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	Ridgecrest Elementary School 68,456 square feet	Bryan Harrington Certified Indoor Environmentalist Environmental Solutions, Inc. 6114 Drum Point Rd Deale, MD 20751 410-867-6262 Bryan@esi4u.com

Property Location

6120 Riggs Road, Hyattsville, MD 20783

Date of Inspection 3/20/2019

Prepared By: Bryan Harrington

Certified Indoor Environmentalist (CIE)

Dear Mr. Baylor,

The results of the inspection and testing performed at Ridgecrest Elementary School, located at 6120 Riggs Road, Hyattsville, MD 20783, 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 3/20/2019 inspection and testing.

Background Information

The Prince George's 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 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 Historically elevated levels of humidity, condensation from pipes, periodic steam leaks, and outdated HVAC systems may have contributed to water damage ceiling tiles and colonization of mold spores in various areas of the school.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 monoxide and carbon dioxide, in addition to measuring the relative humidity and temperature. Microbial hazards within the breathable airspace will also be tested.

Based upon the visual 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, or air quality concerns were 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 9	2378129	N/A	37.8%	68.9	**2133**	000	9,600	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Student Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Sinks
2x4’	CMU	1	20	6	10	1	0	1
NO	NO	NO	NO	NO	NO	NO	NO	NO
Observation Notes								
• There were no signs of visible mold growth in this location. • There were amplified levels of Carbon dioxide (2133 ppm) in this location. • The airborne fungal spores (400 Count/M^3) and Carbon monoxide (000 ppm) should not pose environmental or exposure risks at these levels.								
Recommendations								
• Increase air movement/exchanges to reduce Carbon dioxide (CO2) levels within this location.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	CO	Cubic feet of air.	
Room 10	2378126	N/A	27.7%	72.3	**1283**	000	9,600	
Inspected								
Ceiling Tiles	Walls	Teacher Desk	Student Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Sinks
2x4’	CMU and Partition	0	27	4	7	1	0	1
NO	NO	NO	NO	NO	NO	NO	NO	**YES**
Observation Notes								
• There is pre-existing water damage and discolorations within the sink cabinet. • There were amplified levels of Carbon dioxide (1283 ppm) in this location. • The airborne fungal spores (120 Count/M^3) and Carbon monoxide (000 ppm) should not pose environmental or exposure risks at these levels.								
Recommendations								
• Clean/treat the sink cabinet as needed. • Increase air movement/exchanges to reduce Carbon dioxide (CO2) levels within this location.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	CO	Cubic feet of air.	
Room 7	2378125	N/A	23.3%	72.5	**1292**	000	10,250	
Inspected								
Ceiling Tiles	Walls	Teacher Desk	Student Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Sinks
2x4’	CMU	0	0	13	14	1	0	1
NO	NO	NO	NO	NO	NO	NO	NO	NO
Observation Notes								
• There were no signs of visible mold growth in this location. • There were amplified levels of Carbon dioxide (1292 ppm) in this location. • The airborne fungal spores (40 Count/M^3) and Carbon monoxide (000 ppm) should not pose environmental or exposure risks at these levels.								
Recommendations								
• Increase air movement/exchanges to reduce Carbon dioxide (CO2) levels within this location.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	CO	Cubic feet of air.	
Room 102	2378131	**YES**	24.4%	72.3	**1456**	000	9,255	
Inspected								
Ceiling Tiles	Walls	Teacher Desk	Student Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Sinks
2x4’	CMU and drywall	1	23	3	8	0	4	1
NO	NO	NO	NO	NO	NO	NO	NO	**YES**
Observation Notes								
• There was water damage and suspected microbial growth on the drywall underneath the sink. A surface swab sample was collected and “Rare” Aspergillus/Penicillium and Chaetomium species, as well as “Light” Stachybotrys species was identified on the drywall. • There were amplified levels of Carbon dioxide (1456 ppm) in this location. • The airborne fungal spores (120 Count/M^3) and Carbon monoxide (000 ppm) should not pose environmental or exposure risks at these levels.								
Recommendations								
• Engage HEPA filtered air scrubber near sink prior to disturbing water damaged wallboard. • Remove the water damaged drywall from underneath the sink and seal airtight in a contractor’s bag for disposal. • HEPA vacuum and damp-wipe the exposed structural supports. • Allow HEPA filtered air scrubber to run in circulation mode for 6-8 hours. • Increase air movement/exchanges to reduce Carbon dioxide (CO2) levels within this location.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	CO	Cubic feet of air.	
Room 17	2378124	N/A	25.1%	72.6	**1369**	000	9,600	
Inspected								
Ceiling Tiles	Walls	Teacher Desk	Student Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Sinks
2x4’	CMU and Partition	0	27	4	10	1	0	1
YES	NO	NO	**YES**	NO	NO	NO	NO	NO

Observation Notes

- There was one water damaged ceiling tile along the exterior wall.
- There was suspected microbial growth on the underside of the student desks, particularly the edges of the wood desktop.
- There were amplified levels of Carbon dioxide (1369 ppm) in this location.
- The airborne fungal spores (320 Count/M^3) and Carbon monoxide (000 ppm) should not pose environmental or exposure risks at these levels.

Recommendations

- Engage HEPA filtered air scrubber prior to cleaning and treating the student desks.
- HEPA vacuum underside of student desks. Then, damp-wipe with ShockWave or equivalent.
- Allow HEPA filtered air scrubber to run in circulation mode for 6-8 hours.
- Increase air movement/exchanges to reduce Carbon dioxide (CO2) levels within this location.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	CO	Cubic feet of air.	
Room 21	2378119	N/A	25.3%	72.3	**1536**	000	9,600	
Inspected								
Ceiling Tiles	Walls	Teacher Desk	Student Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Sinks
2x4’	CMU	1	25	3	10	1	0	1
NO	NO	NO	NO	NO	NO	NO	NO	**YES**

Observation Notes

- There is pre-existing water damage and discolorations within the sink cabinet.
- There were amplified levels of Carbon dioxide (1536 ppm) in this location.
- The airborne fungal spores (160 Count/M^3) and Carbon monoxide (000 ppm) should not pose environmental or exposure risks at these levels.

Recommendations

- Clean/treat the sink cabinet and doors as needed.
- Increase air movement/exchanges to reduce Carbon dioxide (CO2) levels within this location.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	CO	Cubic feet of air.	
Room 108	2378141	N/A	21.6%	72.8	**2135**	000	7,293	
Inspected								
Ceiling Tiles	Walls	Teacher Desk	Student Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4’	Drywall	1	26	4	6	0	4	2
NO	NO	NO	NO	NO	NO	NO	NO	NO
Observation Notes								
• There were no signs of visible mold growth in this location. • There were amplified levels of Carbon dioxide (2135 ppm) in this location. • The airborne fungal spores (120 Count/M^3) and Carbon monoxide (000 ppm) should not pose environmental or exposure risks at these levels.								
Recommendations								
• Increase air movement/exchanges to reduce Carbon dioxide (CO2) levels within this location.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	CO	Cubic feet of air.
Outdoors	2378135	N/A	15.6%	55.0	876	000	N/A

Interpretation of Lab Results

In the enclosed Air Cassette Analysis report, you will notice Fungal Identification, which is the genera detected in the breathable airspace, both indoors and/or outdoors (control sample). The Raw Count is the actual number of spores counted on the slide, and the Count/M^3 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

Analyst: Smith, Kiersten

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

Project Number: 6120 Riggs Road
P.O. Number:
Project Name: Ridgecrest Elementary School
Collected Date: 3/20/2019
Received Date: 3/21/2019 9:35:00 AM

SanAir ID Number
19013145
FINAL REPORT
3/25/2019 12:55:55 PM

Air Cassette Analysis

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

SanAir ID Number	19013145-001			19013145-002			19013145-003			19013145-004		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2378129			2378126			2378125			2378131		
Sample Identification	Room 9			Room 10			Room 7			Room 102		
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	2+			1+			1+			1+		
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Dander	112	4480	n/a	20	800	n/a	29	1160	n/a	44	1760	n/a
Fibers	2	80	n/a	2	80	n/a	3	120	n/a	1	40	n/a
Mycelial Fragments							1	40	n/a			
Pollen												
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Ascospores	1	40	10									
Aspergillus/Penicillium	2	80	20	2	80	67				2	80	67
Basidiospores	3	120	30	1	40	33	1	40	>99	1	40	33
Cladosporium species	4	160	40									
Curvularia species												
TOTAL	**10**	**400**		**3**	**120**		**1**	**40**		**3**	**120**	

Signature: K. Smith Date: 3/25/2019 Reviewed: Johnathan Wilson Date: 3/25/2019

SanAir Technologies Laboratory

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Analyst: Smith, Kiersten

Air Cassette Analysis

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

SanAir ID Number	19013145-005			19013145-006			19013145-007			19013145-008		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2378124			2378119			2378141			2378135		
Sample Identification	Room 17			Room 21			Room 108			Outdoors		
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	2			2+			2+			1+		
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Dander	71	2840	n/a	118	4720	n/a	68	2720	n/a	4	160	n/a
Fibers	2	80	n/a	1	40	n/a	2	80	n/a	1	40	n/a
Mycelial Fragments												
Pollen										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	4	160	50	1	40	25				1	40	17
Basidiospores	2	80	25	1	40	25	2	80	67	1	40	17
Cladosporium species	1	40	13	2	80	50	1	40	33	4	160	67
Curvularia species	1	40	13									
TOTAL	**8**	**320**		**4**	**160**		**3**	**120**		**6**	**240**	

Signature: K. Smith Date: 3/25/2019 Reviewed: Johnathan Wilson Date: 3/25/2019

Direct ID Lab Results

SanAir Technologies Laboratory

SanAir ID Number
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Name: Environmental Solutions, Inc
Address: 534-A Deale Road
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Phone: 410-867-6262

Project Number: 6120 Riggs Road
P.O. Number:
Project Name: Ridgecrest Elementary School
Collected Date: 3/20/2019
Received Date: 3/21/2019 9:35:00 AM

Analyst: Smith, Kiersten

Direct Identification Analysis

SanAir ID: 19013145-009 Sample #:Swab Room 102 - Drywall Under Sink

D1 - Direct Identification Analysis on Surface Swab using STL 104

Direct ID of Mold

Fungi	Estimated Amount
Aspergillus/Penicillium	Rare
Chaetomium species	Rare
Stachybotrys species	Light

Estimated Amount	Indication of Growth	Evidence of Mycelial Fragments/Conidiophores
Rare	Not Likely	None
Light	Possible	Some, 10 to 25% of Tape Covered
Moderate	Probable	Abundant, 25 to 50% of Tape Covered
Heavy	Significant	Throughout, 50 to 100% of Tape Covered

*Refer to additional information page for further details

Signature: K. Smith
Date: 3/25/2019

Reviewed: Johnathan Wilson
Date: 3/25/2019

SanAir ID Number
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Name: Environmental Solutions, Inc
Address: 534-A Deale Road
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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.

Mycelial Fragments - A mycelium (plural = mycelia) is the "body" of a fungus. It is a collective term for hyphae (singular = hypha), which are the tubular units of the mycelium usually composed of chitin. The terms hyphae and mycelial fragments are used interchangeably. [This information was referenced from the mycology text "The Fifth Kingdom"]In some cases a fungal identification cannot be obtained due to lack of sporulation. Only the mycelial fragments are present, and cannot be identified without the distinguishing characteristics of the spores or the structures they grow from.
Health Effects: Allergic reactions may occur in the presence of spores (conidia) or mycelial/hyphal fragments.

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.

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.

Conclusions/Recommendations

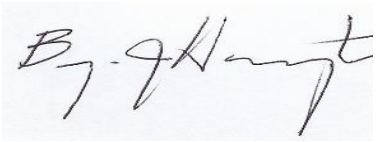
All water damaged sink cabinets should be cleaned and treated as needed. The water damaged drywall underneath the sink in Room 102 should be removed as outlined above. The student desks in Room 17 should be HEPA vacuumed and damp-wiped.

The amplified levels of Carbon dioxide can be reduced by increasing air movement/exchanges.

The air samples for the tested locations 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,



Bryan Harrington (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)**