ati INC
Architecture | Engineering | Construction

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February 23, 2021

Prince George's County Public Schools
13300 Old Marlboro Pike
Upper Marlboro, Maryland 20772
Attention: Mr. Alex Baylor

RE: Indoor Air Quality Assessment, Suitland Elementary School
Purchase Order: 734977
ATI Project Number: 21-607

Dear Mr. Baylor:

Prince George's County Public Schools requested that ATI, Inc., conduct a proactive indoor air quality (IAQ) assessment at Suitland Elementary School on January 27, 2021 and a follow-up assessment on February 20, 2021. The assessments' key findings are in the enclosed Executive Summary on page three, and the official laboratory reports for total fungal spore trap sampling are enclosed in Appendix A.

Thank you for the opportunity to provide Industrial Hygiene services for Prince George's County Public Schools. If you have any questions regarding this report, please contact us at (202) 643-4283.

Sincerely,
ATI, INC.

Reviewed By:

Nate Burgei, CIH, CSP
Certified Industrial Hygienist

Courtney E. McCall
Project Manager

Indoor Air Quality Assessment Report

Prince George's County Public Schools
Suitland Elementary School
4650 Towne Park Road
Suitland, MD 20746

Prepared for:

Prince George's County Public Schools
13300 Old Marlboro Pike
Upper Marlboro, Maryland 20772

February 23, 2021

Submitted by:

ATI Job # 21-607

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Appendices

Abbreviations and Acronyms

AHU	Air-Handling Unit
AIHA	American Industrial Hygiene Association
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASTM	American Society for Testing and Materials
CO	Carbon Monoxide
CO_2	Carbon Dioxide
EMLAP	Environmental Microbiology Laboratory Accreditation Program
HVAC	Heating, Ventilating, And Air-Conditioning
IAQ	Indoor Air Quality
NIST	National Institute for Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
RH	Relative Humidity
Rev.	Revision

Abbreviations involving scientific volume and measurements involving media or water sampling

Spores/m^3	Mold spores per cubic meter of air
LPM	Liters Per Minute
NTE	Not to exceed
°F	degree Fahrenheit
PPM	Parts Per Million

1 Executive Summary

ATI conducted a proactive Indoor Air Quality (IAQ) assessment on January 27, 2021, at Suitland Elementary School, located at 4650 Towne Park Road, in Suitland, Maryland, and a follow-up assessment on February 20, 2021, in select rooms that had unusual fungal results in the initial inspection.

The initial assessment on January 27, 2021 included a visual assessment of randomly selected classrooms and other frequently occupied spaces, such as the cafeteria/gym, the main office, and randomly selected classrooms, for potential IAQ contributors and pathways. Room 131 had unusual fungal spore concentrations during the initial assessment and was selected for a follow-up assessment on February 20, 2021 after actions were taken to reduce the presence of mold and repair any water issues discovered. As part of both assessments, ATI measured common IAQ comfort parameters, including temperature, relative humidity, carbon dioxide, and carbon monoxide. Also, ATI collected total fungal air samples on spore trap cassettes for microbiological analysis.

The following is a summary of the key findings from these assessments:

1. One of the tested spaces had a temperature greater than the ASHRAE recommended winter range of 68-75°F during the initial assessment. During the reassessment, Room 131 had a temperature less than the ASHRAE recommended winter range. The reassessment occurred during the weekend when a more energy efficient HVAC mode was likely operating, accounting for the cooler temperature.
2. The relative humidity in all tested spaces during both assessments was less than the ASHRAE guidelines of <65%, and also <30%, which can cause occupant discomfort.
3. Carbon dioxide concentrations in all tested spaces during both assessments were less than the ASHRAE limit for carbon dioxide, relative to the outdoor carbon dioxide concentration on the day of each assessment.
4. Carbon monoxide concentrations were less than the IAQ meter's detection limit throughout the tested spaces for both assessments.
5. The measured *Aspergillus/Penicillium* concentrations in Room 131 during the initial assessment on January 27, 2021 suggested indoor spore amplification.
6. The February 20, 2021 reassessment in Room 131 conducted after mold abatement showed a complete reduction in *Aspergillus/Penicillium* concentrations. ATI has no further recommendations.

2 Assessment Methods

Nate Burgei, CIH, CSP, of ATI, Inc. conducted the initial visual assessment and air sampling on January 27, 2021. Sampled rooms were randomly selected and accounted for approximately 10% of classrooms or a minimum of five samples. Mr. Burgei documented visual observations at the time she collected the air samples. Courtney McCall conducted a follow-up inspection on February 20, 2021, in Room 131 after the room was treated for mold presence. ATI references the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) *Standard 62.1 – 2016* and ASHRAE *Standard 55 – 2017* when providing IAQ services to clients. ASHRAE is an industry leader on energy efficiency and indoor air quality.

All measurements and air samples were collected between three-six feet from floor elevation, which represents a typical adult breathing zone, and away from air-supply and return diffusers. Real-time direct readings for temperature, relative humidity, carbon dioxide (CO_2), and carbon monoxide (CO), were measured with a calibrated TSI Q-Trak 7575-X Meter and attached 982 Probe.

Total fungal air samples were collected with a Buck BioAire High-Volume Sampling Pump on Zefon Air-O-Cell spore-trap cassettes at a flow rate of 15 liters per minute for five minutes, for a sample volume of 75 liters. AMA Analytical Services, Inc.

of Lanham, MD analyzed the samples using direct microscopic examination per ASTM D7391, which spores both viable and non-viable mold spores and particulates, which combined yields total fungal results. AMA participates in the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP) for general laboratory performance and management, and the American Industrial Hygiene Association (AIHA) for Environmental Microbial Laboratory Accreditation Program (EMLAP). The AMA laboratory reports are included in Appendix A.

3 Visual Observations

Table 1 lists the areas, conditions, observations, and other pertinent details related to the initial and follow-up IAQ assessments. On both dates of sampling, few occupants were present in the school because of the COVID-19 global pandemic.

Table 1: Visual Observations and Sampling Locations

Sample Location	January 27, 2021 Observations
Main Office	• Two occupants in the area during sampling, and main door closed • Ceiling tiles mostly clean, with some minor staining here and there • two air supply and a single air return, low to moderate dust accumulation • Sink in breakroom appears clean and dry, no signs of leaks
Cafeteria/Gymnasium	• One occupant at time of assessment • One set of double doors to outdoors appeared in good condition and sealed • Sink on stage appeared clean and lead free • Six air supplies and two returns with light dust accumulation • Walls and ceiling appear clean • Space is approximately 4063 ft.^{2}
Media Center	• Unoccupied at time of assessment and door to hallway was closed • No signs of major water intrusion • Some stained ceiling tiles, area mostly clean with some minor debris on floor • Five air supplies, two returns with light dust accumulation on returns
Classroom 111	• Space was unoccupied and door to hallway was closed • Door to outdoors appeared in good condition and sealed well • Ceiling mounted air unit showed signs of rust, but no signs of water damage • Ceiling tiles mostly clean but a single tile had minor water staining • Five air supply vents and one return
Classroom 131	• Space was unoccupied • Wall mounted air unit was on and appeared clean • Windows appeared in good shape with no signs of water intrusion • Classroom sink appeared clean and dry and free of leaks • There were three ceiling tiles with minor water staining • Walls appeared to be dirty, but the floors were clean
Classroom 214	• Space was unoccupied and door to hallway was closed • Windows appeared in good shape with no signs of water intrusion • Minor water stains under sink but no visible mold or signs of current leaks • Ceiling tiles mostly stain free and floors appeared clean, but walls look dirty
Classroom 206	• Space was unoccupied, and door to hallway was closed • Minor dust accumulation under return near windows, heat was on • Windows appeared in good shape with no signs of water intrusion

Sample Location	January 27, 2021 Observations
	• Classroom sink appeared clean and dry • Ceiling tiles and floors were clean
Outdoors	• Mostly cloudy, windy and dry • Parking lot was mostly empty with little to no foot traffic
Sample Location	**February 20,2021 Reassessment Observations**
Classroom 131	• Space was not occupied during sampling • Student materials were stored in the open coat racks on the side of the room • Desks were free of materials • Floors and surfaces were clean and had no visible dust • Light staining observed on two ceiling tiles • Sink was dry during sampling • No odors or significant issues contributing to mold were observed
Outdoors	• Parking lot was mostly empty with one other vehicle nearby. • Snow and ice were present. • Sampling occurred in front of icy trees

4 Thermal Environmental Conditions for Human Occupancy

ASHRAE *Standard 55-2017, Thermal Environmental Conditions for Human Occupancy*, addresses thermal comfort in an office environment, which means that an employee wearing a normal amount of clothing feels neither too cold nor too warm. This standard discusses thermal comfort within the context of air temperature, humidity, and air movement and provides recommended ranges for temperature and humidity that are intended to satisfy 80% of occupants. The recommended ASHRAE ranges are referenced below by each comfort parameter.

4.1 Temperature

The ASHRAE standard establishes a winter comfort range of between 68°F and 75°F and a summer range of between 73°F and 79°F. The temperatures measured during the January 27, 2021 initial assessment and reassessment from February 20, 2021 are summarized in Table 2. As indicated by the data in the table, temperatures in the school on January 27 averaged between 66.4°F and 82.5°F, with one location greater than the ASHRAE recommended winter range and one location less than the recommended range. Room 206 had an average measured temperature of 82.5°F and felt quite warm. The main office had an average temperature of 66.4°F. ATI recommends increasing the temperature in the main office if the occupants express concerns of being too cold.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 20, 2021 after remediation actions were completed. ATI also reassessed the temperature in Room 131, which was 60°F during the reassessment. Although it was cooler than the recommended range winter range, this survey occurred on the weekend when a more energy efficient HVAC mode was likely functioning.

Table 2: Temperature

Sample Location	1/27/2021 °F			ASHRAE Standard °F
	Min	Max	Average	
Outdoors	46.5	46.9	46.7	N/A
Indoors				
Main Office	66.0	66.7	66.4	68-75°F
Cafeteria/Gymnasium	69.9	70.5	70.2	68-75°F
Media Center	71.7	72.1	71.9	68-75°F
Classroom 111	68.6	70.6	69.6	68-75°F
Classroom 131	70.5	70.6	70.6	68-75°F
Classroom 214	71.7	72.1	71.9	68-75°F
Classroom 206	82.4	82.6	82.5	68-75°F
February 20, 2021 Reassessment Temperature in °F				
Outdoors	37.5	38.3	37.9	N/A
Indoors				
Classroom 131	59.0	60.4	59.7	68-75°F

4.2 Relative Humidity

Relative humidity is a key factor for mold growth. Mold has the potential of growing on suitable surfaces with humidity levels above 65%. ASHRAE *Standard 62.1-2016*, *Ventilation for Acceptable Indoor Air Quality,* recommends a maximum indoor relative humidity of 65% to prevent condensation of moisture on surfaces. Relative humidity less than 30% may result in drying of occupants' mucous membranes and skin. Relative humidity measurements for January 27, 2021 and February 20, 2021 are summarized in Table 3. As indicated by the data in the table, the average relative humidity ranged between 15.1% and 32.7% with all but one of the tested locations measuring both less than the ASHRAE maximum recommendation of 65% relative humidity and less than 30% relative humidity. The main office was the only indoor tested space that had a relative humidity greater than 30% but less than 65%.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 20, 2021, after remediation actions were completed. On the resurvey date the humidity ranged between 17-18% in Room 131, less than the ASHRAE maximum recommendation of 65% relative humidity and less than 30% relative humidity.

Table 3: Relative Humidity

Sample Location	1/27/2021 (% RH)			ASHRAE Standard (% RH)
	Min	Max	Average	
Outdoors	37.6	37.8	37.7	N/A
Indoors				
Main Office	32.2	33.2	32.7	< 65
Cafeteria/Gymnasium	26.4	26.7	26.6	< 65
Media Center	23.8	24.3	24.1	< 65
Classroom 111	24.6	26.3	25.5	< 65
Classroom 131	24.2	24.3	24.3	< 65
Classroom 214	22.2	23.0	22.6	< 65

Sample Location	1/27/2021 (% RH)			ASHRAE Standard (% RH)
	Min	Max	Average	
Classroom 206	14.9	15.3	15.1	< 65
February 20, 2021 Reassessment Relative Humidity (%RH)				
Outdoors	24.5	24.9	24.7	N/A
Indoors				
Classroom 131	17.0	18.0	17.5	< 65

4.3 Carbon Dioxide

Carbon dioxide concentrations within an occupied building are a standard method used to gauge the efficiency of ventilation systems. Carbon dioxide is a by-product of human respiration and does not pose an acute health hazard alone. Elevated concentrations may suggest that insufficient fresh air is being supplied to an occupied space and/or that the ventilation system does not provide a sufficient rate of air exchange.

Research has indicated that buildings with adequately operating ventilation systems are able to remove odors generated by activities in an indoor office environment efficiently. ASHRAE *Standard 62.1-2016* states that comfort (odor) criteria with respect to human bioeffluents are likely to be satisfied if the ventilation can maintain indoor carbon dioxide concentrations less than 700 parts per million (ppm) greater than the outdoor air concentration. Typically, outdoor carbon dioxide concentrations range from 300 ppm to 450 ppm, with the higher range typically found in urban areas during peak rush hour.

Carbon dioxide concentrations for January 27, 2021 are summarized in Table 4. On the day of the assessment, the average outdoor carbon dioxide concentration was 369 ppm, which calculates to a maximum indoor concentration of 1,069 ppm (700 + 369). All tested locations indoors were less than the recommended maximum for the day of the assessment.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 20, 2021, after remediation actions were completed. The carbon dioxide concentrations measured during the reassessment are included in Table 4. The average outdoor carbon dioxide concentration on February 20, 2021 was 371 ppm, which calculates to a maximum indoor concentration of 1,071 ppm (700 + 371). Room 131 was less than the recommended maximum for the day of the reassessment.

Table 4: Carbon Dioxide

Sample Location	1/27/2021 Concentration (parts per million)			ASHRAE Standard (ppm) NTE
	Min	Max	Average	
Outdoors	363	375	369	N/A
Indoors				
Main Office	511	512	512	< 1,069
Cafeteria/Gymnasium	450	451	451	< 1,069
Media Center	443	453	448	< 1,069
Classroom 111	431	434	433	< 1,069
Classroom 131	426	431	429	< 1,069
Classroom 214	421	430	426	< 1,069
Classroom 206	427	438	433	< 1,069
February 20, 2021 Reassessment				

Sample Location	1/27/2021 Concentration (parts per million)			ASHRAE Standard (ppm) NTE
	Min	Max	Average	
Concentration (parts per million)				
Outdoors	367	374	371	N/A
Indoors				
Classroom 131	382	392	387	< 1,071

4.4 Carbon Monoxide

Carbon monoxide is a colorless and odorless gas produced by the incomplete combustion of carbon containing fuels. Oil, gasoline, diesel fuels, wood, coke, and coal are the major sources of carbon monoxide. ASHRAE recommends that carbon monoxide not exceed nine ppm indoors over an eight-hour time-weighted average. ATI measured carbon monoxide concentrations using a TSI Q-Trak model number 7575-X with an attached IAQ probe (model number 982). The instrument's carbon monoxide sensor has an error range of ± 3% of the reading or three (3) ppm, whichever is greater. As indicated by the data in Table 5, carbon monoxide concentrations for January 27, 2021 were less than the Q-Trak's detection limit throughout the school.

ATI reassessed select rooms that had unusual fungal spore concentrations on February 20, 2021 after remediation actions were completed. The carbon monoxide concentrations measured during the reassessment are included in Table 5. The carbon monoxide concentrations from the reassessment were also less than the Q-Trak's limit of detection and less than the EPA/ASHRAE recommended maximum of 9 ppm.

Table 5: Carbon Monoxide

Sample Location	1/27/2021 Concentration (parts per million)			ASHRAE Standard (ppm)
	Min	Max	Average	
Outdoors	<3	<3	<3	N/A
Indoors				
Main Office	<3	<3	<3	< 9
Cafeteria/Gymnasium	<3	<3	<3	< 9
Media Center	<3	<3	<3	< 9
Classroom 111	<3	<3	<3	< 9
Classroom 131	<3	<3	<3	< 9
Classroom 214	<3	<3	<3	< 9
Classroom 206	<3	<3	<3	< 9
February 20, 2021 Reassessment Concentration (parts per million)				
Outdoors	<3	<3	<3	N/A
Indoors				
Classroom 131	<3	<3	<3	< 9

5 Total Fungal Air Sampling Results

Mold is carried indoors through building entrances, open windows, loading docks, foot traffic into buildings, and the HVAC system. To thrive indoors, mold requires a food source, proper temperature and humidity to foster its growth.

The January 27, 2021 and February 20, 2021 mold assessments sampled air using spore trap cassettes in randomly selected classrooms and other areas throughout the facility. These cassettes collect both viable spores, those capable of producing more fungal colonies, and non-viable spores, which cannot reproduce. Based upon recognized industry practices, indoor mold concentrations are compared with those detected outdoors, which are also known as ambient or baseline samples.

In normal circumstances, the diversity of spores identified indoors and outdoors should be similar with some exceptions. The high concentration of one or two species of fungal spores identified indoors and the absence of the same species outdoors can indicate a moisture problem with the potential to degrade the air quality. Fungi species present indoors are typically found at levels ranging from approximately 10-50% of their levels in the outdoor air, reflecting the filtering by the building's HVAC system.

The results from January 27, 2021 suggested unusual mold spore concentrations in three classrooms, Classrooms 131, 214, and 206. The total ambient, outdoor spore concentration was 848 spores/m^3. Classroom 131 had the greatest total spore concentration of 5,671 spores/m^3, with *Aspergillus/Penicillium*-like spores being the predominant spores present at 5,141 spores/m^3. The *Cladosporium* concentration in Classroom 131 was 424 spores/m^3, which was also greater than the outdoor concentration. Classrooms 214 and 206 had total spore concentrations of 1,484 spores/m^3 and 1,272 spores/m^3, respectively, with *Cladosporium* being the predominant spore type in each room with *Aspergillus/Penicillium*-like coming in second most prevalent.

The fungal spore concentrations in Classrooms 214 and 206 were just slightly greater than typical indoor mold concentrations of around 1,000 spores/m^3 or less; however, the concentrations measured in those rooms do not suggest significant mold growth and could be residual spores from prior growth, or possibly trivial amounts of mold growth normal in occupied spaces. The fungal spore concentrations in Room 131 were greater than the typical occupied space and suggested at least some level of mold amplification indoors, but did not suggest major growth or major water intrusion. ATI recommended evaluating Classroom 131 and the surrounding areas to try and identify water sources, abate any mold issues and clean the area before retesting the space.

ATI conducted the reassessment in Room 131 on February 20, 2021. There were no spore concentrations detected in the room after mold abatement. Ambient concentrations on were 312 spores/m^3. ATI has no further recommendations for cleaning or sampling at this time. Differences in concentrations between both dates of assessment are summarized in Table 6.

Table 6: *Aspergillus/Penicillium* Concentration Comparison
Spores/m^3

Sample Location	January 27, 2021 Concentrations	February 20, 2021 Concentrations	% Change
Classroom 131	5,141	0	-100%

The official laboratory reports with spore trap samples collected on January 27, 2021 and February 20, 2021 are presented in Appendix A.

6 Summary of Findings

1. One of the tested spaces had a temperature greater than the ASHRAE recommended winter range of 68-75°F during the initial assessment. During the reassessment, Room 131 had a temperature less than the ASHRAE recommended winter range. The reassessment occurred during the weekend when a more energy efficient HVAC mode was likely operating, accounting for the cooler temperature.
2. The relative humidity in all tested spaces during both assessments was less than the ASHRAE guidelines of <65%, and also <30%, which can cause occupant discomfort.
3. Carbon dioxide concentrations in all tested spaces during both assessments were less than the ASHRAE limit for carbon dioxide, relative to the outdoor carbon dioxide concentration on the day of each assessment.
4. Carbon monoxide concentrations were less than the IAQ meter's detection limit throughout the tested spaces for both assessments.
5. The measured *Aspergillus/Penicillium* concentrations in Room 131 during the initial assessment on January 27, 2021 suggested indoor spore amplification.
6. The February 20, 2021 reassessment in Room 131 conducted after mold abatement showed a complete reduction in *Aspergillus/Penicillium* concentrations. ATI has no further recommendations.

We appreciate the opportunity to provide these IAQ testing services for you. If you have any questions, please contact us at (202) 643-4283.

Best,
ATI, INC.

Nate Burgei, CIH, CSP
Certified Industrial Hygienist

Courtney E. McCall
Project Manager

Appendix A: Laboratory Report and Chain of Custody

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody: 624987
Client: ATI, Inc.
Address: 9220 Rumsey Road
Suite 100
Columbia, MD 21045
Attention: Nate Burgei

Job Name: Suitland Elementary
Job Location: Not Provided
Job Number: 21-607
P.O. Number: Not Provided

Date Submitted: 01/27/2021
Person Submitting: Nate Burgei
Date Analyzed: 02/01/2021
Report Date: 02/02/2021

AMA Sample #	624987-1
Client ID	31638802
Analyst ID	TLW
Collection Apparatus	Air-O-Cell
Sample Volume (L)	75
Sample Condition	Acceptable
Debris Loading	2
Location	Main Office

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores	3	15	53	159	33.3%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	2	15	53	106	22.2%
Smuts/Periconia/Myxomycetes	1	15	53	53	11.1%
Stachybotrys/Memnoniella					
Ulocladium					
Unknown	1	15	53	53	11.1%
Pithomyces	1	15	53	53	11.1%
Other Colorless	1	15	53	53	11.1%
Hyphal Fragments*	1	15	53	53	11.1%

Total Raw Ct: 9 **Total sp/m^3:** 477

Comments

AMA Sample #	624987-2
Client ID	31638775
Analyst ID	TLW
Collection Apparatus	Air-O-Cell
Sample Volume (L)	75
Sample Condition	Acceptable
Debris Loading	1
Location	Cafeteria

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores	2	15	53	106	16.7%
Basidiospores	6	15	53	318	50%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	4	15	53	212	33.3%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Pithomyces					
Other Colorless					
Hyphal Fragments*					

Total Raw Ct: 12 **Total sp/m^3:** 636

Comments

AMA Sample #	624987-3
Client ID	31638727
Analyst ID	TLW
Collection Apparatus	Air-O-Cell
Sample Volume (L)	75
Sample Condition	Acceptable
Debris Loading	1
Location	Library

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores	Present	15	53	<53	
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	Present	15	53	<53	
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Pithomyces					
Other Colorless					
Hyphal Fragments*					

Total Raw Ct: 0 **Total sp/m^3:** 0

Comments

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	624987	**Job Name:**	Suitland Elementary	**Date Submitted:**	01/27/2021
Client:	ATI, Inc.	**Job Location:**	Not Provided	**Person Submitting:**	Nate Burgei
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-607	**Date Analyzed:**	02/01/2021
		P.O. Number:	Not Provided	**Report Date:**	02/02/2021
Attention:	Nate Burgei				

AMA Sample #	624987-4	**AMA Sample #**	624987-5	**AMA Sample #**	624987-6
Client ID	31638737	**Client ID**	31638782	**Client ID**	31638730
Analyst ID	TLW	**Analyst ID**	TLW	**Analyst ID**	TLW
Collection Apparatus	Air-O-Cell	**Collection Apparatus**	Air-O-Cell	**Collection Apparatus**	Air-O-Cell
Sample Volume (L)	75	**Sample Volume (L)**	75	**Sample Volume (L)**	75
Sample Condition	Acceptable	**Sample Condition**	Acceptable	**Sample Condition**	Acceptable
Debris Loading	2	**Debris Loading**	2	**Debris Loading**	1
Location	Classroom 111	**Location**	Classroom 131	**Location**	Classroom 214

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores	2	15	53	106	33.3%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	53	53	16.7%
Curvularia					
Penicillium / Aspergillus	1	15	53	53	16.7%
Smuts/Periconia/Myxomycetes	2	15	53	106	33.3%
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Pithomyces					
Other Colorless					
Hyphal Fragments*	1	15	53	53	16.7%
Total Raw Ct:	6		**Total sp/m³:**		318

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores	1	15	53	53	0.9%
Basidiospores	1	15	53	53	0.9%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	8	15	53	424	7.5%
Curvularia					
Penicillium / Aspergillus	97	15	53	5141	90.7%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Pithomyces					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	107		**Total sp/m³:**		5671

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores	3	15	53	159	10.7%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	14	15	53	742	50%
Curvularia					
Penicillium / Aspergillus	9	15	53	477	32.1%
Smuts/Periconia/Myxomycetes	2	15	53	106	7.1%
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Pithomyces					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	28		**Total sp/m³:**		1484

Comments

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	624987	**Job Name:**	Suitland Elementary	**Date Submitted:**	01/27/2021
Client:	ATI, Inc.	**Job Location:**	Not Provided	**Person Submitting:**	Nate Burgei
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-607	**Date Analyzed:**	02/01/2021
		P.O. Number:	Not Provided	**Report Date:**	02/02/2021
Attention:	Nate Burgei				

AMA Sample #	624987-7	**AMA Sample #**	624987-8	**AMA Sample #**	624987-9
Client ID	31638769	**Client ID**	31638784	**Client ID**	31638765
Analyst ID	TLW	**Analyst ID**	TLW	**Analyst ID**	TLW
Collection Apparatus	Air-O-Cell	**Collection Apparatus**	Air-O-Cell	**Collection Apparatus**	Air-O-Cell
Sample Volume (L)	75	**Sample Volume (L)**	75	**Sample Volume (L)**	0
Sample Condition	Acceptable	**Sample Condition**	Acceptable	**Sample Condition**	Acceptable
Debris Loading	1	**Debris Loading**	2	**Debris Loading**	1
Location	Classroom 206	**Location**	Outdoors	**Location**	Field Blank

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores	1	15	53	53	4.2%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	15	15	53	795	62.5%
Curvularia					
Penicillium / Aspergillus	8	15	53	424	33.3%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Pithomyces					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	24	**Total sp/m^3:**	1272		

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores	8	15	53	424	50%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	3	15	53	159	18.8%
Curvularia					
Penicillium / Aspergillus	3	15	53	159	18.8%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Pithomyces					
Other Colorless	2	15	53	106	12.5%
Hyphal Fragments*	1	15	53	53	6.3%
Total Raw Ct:	16	**Total sp/m^3:**	848		

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Pithomyces					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	0	**Total sp/m^3:**	0		

Comments

No mold spores observed.

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	624987	**Job Name:**	Suitland Elementary	**Date Submitted:**	01/27/2021
Client:	ATI, Inc.	**Job Location:**	Not Provided	**Person Submitting:**	Nate Burgei
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-607	**Date Analyzed:**	02/01/2021
		P.O. Number:	Not Provided	**Report Date:**	02/02/2021
Attention:	Nate Burgei				

Spore Comparison Guide

The criteria for these specifications are outlined, but not limited to those listed, below. Final specifications may differ from the listed criteria for certain samples. AMA Analytical Services, Inc. reserves the right to make changes to these criteria at any time without notice.

Normal ecology	Slightly above normal ecology	Moderately above normal ecology	Substantially above normal ecology

Stachybotrys / Memnoniella, and Chaetomium	**Other Spores* (Control Present)**	**Other Spores* (No Control)**
1-4 Spores: Yellow 5-9 Spores: Orange 10+ Spores: Red	< 10 Spores: Insignificant (no color) <= Control's spore count: Green Between Control and 2x Control: Yellow Between 2x Control and 3x Control: Orange 3x+ Control: Red	< 10 Spores: Insignificant (no color) 10-20 Spores: Yellow 20-50 Spores: Orange 50+ Spores: Red

*No evalutation is provided for the following spore types: Other, Other Colorless, and Unknown Fungi, and Misc

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ASTM D7391-09 Spore Trap Analysis Report

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		P.O. Number:	Not Provided	**Report Date:**	02/02/2021
Attention:	Nate Burgei				

General Comments, Disclaimers, and Footnotes

Analytical Method: Sample are analyzed following the instructions and guidelines outlined in ASTM 7391-09.

Sample Condition: Acceptable: The sample was collected and delivered to the our location without disturbing the material on the sampling media.
Unacceptable: 1. The sample trace (TR) has been disturbed. 2. The sample was damaged or otherwise unsuitable for analysis.
0 = No particulate matter detected; 1= >nd-~5% Particulate Loading; 2 = ~5%-25% Particulate Loading; 3 = ~25%- 75% Particulate Loading; 4 = ~75%-90% Particulate Loading; 5 = >90% Particulate Loading

Spore Notes: Based on their small size and very few distinguishing characteristics, Aspergillus and Penicillium cannot be differentiated by non-viable sampling methods. There are other types of spores whose morphology is similar to Aspergillus and Penicillium and cannot be differentiated by non-viable sampling methods. Examples of these similar spores are Acremonium, Paecilomyces, Wallemia, Trichoderma, Scopulariopsis, and Gliocladium.
Smuts, Periconia and Myxomycetes are three different types of genera that have similar morphological characteristics.
Bipolaris/Dreschlera/Helm: Bipolaris / Dreschlera / Helminthosporium are three different types of genera that have smiliar morphological characteristics.
Other Colorless represents all colorless spores that are non-distinctive and unidentifiable.
*Hyphal Fragments: A portion of the mycelium that becomes separated from the remainder of the thallus (vegetative body), each of which has the capacity to grow and form new individuals. Results for hyphal fragments are in fragments/m3 and are not incorporated in the total spore concentration.
The droplet symbol (💧) refers to water-intrusion indicator spores. These fungal spores, when found on indoor air samples, can be an indication of moisture sources and resultant fungal growth that may be problematic.

Quantification: Analytical Sensitivity (A.S.): This is dependent on the volume of air collected, size of the trace, ocular diameter, and the amount of the trace that was analyzed.
The value of "Present" indicated in the Raw Count column represents the presence of this spore type during the preliminary exam at 400x. The Raw Count converts to a whole number if the spore type is encountered again during the 600x-1,000x enumeration. The sp/m3concentration will be reported as less than the analytical sensitivity if "Present" is reported in the Raw Count.
Results are reported to 3 significant figures. sp/m3: Spores per cubic meter.
Uncertainty: for raw count in the range of 0-50 the SR is 0.375, 51-100 SR=0.333, 101-200 SR=0.257, >200 SR=0.245
All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.
Analyst(s): Tristan Ward

Technical Director Tristan Ward

MOLD SPORE DESCRIPTIONS

Ascospores

Ascospores are spores formed inside an ascus (asci-plural) or sac-like cell which is contained inside a fruiting body called an ascocarp or an ascoma (ascomata-plural). An ascus typically contains a definite nuimber of ascospores, usually eight. Ascospores are unique in shape, size, and color as to the Genus/species they represent. These spores are specific to fungi classified as Ascomycetes. They are ubiquitous in nature. Many decay organic matter, others are plant or animal pathogens. They can grow indoors on damp materials. Release of ascospores are released by forcible ejection and dispersed by wind, water, animals and other agents. Health Effects: Depending on the Genera, Ascospores may be allergenic.

Basidiospores

Basidiospores are reproductive spores produced by a group of fungi called basidiomycetes. This group includes the mushrooms, shelf fungi and various other macrofungi. Basidipspores serve as the main air (wind) dispersal units for the fungi and their release is dependent upon moisture. The structure of the spore complex can develop in various manners resulting in different appearances. It is often found growing in soil, decaying plant debris, compost piles and fruit rot. Indoors, it can be found on water damaged building materials (chipboard /OSB, plywood, wallpaper, and glue) as well as on food items (dried foods, cheeses, fruits, herbs, spices, cereals). Health effects: Some basidiospores may produce toxins and can act as allergens. They have not been reported to be pathogens.

Cladosporium

Cladosporium is the most common indoor and outdoor mold. The spores are wind dispersed and are often extremely abundant in outdoor air. Many species are commonly found on living and dead plant material. Indoors, they may grow on surfaces with high moisture or high humidity levels such as damp window sills, poorly ventilated bathrooms and soiled refrigerators. It produces powdery or velvety olive-green to brown or black colonies. The conidia (spores) vary depending on the species and are formed in simple or branching chains with multi-attachment points. Health Effects: Cladosporium species are rarely pathogenic to humans, but have been reported to occassionally cause sinusitis and pulmonary infections as well as infections of the skin and toenails. The airborne spores are significant allergens, and in large amounts they may severely affect asthmatics and people with respiratory diseases.

Hyphal Fragments

Hyphal Fragments are segments or pieces of hyphae or mycelium that may have broken off during sampling (air, tape, dust). The mycelium is the entire mass of hyphae that makes up the vegetative body of a fungus. The presence of hyphal fragments may indicate the presence of viable mold.

Other Colorless

- “Other Colorless” are all non-distinctive, unidentifiable, colorless spores seen on spore trap samples and include all the genera that do not have distinguishing morphology to belong to any of the other defined categories."

Penicillium/Aspergillus Like

Penicillium and Aspergillus are ubiquitous, filamentous fungi that are found in soil, decaying plant debris, compost piles, and in the air. Indoors, spores are commonly found in house dust, in water-damaged buildings (wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint) as well as fruit and grains. They are the most common fungal genera, worldwide. Both produce chains of spores that are small, round to oval, colorless or slightly pigmented, and smooth to rough walled. These spores are indistinguishable between the two as well as other genera, such as Gliocladium, Trichoderma, Paecilomyces, and Scopulariopsis. They differ as to their conidiophores or fruiting bodies. While, Aspergillus spores are produced from phialides supported on conidia heads or swollen vesicles, Penicillium spores are produced on finger-like projections. Depending on species, typical colonies of Aspergillus are initially white and later turn to either shades of green, yellow, orange, brown or black. Texture is usually velvety to cottony. Typical colonies of Penicillium, other than Penicillium marneffei (yeast-like at 37oC), grow rapidly, white in color at first, later becoming bluish green with white borders with velvety to powdery textures depending on species. Some species produce radial patterns. Health Effects: Both Aspergillus and Penicillium are potential allergens. Several species of Aspergillus (A. flavus and A. parasiticus) produce aflatoxins or natually occurring mycotoxins that are toxic and carcinogenic. These are found in contaminated foodstuff and are hazardous to consumers. Penicillium has only one known species that is pathogenic to humans (P. marneffei) that causes lethal systemic infection (Penicilliosis) in immunocompromised individuals.

Pithomyces

Pithomyces is a cosmopolitan, dark-walled fungus often found growing outside in soil, decaying leaves, and grasses. It is rarely found growing indoors, but will grow on paper given the right conditions. Colonies grow rapidly, cottony in texture with light to dark brownish black surface color. Spores are single, oval yellow to dark brown, multi-celled, and usually rough. One identification feature of the spores is the resemblance to barrels. Another identifying character is beak-like structures on young spores. Spores of Pithomyces chartarum are most common and are identified by distinctive tranverse septa. This species has been linked to facial eczema in sheep. Health Effects: It is a potential but not well-studied allergen or human pathogen.

Smuts/Periconia/Myxomycetes

Smuts, Periconia, and Myxomycetes spores are grouped together due to their similar round, brown morphology. Smuts are outdoor parasitic plant pathogens. They rarely grow indoors but may grow on host plants if appropriate conditions are present. They are parasitic plant pathogens. They can be found on cereal crops, grasses, flowing plants, weed, and other fungi. They can cause allergies. Periconia are found in soils, dead herbaceous stems and leaf spots, and grasses. They have wind dispersed dry spores. Their spores are abundant in the air but it is not known if they are allergenic. Myxomycetes are found on decaying logs, stumps and dead leaves. They have wind-dispersed dry spores and wet motile (amoebic phase) spores. During favorable conditions they move about like amoebae. They form dry airborne spores when conditions are unfavorable. They are rarely found indoors. Health Effects: They may cause Type 1 allergies (hay fever, asthma). No human infections have been reported.

Unknown Fungi

“Unknown Fungi” are spores that cannot be identified under direct microscopic analysis. This includes partial spores. This category also includes spores that are hidden or hard to see during microscopic examination due to heavy presence of particulate.

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA-LAP (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 624987

Mailing/Billing Information:

1. Client Name: ATI, Inc.
2. Address 1: 4221 Forbes Blvd.
3. Address 2: SUITE 250
4. Address 3: LANHAM, MD 20706
5. Phone #: _____ Fax #: _____

Submittal Information:

1. Job Name: SUITLAND ELEMENTARY
2. Job Location: _____
3. Job #: 21-607 P.O. #: _____
4. Contact Person: Nate Burgei Cell: 614-286-5919
5. Collected by: Nate Burgei Cell: _____

Reporting Info (Results provided as soon as technically feasible). If no TAT/Reporting Info is provided, AMA will assign defaults of 5-Day and email/fax to contacts on file.

AFTER HOURS (must be pre-scheduled)
☐ 4 Hours ☐ Late Night
☐ Immediate Date Due: _____
☐ 24 Hours Time Due: _____
Comments: _____

NORMAL BUSINESS HOURS
☐ 4 Hours ☐ 3 Day ☐ Results Required By Noon
☐ Same Day ☒ 5 Day + Date Due: 2/3/21
☐ Next Day
☐ 2 Day

REPORT TO:
☐ Email: nate.burgei@atiinc.com
☐ Email 2: courtney@atiinc.com
☐ Verbals: _____

Asbestos Analysis
*PCM Air – Please Indicate Filter Type: _____
☐ NIOSH 7400 _____ (QTY)
☐ Fiberglass _____ (QTY)
TEM Air* – Please Indicate Filter Type: _____
☐ AHERA _____ (QTY)
☐ NIOSH 7402 _____ (QTY)
☐ Other (specify _____) _____ (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate _____ (QTY) ☐ Pos Stop
☐ EPA Point Count _____ (QTY)
☐ NY State Friable 198.1 _____ (QTY)
☐ Grav. Reduction ELAP 198.6 _____ (QTY)
☐ Other (specify _____) _____ (QTY)
MISC
☐ Asbestos Soil PLM☐ (Qual) PLM☐ (Quan) PLM/TEM☐ (Qual) PLM/TEM☐ (Quan)
*It is recommended that blank samples be submitted with all air and surface samples

TEM Bulk
☐ ELAP 198.4/Chatfield _____ (QTY)
☐ NY State PLM/TEM _____ (QTY)
☐ Residual Ash _____ (QTY)
☐ Vermiculite
TEM Dust*
☐ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
☐ Quan. (s/area)Dust D6480-99 _____ (QTY)
TEM Water
☐ Qual. (pres/abs) _____ (QTY)
☐ ELAP 198.2/EPA 100.2 _____ (QTY)
☐ EPA 100.1 _____ (QTY)
☒ All samples received in good condition unless otherwise noted.
(TEM Water samples _____ °C)
If field data sheets are submitted, there is no need to complete bottom section.

Metals Analysis
☐ Pb Paint Chip _____ (QTY)
☐ *Pb Dust Wipe (wipe type _____) _____ (QTY)
☐ *Pb Air _____ (QTY)
☐ Pb Soil/Solid _____ (QTY)
☐ Pb TCLP _____ (QTY)
☐ Drinking Water ☐ Pb _____ (QTY) ☐ Cu _____ (QTY) ☐ As _____ (QTY)
☐ Waste Water ☐ Pb _____ (QTY) ☐ Cu _____ (QTY) ☐ As _____ (QTY)
☐ Pb Furnace (Media _____) _____ (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
☒ *Spore-Trap 9 (QTY) ☐ Surface Vacuum Dust _____ (QTY)
☐ *Surface Swab _____ (QTY)
☐ *Surface Tape _____ (QTY)
☐ Other (Specify _____) _____ (QTY

CLIENT ID #	SAMPLE INFORMATION SAMPLE LOCATION/ ID	DATE/ TIME	VOL (L)/ Wipe Area	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	COMMENTS / SPECIAL INSTRUCTIONS
31638802	Main office	1/27 9:54	75L										✓			
31638775	Cafeteria	1/27 10:03	75L										✓			
31638727	LIBRARY	1/27 10:10	75L										✓			
31638737	Classroom 111	1/27 10:20	75L										✓			
31638782	Classroom 131	1/27 10:29	75L										✓			
31638730	Classroom 214	1/27 10:39	75L										✓			
31638802	~~31638802~~	1/27 10:46	75L										✓			
31638784	~~31638784~~ Outdoors	1/27 10:58	75L										✓			
	31638765 Blank	1/27 9:55	OL										✓			

	Print Name	Signature	Date	Time	Shipping Information
Relinquished by:	Nate Burgei		1/27/21	11:45 AM	☐ UPS ☐ In-Person ☐ Other ☐ FedEx ☐ Drop Box ☐ USPS ☐ Courier
Received by:			1/27/21	1145	

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody: 625299
Client: ATI, Inc.
Address: 9220 Rumsey Road
Suite 100
Columbia, MD 21045
Attention: Courtney McCall

Job Name: Suitland Elementary School
Job Location: 4650 Towne Park Road, Hillcrest Heights, MD 20746
Job Number: 21-607
P.O. Number: Not Provided

Date Submitted: 02/22/2021
Person Submitting: Courtney McCall
Date Analyzed: 02/22/2021
Report Date: 02/22/2021

AMA Sample #	625299-1
Client ID	31569970
Analyst ID	TLW
Collection Apparatus	Air-O-Cell
Sample Volume (L)	75
Sample Condition	Acceptable
Debris Loading	1
Location	RM 131

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*					

Total Raw Ct: 0 **Total sp/m³:** 0

Comments
No mold spores observed.

AMA Sample #	625299-2
Client ID	31569991
Analyst ID	TLW
Collection Apparatus	Air-O-Cell
Sample Volume (L)	75
Sample Condition	Acceptable
Debris Loading	1
Location	Ambient

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores	1	15	52	52	16.7%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	2	15	52	104	33.3%
Curvularia					
Penicillium / Aspergillus	1	15	52	52	16.7%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	2	15	52	104	33.3%
Hyphal Fragments*	1	15	52	52	16.7%

Total Raw Ct: 6 **Total sp/m³:** 312

Comments

AMA Sample #	625299-3
Client ID	31569966
Analyst ID	TLW
Collection Apparatus	Air-O-Cell
Sample Volume (L)	0
Sample Condition	Acceptable
Debris Loading	1
Location	Field Blank

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*					

Total Raw Ct: 0 **Total sp/m³:** 0

Comments
No mold spores observed.

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	625299	**Job Name:**	Suitland Elementary School	**Date Submitted:**	02/22/2021
Client:	ATI, Inc.	**Job Location:**	4650 Towne Park Road, Hillcrest Heights, MD 20746	**Person Submitting:**	Courtney McCall
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-607	**Date Analyzed:**	02/22/2021
		P.O. Number:	Not Provided	**Report Date:**	02/22/2021
Attention:	Courtney McCall				

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Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-607	**Date Analyzed:**	02/22/2021
		P.O. Number:	Not Provided	**Report Date:**	02/22/2021
Attention:	Courtney McCall				

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Results are reported to 3 significant figures. sp/m3: Spores per cubic meter.
Uncertainty: for raw count in the range of 0-50 the SR is 0.375, 51-100 SR=0.333, 101-200 SR=0.257, >200 SR=0.245
All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.
Analyst(s): Tristan Ward

Technical Director Tristan Ward

MOLD SPORE DESCRIPTIONS

Basidiospores

Basidiospores are reproductive spores produced by a group of fungi called basidiomycetes. This group includes the mushrooms, shelf fungi and various other macrofungi. Basidipspores serve as the main air (wind) dispersal units for the fungi and their release is dependent upon moisture. The structure of the spore complex can develop in various manners resulting in different appearances. It is often found growing in soil, decaying plant debris, compost piles and fruit rot. Indoors, it can be found on water damaged building materials (chipboard /OSB, plywood, wallpaper, and glue) as well as on food items (dried foods, cheeses, fruits, herbs, spices, cereals). Health effects: Some basidiospores may produce toxins and can act as allergens. They have not been reported to be pathogens.

Cladosporium

Cladosporium is the most common indoor and outdoor mold. The spores are wind dispersed and are often extremely abundant in outdoor air. Many species are commonly found on living and dead plant material. Indoors, they may grow on surfaces with high moisture or high humidity levels such as damp window sills, poorly ventilated bathrooms and soiled refrigerators. It produces powdery or velvety olive-green to brown or black colonies. The conidia (spores) vary depending on the species and are formed in simple or branching chains with multi-attachment points. Health Effects: Cladosporium species are rarely pathogenic to humans, but have been reported to occassionally cause sinusitis and pulmonary infections as well as infections of the skin and toenails. The airborne spores are significant allergens, and in large amounts they may severely affect asthmatics and people with respiratory diseases.

Hyphal Fragments

Hyphal Fragments are segments or pieces of hyphae or mycelium that may have broken off during sampling (air, tape, dust). The mycelium is the entire mass of hyphae that makes up the vegetative body of a fungus. The presence of hyphal fragments may indicate the presence of viable mold.

Other Colorless

- “Other Colorless” are all non-distinctive, unidentifiable, colorless spores seen on spore trap samples and include all the genera that do not have distinguishing morphology to belong to any of the other defined categories."

Penicillium/Aspergillus Like

Penicillium and Aspergillus are ubiquitous, filamentous fungi that are found in soil, decaying plant debris, compost piles, and in the air. Indoors, spores are commonly found in house dust, in water-damaged buildings (wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint) as well as fruit and grains. They are the most common fungal genera, worldwide. Both produce chains of spores that are small, round to oval, colorless or slightly pigmented, and smooth to rough walled. These spores are indistinguishable between the two as well as other genera, such as Gliocladium, Trichoderma, Paecilomyces, and Scopulariopsis. They differ as to their conidiophores or fruiting bodies. While, Aspergillus spores are produced from phialides supported on conidia heads or swollen vesicles, Penicillium spores are produced on finger-like projections. Depending on species, typical colonies of Aspergillus are initially white and later turn to either shades of green, yellow, orange, brown or black. Texture is usually velvety to cottony. Typical colonies of Penicillium, other than Penicillium marneffei (yeast-like at 37oC), grow rapidly, white in color at first, later becoming bluish green with white borders with velvety to powdery textures depending on species. Some species produce radial patterns. Health Effects: Both Aspergillus and Penicillium are potential allergens. Several species of Aspergillus (A. flavus and A. parasiticus) produce aflatoxins or natually occurring mycotoxins that are toxic and carcinogenic. These are found in contaminated foodstuff and are hazardous to consumers. Penicillium has only one known species that is pathogenic to humans (P. marneffei) that causes lethal systemic infection (Penicilliosis) in immunocompromised individuals.

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 625299

Mailing/Billing Information:

1. Client Name: ATI, Inc.
2. Address 1: 4221 Forbes Blvd.
3. Address 2: Suite 250
4. Address 3: Lanham, MD 20706
5. Phone #: _____ Fax #: _____

Submittal Information:

1. Job Name: Suitland E.S.
2. Job Location: 4650 Towne Park Rd. Hillcrest Heights, MD 20746
3. Job #: 21-609 P.O. #: _____
4. Contact Person: Courtney McCall @ phone # 703 399 5423
5. Submitted by: ~~Andrew Woerner~~ C. McCall Signature: Courtney McCall

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due: _____ ❑ 24 Hours Time Due: _____ Comments: _____	❑ Immediate ❑ 3 Day ☒ Next Day ❑ 5 Day + 2/23/21 ❑ 2 Day Date Due: _____ ❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	☒ Include COC/Field Data Sheets with Report ☒ Email: courtney @ atiinc.com ❑ Fax: _____ ❑ Verbals: _____

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
- ❑ NIOSH 7400 _____ (QTY)
- ❑ Fiberglass _____ (QTY)

TEM Air – Please Indicate Filter Type:
- ❑ AHERA _____ (QTY)
- ❑ NIOSH 7402 _____ (QTY)
- ❑ Other (specify _____) _____ (QTY)

PLM Bulk
- ❑ EPA 600 – Visual Estimate _____ (QTY)
- ❑ EPA Point Count _____ (QTY)
- ❑ NY State Friable 198.1 _____ (QTY)
- ❑ Grav. Reduction ELAP 198.6 _____ (QTY)
- ❑ Other (specify _____) _____ (QTY)

MISC
- ❑ Vermiculite
- ❑ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

TEM Bulk
- ❑ ELAP 198.4/Chatfield _____ (QTY)
- ❑ NY State PLM/TEM _____ (QTY)
- ❑ Residual Ash _____ (QTY)

TEM Dust
- ❑ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
- ❑ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
- ❑ Quan. (s/area)Dust D6480-99 _____ (QTY)

TEM Water
- ❑ Qual. (pres/abs) _____ (QTY)
- ❑ ELAP 198.2/EPA 100.2 _____ (QTY)
- ❑ EPA 100.1 _____ (QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples _____ °C)

Metals Analysis
- ❑ Pb Paint Chip _____ (QTY)
- ❑ Pb Dust Wipe (wipe type _____) _____ (QTY)
- ❑ Pb Air _____ (QTY)
- ❑ Pb Soil/Solid _____ (QTY)
- ❑ Pb TCLP _____ (QTY)
- ❑ Drinking Water ❑ Pb_____(QTY) ❑ Cu_____(QTY) ❑ As_____(QTY)
- ❑ Waste Water ❑ Pb_____(QTY) ❑ Cu_____(QTY) ❑ As_____(QTY)
- ❑ Pb Furnace (Media _____) _____ (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples: _____
Collection Media _____
- ☒ Spore-Trap 3 (QTY)
- ❑ Surface Swab _____ (QTY)
- ❑ Surface Tape _____ (QTY)
- ❑ Other (Specify _____) _____ (QTY)
- ❑ Surface Vacuum Dust _____ (QTY)
- ❑ Culturable ID Genus (Media _____) _____ (QTY)
- ❑ Culturable ID Species (Media _____) _____ (QTY)

SAMPLE INFORMATION					ANALYSIS				MATRIX									CLIENT CONTACT
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB		(LABORATORY STAFF ONLY)
31569970	Room 131	2/20/21	75L	—					X	X				X			Date/Time:	Contact: By:
31569991	Ambient	2/20/21	75L	—					X	X				X				
31569966	Field Blank	2/20/21	75L	—					X	X				X			Date/Time:	Contact: By:
																	Date/Time:	Contact: By:
																	Date/Time:	Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: 2 / 22 / 21 @ 0800 Via: DLO By (Print): _____ Sign: _____
2. Date/Time Analyzed: ____ / ____ / ____ @ ____ By (Print): _____ Sign: _____
3. Results Reported To: _____ Via: _____ Date: ____ / ____ / ____ Time: _____ Initials: _____
4. Comments: _____

Appendix B: Instrument Calibration Records

Certificate of Calibration

(✓) Buck™ BioAire Pump Calibration Rotameter

( ) Buck™ BioSlide Pump Calibration Rotameter

Serial number: R15046
Date Calibrated: 11/12/2020 **Calibration Due Date:** 11/12/2021

Flow Calibration

This is to certify that the rotameter listed above has been calibrated using a Buck Primary calibrator listed below which is calibrated according to A.P. Buck, Inc. calibration procedure APB-1, Ver. 6.2 and is traceable to the National Institute of Standards & Technology (N.I.S.T). A.P. Buck guarantees the accuracy of the rotameter to be within ± 5% of the actual flow rate.

AMBIENT CONDITIONS: Temperature 74±3° F Relative Humidity 50±10%

Description	MFR.	Model	Serial #
Primary Calibrator	A.P. Buck Inc.	M30B	☐ A40020 ☑ A40021

QA Approval By: Moran Menk

A.P. BUCK, INC.
7101 Presidents Drive, Suite 110
Orlando, FL 32809
Phone: 407-851-8602
Fax: 407-851-8910

BUCK

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	74.0 (23.3)	°F (°C)
RELATIVE HUMIDITY	34	%RH
BAROMETRIC PRESSURE	29.20 (988.8)	inHg (hPa)

MODEL	982
SERIAL NUMBER	P17100007

☐ AS LEFT ☒ AS FOUND

☐ IN TOLERANCE ☒ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

GAS CO_2 AS FOUND — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	0	0	0~50	4	3015.3	* 2902.7	2924.9~3105.8
2	499	458	449~549	5	5056	* 4859.6	4904.3~5207.7
3	1002	963	952~1052				

GAS CO AS FOUND — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	35.1	* 29.5	32.1~38.1	2	100.5	* 84.8	97.5~103.5

TEMPERATURE AS FOUND — SYSTEM T-101 — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	32.1 (0.0)	32.8 (0.4)	31.1~33.1 (−0.5~0.6)	2	140.02 (60.01)	* 141.31 (60.73)	139.02~141.02 (59.45~60.57)

HUMIDITY AS FOUND — SYSTEM H-102 — *Unit: %RH*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	10.0	10.4	7.0~13.0	4	70.0	67.1	67.0~73.0
2	30.0	29.3	27.0~33.0	5	90.01	* 85.88	87.01~93.01
3	50.0	48.5	47.0~53.0				

**Indicates Out-of-Tolerance Condition*

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due
5000 CO_2	14A044095	04-06-20	04-06-25
N2	T-0608	05-19-20	05-19-28
Flow	E003341	09-03-19	09-30-20
Flow	E003525	01-06-20	01-31-21
2000 C4H8	EB0054467	08-13-19	08-12-22
Temperature	E010657	02-14-20	02-28-21
Temperture	E010655	01-21-20	01-31-21

Measurement Variable	System ID	Last Cal.	Cal. Due
200 CO	149886	04-30-20	03-24-28
Air	T17939	04-09-20	04-09-28
Flow	E003980	04-22-20	04-30-21
Flow	E003342	09-03-19	09-30-20
100 C4H8	CC507339	03-24-20	03-24-28
Temperature	E010658	02-14-20	02-28-21
Humidity	E003539	02-26-20	08-31-20

Chimouva Vue
VERIFIED

June 15, 2020
DATE

Doc. ID: CERT_GEN_WCC

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	70.41 (21.3)	°F (°C)
RELATIVE HUMIDITY	50.3	%RH
BAROMETRIC PRESSURE	29.15 (987.1)	inHg (hPa)

MODEL	982
SERIAL NUMBER	P17100007

☒ AS LEFT ☐ AS FOUND

☒ IN TOLERANCE ☐ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

TEMPERATURE VERIFICATION — SYSTEM T-101 — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	32.1 (0.0)	31.9 (-0.1)	31.1~33.1 (-0.5~0.6)	2	140.0 (60.0)	140.3 (60.3)	139.0~141.0 (59.5~60.6)

HUMIDITY VERIFICATION — SYSTEM H-102 — *Unit: %RH*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	10.0	9.0	7.8~12.2	4	70.0	69.5	67.8~72.2
2	30.0	29.1	27.8~32.2	5	90.0	88.7	87.8~92.2
3	50.0	49.6	47.8~52.2				

CO2 GAS VERIFICATION — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	0	0	0~50	4	3016	3012	2926~3107
2	502	502	452~552	5	5056	5032	4904~5208
3	1005	1019	955~1055				

CO GAS VERIFICATION — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	35	36	32~38	2	101	100	98~104

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E010657	02-14-20	02-28-21
Temperture	E010655	01-21-20	01-31-21
5000 CO2	14A044095	04-06-20	04-06-25
N2	T-0608	05-19-20	05-19-28
Flow	E003341	09-03-19	09-30-20
Flow	E003525	01-06-20	01-31-21
2000 C4H8	EB0054467	08-13-19	08-12-22

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E010658	02-14-20	02-28-21
Humidity	E003539	02-26-20	08-31-20
200 CO	149886	04-30-20	03-24-28
Air	T17939	04-09-20	04-09-28
Flow	E003980	04-22-20	04-30-21
Flow	E003342	09-03-19	09-30-20
100 C4H8	CC507339	03-24-20	03-24-28

Chao Vang
CALIBRATED

June 16, 2020
DATE

Doc ID: CERT_GEN_WCC

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	70.72 (21.5)	°F (°C)
RELATIVE HUMIDITY	39.0	%RH
BAROMETRIC PRESSURE	29.15 (987.1)	inHg (hPa)

MODEL	7575-X
SERIAL NUMBER	7575X1711006

☒ AS LEFT ☒ IN TOLERANCE
☐ AS FOUND ☐ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

THERMO COUPLE — **SYSTEM PRESSURE01-02** — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	70.9 (21.6)	70.8 (21.6)	68.9~72.9 (20.5~22.7)				

BAROMETRIC PRESSURE — **SYSTEM PRESSURE01-02** — *Unit: inHg (hPa)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	29.22 (989.5)	29.23 (989.8)	28.64~29.80 (969.9~1009.1)				

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E004626	02-14-20	02-28-21	Pressure	E005254	10-10-19	10-31-20
Pressure	E003982	01-24-20	07-31-20	DC Voltage	E003493	08-14-19	08-31-20

ChaoVang
CALIBRATED

June 15, 2020
DATE

DOC ID: CERT_GEN_V02

TSI P/N 2300157

CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

ENVIRONMENT CONDITIONS		
TEMPERATURE	70.68 (21.5)	°F (°C)
RELATIVE HUMIDITY	38.0	%RH
BAROMETRIC PRESSURE	29.16 (987.5)	inHg (hPa)

MODEL	7575-X
SERIAL NUMBER	7575X1711006

☐ AS LEFT ☒ IN TOLERANCE
☒ AS FOUND ☐ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

THERMO COUPLE — SYSTEM PRESSURE01-02 — *Unit: °F (°C)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	70.8 (21.6)	71.1 (21.7)	68.8~72.8 (20.4~22.7)				

BAROMETRIC PRESSURE — SYSTEM PRESSURE01-02 — *Unit: inHg (hPa)*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	29.22 (989.5)	29.17 (987.8)	28.64~29.80 (969.9~1009.1)				

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the United States National Institute of Standards and Technology (NIST) or has been verified with respect to instrumentation whose accuracy is traceable to NIST, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E004626	02-14-20	02-28-21	Pressure	E005254	10-10-19	10-31-20
Pressure	E003982	01-24-20	07-31-20	DC Voltage	E003493	08-14-19	08-31-20

ChaoVang
VERIFIED

June 15, 2020
DATE

Doc ID: CERT_GEN_WCC

TSI P/N 2300157