2 level in this room was slightly elevated at 3,237 ppm. The CO2 level may have been increased due to the room being occupied. • The total spore count was 720 Count/M³ and should not pose environmental or exposure risks at these levels. 								
Recommendations								
<ul style="list-style-type: none"> • To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. 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.	
Classroom #102	2428540	No	42.8	77.0	2,369	001	8,580	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x6	CMU	1	28	7	4	1	0	6
No	No	No	No	No	No	No	N/A	No
Observation Notes								
<ul style="list-style-type: none"> • Accumulations of dust and debris were seen on the fins of the window A/C units. • The Carbon Dioxide CO2 level in this room was slightly elevated at 2,369 ppm. The CO2 level may have been increased due to the room being occupied. • The total spore count was 520 Count/M³ and should not pose environmental or exposure risks at these levels. 								
Recommendations								
<ul style="list-style-type: none"> • To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. 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.	
Classroom #208	2428534	No	42.4	71.9	2,078	001	8,960	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x6	CMU	1	32	2	5	1	0	6
No	No	No	No	No	No	No	N/A	No
Observation Notes								
<ul style="list-style-type: none"> • Accumulations of dust and debris were seen on the fins of the window A/C units. • The Carbon Dioxide CO2 level in this room was slightly elevated at 2,369 ppm. The CO2 level may have been increased due to the room being recently occupied. • The total spore count was 200 Count/M³ and should not pose environmental or exposure risks at these levels. 								
Recommendations								
<ul style="list-style-type: none"> • To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. 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.	
Classroom #306	2428530	No	34.3	71.0	593	001	6,256	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	0	0	19	3	0	4	6
No	No	N/A	N/A	No	No	N/A	No	No
Observation Notes								
<ul style="list-style-type: none"> • There were no signs of visible mold growth or elevated levels of moisture detected within this location. • The indoor air quality should not pose environmental or exposure risks at these levels. The total spore count was 40 Count/M³ and no elevated levels of Carbon monoxide or Carbon dioxide were detected. 								
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.

Lab Results



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

Project Number: 7801 Sherriff
P.O. Number:
Project Name: William Paca ES
Collected Date: 4/25/2019
Received Date: 4/26/2019 9:15:00 AM

SanAir ID Number:
19019898
FINAL REPORT
 4/29/2019 4:54:06 PM

Analyst: Smith, Kiersten

Air Cassette Analysis

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

SanAir ID Number	19019898-001			19019898-002			19019898-003			19019898-004		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2428525			2428545			2428540			2428534		
Sample Identification	Classroom #105			Classroom #116			Classroom #102			Classroom #208		
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/M ³			40 Count/M ³			40 Count/M ³			40 Count/M ³		
Background Density	2+			2+			3			2+		
Other	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Dander	184	7360	n/a	165	6600	n/a	202	8080	n/a	160	6400	n/a
Fibers	4	160	n/a	7	280	n/a	10	400	n/a	2	80	n/a
Pollen	2	80	n/a									
Fungal Identification	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Alternaria species	1	40	7									
Ascospores				3	120	17						
Aspergillus/Penicillium	5	200	33	6	240	33	3	120	23	2	80	40
Basidiospores	1	40	7	2	80	11	6	240	46			
Bispora like	2	80	13				1	40	8			
Chaetomium species										1	40	20
Cladosporium species	6	240	40	6	240	33	2	80	15			
Cladospirium species				1	40	6	1	40	8	2	80	40
Smuts/Myxomycetes												
TOTAL	15	600		18	720		13	520		5	200	

Signature:

K. Smith

Date: 4/29/2019

Reviewed:

Jonathan Wilson

Date: 4/29/2019



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Air Cassette Analysis

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

SanAir ID Number	19019898-005			19019898-006		
Analysis Using STL	107C			107C		
Sample Number	2428530			2428520		
Sample Identification	Classroom #306			Outdoors		
Sample Type	Air Cassette - Micro-5			Air Cassette - Micro-5		
Volume	25 Liters			25 Liters		
Analytical Sensitivity	40 Count/M ³			40 Count/M ³		
Background Density	1+			2		
Other	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Dander	15	600	n/a	2	80	n/a
Fibers	5	200	n/a	2	80	n/a
Pollen				21	840	n/a
Fungal Identification	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Alternaria species				5	200	15
Ascospores						
Aspergillus/Penicillium						
Basidiospores	1	40	>99	14	560	41
Bispora like						
Chaetomium species						
Cladosporium species				13	520	38
Smuts/Myxomycetes				2	80	6
TOTAL	1	40		34	1360	

Signature:

K. Smith

Date: 4/29/2019

Reviewed:

Johnathan Wilson

Date: 4/29/2019



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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.

Pollen - Produced by trees, flowers, weeds and grasses. The level of pollen production can depend on water availability, precipitation, temperature, and light. Pollen is usually dispersed by either insects or the wind.
Health Effects: Mostly effects the respiratory tract with hay fever symptoms but has also been shown to trigger asthma in some people.

Alternaria species - This genus comprises a large number of saprobes and plant pathogens. It is one of the predominate airborne fungal spores indoor and outdoor. Outdoors it may be isolated from samples of soil, seeds, and plants. It is one of the more common fungi found in nature, extremely widespread and ubiquitous. Conidia are easily carried by the wind, with peak concentrations in the summer and early fall. It is commonly found in outdoor samples. It is often found in indoor environments, on drywall, ceiling tiles, in house dust, carpets, textiles, and on horizontal surfaces in building interiors. Often found on window frames.

Health Effects: In humans, it is recognized to cause type I and III allergic responses. Because of the large size of the spores, it can be deposited in the nose, mouth and upper respiratory tract, causing nasal septum infections. It has been known to cause Baker's asthma, farmer's lung, and hay fever. It has been associated with hypersensitivity pneumonitis, sinusitis, dermatomycosis, onychomycosis, subcutaneous phaeohiphomycosis, and invasive infection. Common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchospasms, chronic cases may develop pulmonary emphysema.

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.

Ascospores - From the fungal Subphylum Ascomycotina. Ascospores are ubiquitous in nature and are commonly found in the outdoor environment. This class contains the "sac fungi" and yeasts. Some ascospores can be identified by spore morphology, however; some care should be exercised with regard to specific identification. They are identified on tape lifts and non-viable analysis by the fact that they have no attachment scars and are sometimes enclosed in sheaths with or without sacs.

Ascomycetes may develop both sexual and asexual stages. Rain and high humidity may help asci to release, and disperse ascospores, which is why during these weather conditions there is a great increase in counts.

Health Effects: This group contains possible allergens.

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.



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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.

Bispora like - Bispora is a ubiquitous anamorphic fungus and may be isolated from decaying wood.

Health Effects: There has been no known research on the health effects, toxicity, or allergens to this fungi.

References: C.J. K. Wang, R.A. Zabel, Identification Manual for Fungi from Utility Poles in the Eastern United States, American Type Culture Collection 1990

Chaetomium species - It is an ascomycete. It is found on a variety of substrates containing cellulose including paper and plant compost. It can be found on the damp or water damaged paper in sheetrock after a long term water damage. Several species have been reported to play a major role in decomposition of cellulose made materials. These fungi are able to dissolve the cellulose fibers in cotton and paper, and thus cause these materials to disintegrate. The process is especially rapid under moist conditions.

Health Effects: Chaetomium can produce type I fungal hypersensitivity and has caused onychomycosis (nail infections).

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.

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 bronchospasms, chronic cases may develop pulmonary emphysema. Illnesses caused by this genus can include phaeoophomycosis, 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.

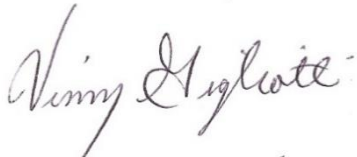
Conclusions/Recommendations

The school was relatively clean during the inspection. The window A/C units did contain heavy accumulations of dust and debris on the fins, which should be evaluated and cleaned as needed. In addition, elevated carbon dioxide was detected in several rooms which may have been due to the rooms being occupied. The carbon dioxide should be monitored, and the recommendations should be followed as needed.

The samples for the classrooms tested in this report do not indicate the presence of elevated airborne mold spores and should not pose health or environmental risks. 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)**