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 301-952-676	Margaret Brent Regional School 2816 Lamont Terrace New Carrollton, MD 20784 48,236 sq. feet	Bryan Harrington 6114 Drum Point Road Deale, MD 20751 Office: 410-867-6262 Mobile: 301-832-6621 bryan@esi4u.com

Property Location

2816 Lamont Terrace New Carrollton, MD

20784 **Date of Inspection** 2/27/2019

Prepared By: Bryan Harrington

Certified Indoor Environmentalist (CIE)

Dear Mr. Baylor,

The results of the inspection and testing performed at Margaret Brent Regional School, which is located at 2816 Lamont Terrace, New Carrollton, MD 20874, 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 recommendation from ESI's 2/27/2019 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 Historically elevated levels of humidity, condensation from pipes, periodic steam leaks and outdated HVAC systems, may have contributed to water damage ceiling tiles and colonization of mold spores in various areas of the school.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, as well as 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 hazards within the breathable airspace 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.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 8	**2378058**	N/A	20.8%	66.3	815	009	Approximately 6,000	
Inspected								
Ceiling Tiles	Walls	Teacher's Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2'	CMU	0	10	1	11	1	0	9
NO	NO	NO	NO	YES	NO	NO	NO	NO

Observation Notes

- There was suspected microbial growth on the plastic chairs around the U-shaped table.
- There was suspected microbial growth on the loose wood and plastic jug within the sink cabinet.
- There was suspected microbial growth on the loudspeaker.
- The indoor air quality had slightly amplified levels of Aspergillus/Penicillium at 1,760 spores per cubic meter of air.

Recommendations

- HEPA vacuum, spray antimicrobial, then damp-wipe chairs to remove microbial growth and dust/debris.
- Discard the loose piece of wood and jug from within the sink cabinet.
- HEPA vacuum, spray antimicrobial, then damp-wipe the loudspeaker to remove microbial growth and dust/debris.
- Engage a HEPA filtered air scrubber in this location for approximately 4-6 hours. Damp wipe all horizontal surfaces with an antimicrobial, then fog the breathable airspace.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 7	2378057	YES	16.8%	71.9	631	010	Approximately 6,000	
Inspected								
Ceiling Tiles	Walls	Teacher's Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2'	CMU	0	2	1	5	1	2	4
YES	NO	NO	NO	NO	NO	NO	NO	NO

Observation Notes

- There was suspected microbial growth on several ceiling tiles along the exterior wall.
- There was suspected microbial growth on the loudspeaker.
- Suspected microbial growth was pointed out by a staff member in between the paper and bulletin board along the right wall of the room. A surface sample was collected and identified "Rare" Arthrobotrys species and Basidiospores, "Light" Penicillium species, and "Heavy" Aspergillus species.
- There were discolorations on the underside of the air handling unit(s) along ceiling.
- The indoor air quality should not pose health or environmental risk. The total spore count was 600 count per cubic meter of air, which would be considered a normal fungal ecology.

Recommendations

- Remove and replace all three ceiling tiles and place contaminated/damaged tiles in a sealed plastic bag for disposal.
- HEPA vacuum, spray antimicrobial, then damp-wipe the loudspeaker to remove microbial growth and dust/debris.
- Remove paper from bulletin board(s). HEPA vacuum, spray antimicrobial, then damp-wipe the bulletin board(s) to remove mold growth.
- HEPA vacuum, spray antimicrobial, then damp-wipe underside of AHU(s) to remove discolorations.
- Engage HEPA filtered air scrubber in this location for approximately 4-6 hours. Damp wipe all horizontal surfaces with an antimicrobial, then fog the breathable air space.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 9	**2378053**	N/A	17.6%	74.3	671	011	Approximately 6,000	
Inspected								
Ceiling Tiles	Walls	Teacher's Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2'	CMU	2	0	4	13	1	2	9
NO	NO	NO	NO	NO	NO	NO	NO	NO
Inspected								
• Suspected microbial growth was pointed out by a staff member on the multi-colored folding mats. • The indoor air quality had slightly amplified levels of Aspergillus/Penicillium at 1,080 spores per cubic meter of air.								
Recommendations								
• HEPA vacuum, spray antimicrobial, then damp-wipe the folding mats to remove microbial growth. • Engage a HEPA filtered air scrubber in this location for approximately 4-6 hours. Damp wipe all horizontal surfaces with an antimicrobial, then fog the breathable airspace.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 11	2378061	N/A	18.9%	68.9	540	012	Approximately 6,000	
Inspected								
Ceiling Tiles	Walls	Teacher's Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2'	CMU	1	1	3	16	1	2	7
NO	NO	YES	NO	NO	NO	NO	NO	NO
Observation Notes								
• There was suspected microbial growth underneath the teacher's desk. • There were accumulations of dust remaining on the plastic chairs. • The indoor air quality should not pose health or environmental risk. The total spore count was 240 count per cubic meter of air, which would be considered a normal fungal ecology.								
Recommendations								
• HEPA vacuum, spray antimicrobial, then damp-wipe the teacher's desk to remove microbial growth and dust/debris. • HEPA vacuum, then damp-wipe chairs to remove dust and debris.								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 18	2378056	N/A	26.0%	70.7	531	013	Approximately 6,000	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2'	CMU	0	3	5	15	1	2	8
NO	NO	NO	NO	NO	NO	NO	**YES**	NO
Observation Notes								
• There were accumulations of dust/debris and/or microbial growth on the supply registers to the air handling unit(s). • The indoor air quality should not pose health or environmental risk. The total spore count was 560 count per cubic meter of air, which would be considered a normal fungal ecology.								
Recommendations								
• Remove supply registers to AHU(s) then HEPA vacuum, spray with antimicrobial, then damp-wipe to remove dust/debris and/or microbial growth.								

Interpretation of Lab Results

In the enclosed Air Cassette Analysis, you will notice Fungal Identification, which is the genera detected in the breathable airspace, both indoors and 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

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

Project Number: 2816 Lamont Terrace
P.O. Number:
Project Name: Margaret Brent Regional
Collected Date: 2/27/2019
Received Date: 2/28/2019 9:30:00 AM

SanAir ID Number
19009270
FINAL REPORT
3/4/2019 10:13:50 AM

Analyst: Shepperson, Josh

Air Cassette Analysis

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

SanAir ID Number	19009270-001			19009270-002			19009270-003			19009270-004		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2378058			2378057			2378053			2378061		
Sample Identification	Room 8			Room 7			Room 9			Room 11		
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			2		
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Dander	24	960	n/a	28	1120	n/a	11	440	n/a	15	600	n/a
Fibers	6	240	n/a	3	120	n/a	2	80	n/a			
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Aspergillus/Penicillium	44	1760	96	12	480	80	27	1080	93	4	160	67
Basidiospores	1	40	2	2	80	13				2	80	33
Cladosporium species	1	40	2	1	40	7	2	80	7			
TOTAL	**46**	**1840**		**15**	**600**		**29**	**1160**		**6**	**240**	

Signature: Date: 3/4/2019 Reviewed: Date: 3/4/2019

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Analyst: Shepperson, Josh

Air Cassette Analysis

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SanAir ID Number	19009270-005			19009270-006				
Analysis Using STL	107C			107C				
Sample Number	2378056			2378062				
Sample Identification	Room 18			Outdoors				
Sample Type	Air Cassette - Micro-5			Air Cassette - Micro-5				
Volume	25 Liters			25 Liters				
Analytical Sensitivity	40 Count/M³			40 Count/M³				
Background Density	2			2				
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**		
Dander	29	1160	n/a	3	120	n/a		
Fibers	5	200	n/a	2	80	n/a		
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**		
Aspergillus/Penicillium	9	360	64	1	40	25		
Basidiospores	3	120	21	2	80	50		
Cladosporium species	2	80	14	1	40	25		
TOTAL	**14**	**560**		**4**	**160**			

Signature: Date: 3/4/2019 Reviewed: Date: 3/4/2019

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Analyst: Shepperson, Josh

Direct Identification Analysis

SanAir ID: 19009270-007 Sample #:BT Room 7 Bulletin Board

D1 - Direct Identification Analysis on Bio-Tape using STL 104

Direct ID of Mold

Fungi	Estimated Amount
Arthrobotrys species	Rare
Aspergillus species	Heavy
Basidiospores	Rare
Penicillium species	Light

Tape was slightly covered with debris which might have occluded fungi.

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

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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.

Arthrobotrys species - Arthrobotrys species have been isolated from soil samples. Several species within this genus capture nematodes through the development of an adhesive network.
References: Domsch, K. H., Anderson, Traute-Heidi and Gams, W. Compendium of Soil Fungi, Volume1. IHW-Verlag, 1993 (reprint).

Aspergillus species - A genus of fungi containing over 180 recognized species. Members of this genus have been recovered from a variety of habitats, but are especially common as saprophytes on decaying vegetation, soils, stored food, and feed products in tropical and subtropical regions. Some species are xerophilic. Some species are parasitic on insects, plants and animals, including man. Some species are reported mycotoxin producers. Both Penicillium and Aspergillus spores share similar morphology on non-viable analysis and therefore are lumped together into the same group. Only through the visualization of reproductive structures can the genera be distinguished.
Health Effects: Can produce type I and III fungal hypersensitivities. All of the species contained in this genus should be considered allergenic. Various Aspergillus species are a common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchiospasms. Chronic cases may develop pulmonary emphysema. Members of this genus are reported to cause a variety of opportunistic infections of the ears and eyes. Severe pulmonary infections may also occur.
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.

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.

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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.

Penicillium species - Penicillium spores are ubiquitous in the environment. A wide number of organisms have been placed in this genus. Identification to species is difficult. Often found in aerosol samples. Commonly found in soil, food, cellulose, and grains. It is also found in paint and compost piles. Commonly found in carpet, wallpaper, and in interior fiberglass duct insulation. Both Penicillium and Aspergillus spores share similar morphology on non-viable analysis and therefore are lumped together into the same group. Only through the visualization of reproductive structures can the genera be distinguished.
Health Effects: It may cause hypersensitivity pneumonitis and allergic alveolitis in susceptible individuals. It is reported to be allergenic (skin). Common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchiospasms, chronic cases may develop pulmonary emphysema.
References: De Hoog, G.S., J. Guarro, J. Gene, and M.J. Figueras. Atlas of Clinical Fungi, 2nd Edition. The Netherlands: CBS, 2000.

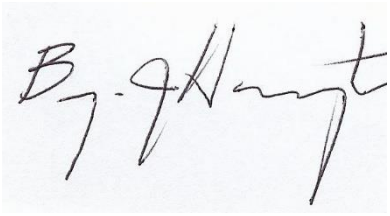
Conclusions/Recommendations

The samples in this report indicate slightly amplified levels of Aspergillus/Penicillium for Room 8 and Room 9. The minimal levels in the breathable airspace of Room 7, Room 11, and Room 18 would be considered a normal fungal ecology. Please refer to the included lab results for identification and spore count per location.

Overall, the inspected rooms were clean of microbial growth. However, several areas of light microbial growth were identified. In addition, a staff member identified hidden microbial growth in between the paper and bulletin board in Room 7. Recommendations for additional cleaning are outlined above.

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)**