ESI Environmental Solutions, Inc.

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

Discovery Environmental Inspection Report

Project Contact Information

Avalon Elementary School 7302 Webster Ln, Oxon Hill, MD 20744 60,520 sq. ft.	Alex Baylor Environmental Specialists Environmental Safety Office 13306 Old Marlboro Pike Upper Marlboro, MD 20772 301-952-6760	Vinny Gigliotti Environmental Solutions Inc. 6114 Drum Point Rd Deale, MD 20751 (410) -867-6262 vinny@esi4u.com

Property Location

Date of Inspection 2/12/2019

Prepared By: Vinny Gigliotti

Certified Indoor Environmentalist (CIE)

Dear Mr. Baylor,

The results of the inspection and testing performed at Avalon 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 February 12, 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 Historically elevated levels of humidity, condensation from pipes, periodic steam leaks, and outdated HVAC systems, may have contributed to water damage ceiling tiles and colonization of mold spores in various area of the school.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.

Observation notes:

Based upon the visible assessment, instrument readings and lab results, ESI will determine if additional remediation in required. However, this school was extremely clean with no visible signs of water damage, mold growth, or elevated levels of microbial or biological hazards within the breathable air space. With the continuation of good housekeeping and regularly scheduled filter changes and cleaning of the ventilation systems should maintain a good environment for the occupants.

ESI has noticed the carbon dioxide (CO2) levels are slightly elevated during the day when the school is occupied. The average (CO2) levels should range between 350-1,000 ppm and we detected levels between 600-1,580. Carbon Dioxide levels between 1,000-2,000 may cause drowsiness but should not pose any health or environmental risk.

Observations and instrument readings

This 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.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 180	2358375		35	72	1182	001	N/C	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4'	CMU	1		16		1		
NO	NO	NO	NO	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. The spore count for mold in this classroom was very low.								
Recommendations								
NONE								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 145	235-8364		31	72	1,413	002		
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4'	CMU	1	24	3	3	1		
NO	NO	NO	NO	NO	NO	NO		
Inspected								
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. The spore count for mold in this classroom was very low, but the DANDER count was slightly elevated at 9,040 particles per cubic meter of air. Dander at 10,000 may cause allergic reactions.								
Recommendations								
Based upon the elevated dander count, the air filter on the convector may need to be changed.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 165	235-8381		33	74	1,580	001		
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4'	CMU	1	22	3	2	1		
NO	NO	NO	NO	NO	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. The carbon dioxide (CO2) levels are slightly elevated at 1,580 ppm.								
Recommendations								
Increase air circulation with additional make up air.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 223	235-8376		29	71	1124	002		
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4'	CMU	1		10	4	1		
NO	NO	NO		NO	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.								
Recommendations								
NONE								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 231	235-8377		28	71	593	001		
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4'	CMU			26	4		12	
NO	NO			NO	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.								
Recommendations								
NONE								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Hallway	235-8365		28	72	600	001		
Inspected								
Ceiling Tiles	Walls							
2x4'	CMU							
NO	NO							
Observation Notes								
As we inspected and tested the hallway/s, we conducted air samples and instrument readings. During the walkthrough, there were NO visible signs of water damage ceiling tiles or visible mold growth on any of the ceiling tiles. The remediation and cleaning efforts were completed successfully, and the indoor air quality should pose no health or environmental risk.								
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: 7302
P.O. Number: VJG
Project Name: Avalon #5
Collected Date: 2/12/2019
Received Date: 2/13/2019 10:15:00 AM

SanAir ID Number
19006514
FINAL REPORT
2/14/2019 11:33:49 AM

Analyst: Smith, Kiersten

Air Cassette Analysis

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

SanAir ID Number	19006514-001			19006514-002			19006514-003			19006514-004		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	235-8375			235-8364			235-8381			235-8376		
Sample Identification	Room 180			Room 145			Room 165			Room 223		
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+			2+			2			1+		
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Dander	36	1440	n/a	226	9040	n/a	152	6080	n/a	21	840	n/a
Fibers	1	40	n/a	9	360	n/a	5	200	n/a	2	80	n/a
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Ascospores												
Aspergillus/Penicillium	2	80	>99	3	120	43	1	40	13			
Basidiospores				4	160	57	6	240	75	2	80	>99
Cladosporium species							1	40	13			
TOTAL	**2**	**80**		**7**	**280**		**8**	**320**		**2**	**80**	

Signature: K. Smith Date: 2/14/2019 Reviewed: Johnathan Wilson Date: 2/14/2019

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Analyst: Smith, Kiersten

Air Cassette Analysis

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

SanAir ID Number	19006514-005			19006514-006			19006514-007			
Analysis Using STL	107C			107C			107C			
Sample Number	235-8377			235-8365			235-8363			
Sample Identification	Room 231			Hallways			Control Sample			
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/M^3			40 Count/M^3			40 Count/M^3			
Background Density	1+			2			1+			
Other	**Raw Count**	**Count/M^3**	**%**	**Raw Count**	**Count/M^3**	**%**	**Raw Count**	**Count/M^3**	**%**	
Dander	13	520	n/a	103	4120	n/a	30	1200	n/a	
Fibers	2	80	n/a	3	120	n/a	1	40	n/a	
Fungal Identification	**Raw Count**	**Count/M^3**	**%**	**Raw Count**	**Count/M^3**	**%**	**Raw Count**	**Count/M^3**	**%**	
Ascospores							6	240	30	
Aspergillus/Penicillium	14	560	>99	1	40	20	10	400	50	
Basidiospores				2	80	40	4	160	20	
Cladosporium species				2	80	40				
TOTAL	**14**	**560**		**5**	**200**		**20**	**800**		

Signature: K. Smith Date: 2/14/2019 Reviewed: Johnathan Wilson Date: 2/14/2019

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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.

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 excercised 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 dispurse 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.

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.

Conclusions

The samples in this report indicate a normal fungal ecology for the specific location tested. Therefore, the indoor air quality passed and based on the visual inspection and the lab results, there are no health or environmental risk related to the remediation areas of the school.

- Room 165 has slightly elevated levels of carbon dioxide at 1,580, which can be reduced by increasing air circulation with some additional make up air.
- Room 145 has a DANDER count that is slightly elevated at 9,040 particles per cubic meter of air. Dander at 10,000 may cause allergic reactions. Based upon the elevated dander count, the air filter in the convector may need to be changed.

Please refer to the attached lab results below 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 301-509-0010 which my cell phone and or call my office 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)**