

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	Andrew Jackson Academy 151,163Ft ²	Zack Butcher Certified Indoor Environmentalist Environmental Solutions, Inc. 6114 Drum Point Rd Deale, MD 20751 410-867-6262 zack@esi4u.com
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Property Location

3500 Regency Parkway, Forestville, MD 20747

Date of Inspection: 3/25/2019



Prepared By: Zack Butcher

Certified Indoor Environmentalist (CIE)

Dear Mr. Baylor,

The results of the inspection and testing performed at Andrew Jackson 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 03/25/2019 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 Historically elevated levels of humidity, condensation from pipes, periodic steam leaks and outdated HVAC systems, may have contributed to water damage ceiling tiles and colonization of mold spores in various area of the school.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 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 recommendations will be included for the area inspected.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 201	2376788	N/A	35.1%	67.8°	964	0.00	8,000	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	28	3	3	1	0	2
YES	NO	N/A	N/A	N/A	N/A	NO	N/A	NO
Inspected								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. There were contents piled up on the convector unit, which may potentially limit air flow. The indoor air quality should not pose health or environmental concerns, as the total fungal ecology was 600 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles. Remove contents piled up on top of the convector unit. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 211	2376790	N/A	32.9%	70.5°	1,404	0.00	12,600	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	13	6	6	1	NO	4
YES	NO	N/A	N/A	N/A	YES	NO	N/A	NO
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. There was visible suspected microbial growth and evidence of water damage in the sink cabinet. There was dust and debris on the convector unit fins. The Carbon Dioxide (CO2) level in this room was elevated at 1,404 ppm (parts per million). The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 200 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles. 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. HEPA vacuum, then damp-wipe the sink cabinetry with an anti-microbial agent to remove water staining and suspected microbial contamination. Ensure there are no active leaks from the sink. Clean convector unit fins with an antimicrobial to remove dust and discolorations. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 213	2376791	N/A	26.6%	70.3°	506	0.00	11,650	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	0	16	8	1	0	5
YES	NO	NO	N/A	NO	NO	NO	N/A	NO
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. There was one water stained ceiling tile. There was dust and debris on the convector unit fins. The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 320 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles and the one water stained ceiling tile. Clean convector unit fins with an antimicrobial to remove dust and discolorations. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 215	2376792	N/A	31.6%	73.0°	1,245	0.00	11,650	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	25	3	4	1	0	5
YES	NO	N/A	N/A	N/A	N/A	NO	N/A	NO
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. The Carbon Dioxide (CO2) level in this room was elevated at 1,245 ppm (parts per million). The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 560 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles. 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.	
Room 223	2376793	N/A	34.3%	71.6°	1,452	0.00	8,000	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	20	3	4	1	0	2
YES	NO	N/A	N/A	NO	N/A	NO	N/A	NO
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. The Carbon Dioxide (CO2) level in this room was elevated at 1,452 ppm (parts per million). The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 240 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles. 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.	
Room 222	2376794	N/A	32.1%	71.7°	1,698	0.00	8,700	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	20	3	5	1	0	0
YES	NO	N/A	N/A	NO	N/A	NO	N/A	N/A
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. The Carbon Dioxide (CO2) level in this room was elevated at 1,698 ppm (parts per million). The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 320 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles. 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.	
Room 210	2376795	N/A	34.6%	74.8°	1,950	0.00	7,550	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU & Drywall	1	19	3	3	1	0	0
YES	NO	N/A	N/A	NO	N/A	NO	N/A	N/A
Observation Notes								
<ul style="list-style-type: none"> • Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. • There was one water stained ceiling tile. • There was dust and debris on the convector unit fins. • The Carbon Dioxide (CO2) level in this room was elevated at 1,950 ppm (parts per million). • The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 160 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> • Remove, discard, and replace the sagging ceiling tiles and the one water stained ceiling tile. • Clean convector unit fins with an antimicrobial to remove dust 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.	
Room 204	2376796	N/A	27.6%	75.0°	1,416	0.00	8,400	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	2	10	3	4	1	0	0
YES	NO	N/A	NO	NO	NO	NO	N/A	N/A
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. The Carbon Dioxide (CO2) level in this room was elevated at 1,416 ppm (parts per million). The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 520 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles. 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.	
Room 216	2376797	N/A	28.8%	74.6°	1,286	0.00	7,280	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU & Drywall	1	14	1	5	1	0	0
YES	NO	N/A	N/A	N/A	N/A	NO	N/A	N/A
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. There was dust and debris on the convector unit fins. The Carbon Dioxide (CO2) level in this room was elevated at 1,286 ppm (parts per million). The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 560 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles. Clean convector unit fins with an antimicrobial to remove dust 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.	
1 st Floor Common Hallway	2376798	N/A	25.4%	73.5°	618	0.00	N/A	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convactor	HVAC Diffusors	Windows
2x4	CMU	0	0	0	0	1	0	0
YES	NO	N/A	N/A	NO	N/A	NO	N/A	N/A
Observation Notes								
<ul style="list-style-type: none"> There were two water stained ceiling tiles from a recent water leak in the ceiling cavity. The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 760 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the two water stained ceiling tiles. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Library	2376799	N/A	22.9%	76.8°	768	0.00	49,000	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convactor	HVAC Diffusors	Windows
2x4	CMU	1	0	40	12	0	15	0
YES	NO	N/A	N/A	N/A	N/A	N/A	YES	N/A
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. There were two water stained ceiling tiles. There was dust and debris on the diffusers. There was visible suspected microbial growth on top of one of the remaining bookshelves impacted by a previous water loss from a convactor unit in a room on the 2nd floor. The indoor air quality may potentially pose health or environmental concerns, as the total fungal ecology was 7,960 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the two water stained ceiling tiles. Clean diffusers with an antimicrobial to remove dust and discolorations. Remove and discard the contaminated bookshelf. Engage a minimum of two 1,000 CFM HEPA filtered air scrubbers in the library for approximately 12-24 hours. Damp wipe all horizontal surfaces with an antimicrobial, then fog the breathable air space with an EPA registered botanical solution. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 113	2376800	N/A	22.3%	75.3°	539	0.00	9,000	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU & Drywall	3	21	5	6	0	4	0
NO	NO	NO	NO	NO	NO	N/A	NO	N/A
Observation Notes								
<ul style="list-style-type: none"> The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 360 spores/M³ of breathable air space. 								
Recommendations								
None								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 117	2376801	N/A	25.5%	74.1°	549	0.00	24,000	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	26	18	5	2	1 AHU	5
NO	NO	NO	NO	NO	NO	NO	YES	NO
Observation Notes								
<ul style="list-style-type: none"> There were water stains and rust on the AHU (Air Handling Unit) suspended from the ceiling. There was dust and debris on the return registers. The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 440 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Clean AHU and return registers with an antimicrobial to remove dust and discolorations. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 100	2376802	N/A	27.0%	72.1°	500	0.00	22,200	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	0	6	6	2	0	0
YES	NO	NO	N/A	NO	NO	NO	N/A	N/A
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. There were three water stained ceiling tiles. There were water stains on some of the sound proof panels. The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 240 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles and the three water stained ceiling tiles. Ensure there are no active leaks in the ceiling cavity contributing to the staining of the sound proof panels. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Room 107	2376803	N/A	38.6%	71.7°	1,418	0.00	12,300	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU & Drywall	1	0	6	13	1	0	2
YES	NO	NO	N/A	NO	NO	NO	N/A	NO
Observation Notes								
<ul style="list-style-type: none"> Most of the ceiling tiles were sagging. This is most likely due to elevated relative humidity during the warmer months of the year. The convector unit was covered with contents, which may limit air flow. The Carbon Dioxide (CO2) level in this room was elevated at 1,418 ppm (parts per million). The indoor air quality should not pose any health or environmental concerns, as the total fungal ecology was 640 spores/M³ of breathable air space. 								
Recommendations								
<ul style="list-style-type: none"> Remove, discard, and replace the sagging ceiling tiles. Remove contents piled up on top of the convector unit. 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.
Control-Outside	2376787		32.6%	62.2°			
Observation Notes							
<ul style="list-style-type: none"> The total fungal ecology detected in the outdoor air sample was 800 spores/M³ of breathable air space. 							

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 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.

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



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

Project Number: 3500 Regency Parkway
P.O. Number: JZB
Project Name: Andrew Jackson Academy
Collected Date: 3/25/2019
Received Date: 3/27/2019 9:35:00 AM

SanAir ID Number
19014151
 FINAL REPORT
 3/28/2019 11:46:00 AM

Analyst: Shepperson, Josh

Air Cassette Analysis

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

SanAir ID Number	19014151-001			19014151-002			19014151-003			19014151-004		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2376787			2376788			2376790			2376791		
Sample Identification	Control - Outside			Room 201			Room 211			Room 213		
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			2			1+		
Other	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%
Dander	2	80	n/a	56	2240	n/a	66	2640	n/a	11	440	n/a
Fibers	1	40	n/a				3	120	n/a	1	40	n/a
Pollen				1	40	n/a						
Fungal Identification	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%
Alternaria species												
Arthrospores												
Ascospores												
Aspergillus/Penicillium	5	200	25	5	200	33	2	80	40	4	160	50
Basidiospores	13	520	65	8	320	53	2	80	40	3	120	38
Chaetomium species												
Cladosporium species	1	40	5							1	40	13
Curvularia species												
Epicoccum species												
Pithomyces species												
Scopulariopsis like												
Smuts/Myxomycetes	1	40	5	2	80	13	1	40	20			
Trichoderma species												
TOTAL	20	800		15	600		5	200		8	320	

Signature:

Date: 3/28/2019

Reviewed:

Date: 3/28/2019



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Analyst: Shepperson, Josh

Air Cassette Analysis

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

SanAir ID Number	19014151-005			19014151-006			19014151-007			19014151-008		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2376792			2376793			2376794			2376795		
Sample Identification	Room 215			Room 223			Room 222			Room 210		
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			2+			2		
Other	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Dander	78	3120	n/a	70	2800	n/a	116	4640	n/a	70	2800	n/a
Fibers	13	520	n/a	8	320	n/a	13	520	n/a	6	240	n/a
Pollen												
Fungal Identification	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Alternaria species												
Arthrospores												
Ascospores				1	40	17	1	40	13	1	40	25
Aspergillus/Penicillium	8	320	57	2	80	33	2	80	25	3	120	75
Basidiospores				2	80	33	1	40	13			
Chaetomium species												
Cladosporium species	6	240	43				3	120	38			
Curvularia species							1	40	13			
Epicoccum species				1	40	17						
Pithomyces species												
Scopulariopsis like												
Smuts/Myxomycetes												
Trichoderma species												
TOTAL	14	560		6	240		8	320		4	160	

Signature:

Date: 3/28/2019

Reviewed:

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SanAir ID Number	19014151-009			19014151-010			19014151-011			19014151-012		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2376796			2376797			2376798			2376799		
Sample Identification	Room 204			Room 216			Common Hallway Outside Room 104			Library		
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	3			2			2			2		
Other	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Dander	77	3080	n/a	42	1680	n/a	60	2400	n/a	34	1360	n/a
Fibers	5	200	n/a	5	200	n/a	12	480	n/a	4	160	n/a
Pollen												
Fungal Identification	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Alternaria species										22	880	11
Arthrospores												
Ascospores	1	40	8									
Aspergillus/Penicillium	3	120	23	4	160	29	5	200	26	7	280	4
Basidiospores	2	80	15	10	400	71	9	360	47	2	80	1
Chaetomium species										6	240	3
Cladosporium species	4	160	31							2	80	1
Curvularia species	1	40	8				1	40	5	1	40	< 1
Epicoccum species							1	40	5			
Pithomyces species	1	40	8									
Scopulariopsis like										3	120	2
Smuts/Myxomycetes	1	40	8				3	120	16	1	40	< 1
Trichoderma species										155	6200	78
TOTAL	13	520		14	560		19	760		199	7960	

Signature:

Date: 3/28/2019

Reviewed:

Date: 3/28/2019



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 Deale, MD 20751
Phone: 410-867-6262

Project Number: 3500 Regency Parkway
P.O. Number: JZB
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Collected Date: 3/25/2019
Received Date: 3/27/2019 9:35:00 AM

SanAir ID Number
19014151
FINAL REPORT
 3/28/2019 11:46:00 AM

Analyst: Shepperson, Josh

Air Cassette Analysis

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

SanAir ID Number	19014151-013			19014151-014			19014151-015			19014151-016		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	23767800			23767801			23767802			23767803		
Sample Identification	Room 113			Room 117			Room 100			Room 107		
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			1+			1+			2+		
Other	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Dander	29	1160	n/a	4	160	n/a	4	160	n/a	179	7160	n/a
Fibers	2	80	n/a	2	80	n/a	1	40	n/a	9	360	n/a
Pollen												
Fungal Identification	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Alternaria species										1	40	6
Arthrospores												
Ascospores												
Aspergillus/Penicillium	2	80	22	1	40	9				3	120	19
Basidiospores	3	120	33	10	400	91	6	240	>99	4	160	25
Chaetomium species												
Cladosporium species	3	120	33							1	40	6
Curvularia species												
Epicoccum species												
Pithomyces species												
Scopulariopsis like												
Smuts/Myxomycetes	1	40	11							1	40	6
Trichoderma species										6	240	38
TOTAL	9	360		11	440		6	240		16	640	

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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 pneumoniti, sinusitis, deratomyocosis, onychomycosis, subcutaneous phaeohyphomycosis, and invasive infection. Common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchiospasm, 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.

Arthrospores - This is a specialized cell that functions as a spore and breaks off from the vegetative hyphal fragment. Examples of fungal spores included in this category are Geotrichum, Arthrographis, and Trichosporon.

References: Referenced from "Dictionary of The Fungi, 9th Edition"

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.

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 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.

Curvularia species - Curvularia is found on plant material and is considered a saprobe. It has also been isolated from dust samples and from wallpaper.

Health Effects: It has been reported to cause type I hypersensitivity and to be a cause of allergic fungal sinusitis. It may cause corneal infections, mycetoma and infections in immune compromised hosts.

References: De Hoog, G.S., J. Guarro, J. Gene, and M.J. Figueras. Atlas of Clinical Fungi, 2nd Edition. The Netherlands: CBS, 2000.

Epicoccum species - It is found in plants, soil, grains, textiles, and paper products. Frequently isolated from air and occasionally occurs in house dust. Is a saprophyte and considered a weakly parasitic secondary invader of plants, moldy paper and textiles. Epicoccum is usually isolated with either Cladosporium species or Aureobasidium species.

Health Effects: A common allergen. It also has the potential to produce type I fungal hypersensitivity reactions.

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.



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Pithomyces species - Grows on dead grass in pastures and decaying plant material.

Health Effects: Causes facial eczema in ruminants.

References: St-Germain, Guy, and Richard Summerbell. Identifying Filamentous Fungi: A Clinical Laboratory Handbook. California: Star Publishing Co., 1996.

Scopulariopsis like - Scopulariopsis species are ubiquitous and can grow on a wide variety of materials including old carpets and water damaged wallpaper.

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.

Trichoderma species - Trichoderma is commonly isolated in soils, air and in plant materials. Often found in litter materials (polluted streams, sewage plants, and driftwoods). It is found on paper and in kitchens on many common tableware materials. In the laboratory, Trichoderma can be a contaminant due to the fact that it can produce confluent growth and take over an entire culture. Materials such as wood construction and mineral fiber panels can be very affected by this fungus. The species *T. viridae* is often isolated from indoor air samples and house dust.

Health Effects: It is usually considered non-pathogenic. Trichoderma is also considered a type I and III allergen. In extremely rare cases, Trichoderma can cause peritonitis or pulmonary infections in immunocompromised persons.

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

Only one sample in this report indicates elevated concentrations of aerosolized mold spores detected in the breathable air space of the specific test location. This was in the library, where there was a previous leak from a convector unit in a room from the 2nd floor that impacted ceiling tiles, bookshelves, and carpet in the library.

Although there were no elevated concentrations of aerosolized mold spores in the breathable air space in the test locations except for the library, several rooms still need attention. This is mainly due to sagging or water stained ceiling tiles located throughout the school, water damaged sink cabinetry, dust or debris, and slightly elevated levels of CO2. Please refer to all the recommendations listed 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,



Zack Butcher (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)**