ati INC
Architecture | Engineering | Construction

9220 Rumsey Road, Suite 100, Columbia, MD 21045
T: 410.992.3424 | F: 410.992.1837

April 6, 2021

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

RE: Indoor Air Quality Assessment, Langley Park-McCormick Elementary School
Purchase Order: 734977
ATI Project Number: 21-626

Dear Mr. Baylor:

Prince George's County Public Schools requested that ATI, Inc., conduct a proactive indoor air quality (IAQ) assessment at Langley Park-McCormick Elementary School on March 8, 2021, and a follow-up assessment on April 2, 2021. The assessments' key findings are enclosed in the 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:

Courtney E. McCall
Project Manager

Nate Burgei, CIH, CSP
Certified Industrial Hygienist

Indoor Air Quality Assessment Report

Prince George's County Public Schools
Langley Park-McCormick Elementary School
8201 15th Avenue
Hyattsville, MD 20783

Prepared for:

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

April 6, 2021

Submitted by:

ATI Job # 21-626

Table of Contents

List of Tables

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 March 8, 2021, at Langley Park-McCormick Elementary School, located at 8201 15th Ave., Hyattsville, MD 20783. On April 2, 2021, ATI conducted a follow-up assessment in select rooms that had mold spore concentrations in the initial inspection that warranted corrective actions.

The assessments 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. The Media Center, Room 17 and Room 19, had unusual fungal spore concentrations during the initial assessment in March and were selected for a follow-up assessment on April 2, 2021 after actions were taken to reduce the presence of mold and repair any water issues discovered. As part of the 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. Two of the tested spaces had a temperature less than the ASHRAE recommended winter range of 68°F - 75°F during the March 8, 2021 assessment. All three retested locations on April 2, 2021 had a temperature within the ASHRAE recommended winter range.
2. The relative humidity in all tested spaces was less than the ASHRAE maximum recommended guidelines of ≤ 65% during the March 8, 2021 and April 2, 2021 assessments, but was also less than 30%, which can cause occupant discomfort.
3. Carbon dioxide concentrations in all tested spaces were less than the ASHRAE limits for carbon dioxide, which were 1,081 parts per million (ppm) for March 8, 2021, and 1,055 ppm for April 2, 2021.
4. Carbon monoxide concentrations were less than the IAQ meter's detection limit throughout the tested spaces during both assessments.
5. The *Aspergillus/Penicillium*-like mold spore concentrations on March 8, 2021 in the Media Center, Room 17 and Room 19 were greater than the outdoor sample and greater than the mold spore concentrations in a typical occupied space. Corrective actions occurred to repair any moisture issues and clean the spaces to reduce the presence of mold spores. All other tested spaces during this assessment had mold spore concentrations typical of occupied spaces.
6. The *Aspergillus/Penicillium*-like mold spore concentrations on April 2, 2021 in Rooms 17 and 19 had an 85% and 99% spore reduction, respectively, after corrective actions were completed.
7. Room 17 had a low concentration of *Stachybotrys/Memnoniella*, which is a chronic water issue indicator. The results do not suggest active mold growth, but ATI recommends an additional inspection of the room and surrounding areas to ensure there are no water damaged building materials.
8. The Media Center had a 14% increase in *Aspergillus/Penicillium*-like mold spore concentration, which is possibly from mold containing dust. The room's carpet was partially removed for flooring work between the two assessments, which likely stirred dust and spores into the air. The measured concentration in the Media Center is borderline typical/atypical, and not suggest significant mold amplification. Thus, ATI recommends additional HEPA vacuuming, surface cleaning and a brief visual reinspection to ensure there are no moisture issues like condensation and heavy dust accumulation.

2 Assessment Methods

Sama Wanigasundara, Industrial Hygienist of ATI, Inc. conducted the initial visual assessment and air sampling on March 8, 2021. Sampled rooms were randomly selected and accounted for approximately 10% of classrooms or a minimum of five samples. Mr. Wanigasundara documented visual observations at the time he collected the air samples. On April 2, 2021, he conducted the reassessment in the Media Center and Rooms 17 and 19 after the areas were 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 field calibrated Buck BioAire High-Volume Sampling Pump on Zefon Air-O-Cell spore-trap cassettes at a flow rate of 15 liters per minute 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	March 8, 2021 Observations
Parking Lot – Outdoors	• Scattered clouds, mostly clear skies • Light foot and vehicle traffic observed • Surrounding trees
Main Office	• No occupants in the area during sampling • No odors, stained ceiling tiles, or visible mold growth observed • Three adjoining office spaces • One air return and one air diffuser in this space and dust on it • No dust accumulation • Observed plant corner of the room • Space is approximately 400ft.^{2}
Cafeteria	• No stained-on ceiling and no suspect mold growth observed • No occupants in area during sampling • No dust accumulation • Five air returns in this space, bottom two returns had accumulated dust • One air diffuser in this space • Space is approximately 2400 ft.^{2}
Gymnasium	• No odors, stained ceiling tiles, or visible mold growth observed • Four air diffusers and two air returns had accumulated dust • No visual dust accumulation on surfaces in this space • All the doors closed, and no occupants • Space is approximately 4400 ft.^{2}

Sample Location	March 8, 2021 Observations
Media Center	• No occupants in the area during sampling • Some older stained ceiling tiles were present • No visible mold growth observed • Door to corridor open during sampling • Carpet appeared to be older • One air return and four air diffusers in this space with accumulated dust • Space is approximately 1800 ft.^{2}
Room 12	• No stained ceiling tiles, or visible mold growth observed • No occupants in the area during sampling • Four air diffusers, one air return dust accumulated on it • No visual dust accumulation in this space • Space is approximately 780 ft.^{2}
Room 17	• No occupants in the area during sampling • No dust accumulation on surfaces in this space • No visible mold growth observed • One air return and four air diffusers with accumulated dust • Space is approximately 700 ft.^{2}
Room 19	• No odors, stained ceiling tiles or visible mold growth observed • One air return or four diffusers in this space with accumulated dust • No occupants in the area during sampling • Space is approximately 840 ft.^{2}
Room 27	• No odors, stained ceiling tiles or mold • No visible dust on floor or other furniture surfaces • One air return with accumulated dust • Two wall mounted air ventilators • Space is approximately 1200 ft.^{2}
Room 30	• No odors, stained ceiling tiles or mold observed • No visible dust on floor or other furniture surfaces • One air return dust on it • One air ventilator in this space • Space is approximately 820 ft.^{2}
Room 42	• No odors, stained ceiling tiles or visible mold growth observed • No occupants • One air return with accumulated dust • One air ventilator in this space • Space is approximately 720 ft.^{2}

Sample Location	April 2, 2021 Reassessment Observations
Outdoors – Parking Lot	• Cloudy sky and moderate wind • No traffic • Parking lot surrounded by trees
Room 17	• No occupants at time of sampling • No visible mold growth observed • Dust accumulation was not present on air supplies and returns • Ceiling tiles did not have staining

Sample Location	April 2, 2021 Reassessment Observations
Room 19	• No occupants at time of sampling • No visible mold growth observed • Dust accumulation was not present on air supplies and returns • Ceiling tiles did not have staining
Media Center	• No occupants at time of sampling • No visible mold growth observed • Carpet was vacuumed • Dust accumulation was not present on air supplies and returns • Empty boxes were sitting on tables

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. While autumn and spring are not accounted for in these ranges, these are general guidelines to maximize occupant comfort so deviations from these ranges are fine as long as occupants are comfortable. ATI will typically refer to winter ranges while heating is operating and the summer range when the air conditioning is operating. 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 March 8, 2021 assessment are summarized in Table 2. As indicated by the data in the table, temperatures in the school on March 8 averaged between 65°F and 74°F, with two tested locations less than the ASHRAE recommended winter range.

ATI reassessed select rooms that had unusual fungal spore concentrations on April 2, 2021, after remediation actions were completed. The average temperatures in the reassessed locations averaged between 69°F and 75°F, within the ASHRAE recommended winter range.

Table 2: Temperature

Sample Location	3/8/2021 Initial Assessment Temperature in °F			ASHRAE Standard °F
	Min	Max	Average	
Outdoors	44	45	45	N/A
Indoors				
Main Office	70	70	70	68°F - 75°F
Cafeteria	66	66	66	68°F - 75°F
Gym	68	69	69	68°F - 75°F
Media Center	70	70	70	68°F - 75°F
Room 12	71	71	71	68°F - 75°F
Room 17	70	71	71	68°F - 75°F
Room 19	74	74	74	68°F - 75°F

Sample Location	3/8/2021 Initial Assessment Temperature in °F			ASHRAE Standard °F
	Min	Max	Average	
Room 27	72	72	72	68°F - 75°F
Room 30	65	65	65	68°F - 75°F
Room 42	68	68	68	68°F - 75°F
4/2/2021 Reassessment Temperature in ˚F				
Outdoors	52	52	52	68°F - 75°F
Indoors				
Room 17	73	73	73	68°F - 75°F
Room 19	74	75	75	68°F - 75°F
Media Center	69	69	69	68°F - 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 March 8, 2021 are summarized in Table 3. As indicated by the data in the table, the average relative humidity ranged between 12% and 17% with all tested locations measuring less than the ASHRAE maximum recommendation of 65% relative humidity, but also less than 30% relative humidity, which can cause occupant discomfort.

During the April 2, 2021 reassessment, relative humidity in the tested spaces were less than the ASHRAE maximum recommendation of 65% relative humidity, but also less than 30% relative humidity. Relative humidity ranged between 19% and 23%.

Table 3: Relative Humidity

Sample Location	3/8/2021 Initial Assessment (% RH)			ASHRAE Standard (% RH)
	Min	Max	Average	
Outdoors	24	24	12	N/A
Indoors				
Main Office	17	17	17	≤ 65
Cafe	16	16	16	≤ 65
Gym	15	15	15	≤ 65
Media Center	15	15	15	≤ 65
Room 12	15	15	15	≤ 65
Room 17	16	16	16	≤ 65
Room 19	14	14	14	≤ 65
Room 27	12	12	12	≤ 65
Room 30	16	16	16	≤ 65
Room 42	17	17	17	≤ 65
4/2/2021 Reassessment Relative Humidity (%RH)				
Outdoors	13	13	13	N/A
Indoors				
Room 17	19	19	19	≤ 65

Sample Location	3/8/2021 Initial Assessment (% RH)			ASHRAE Standard (% RH)
	Min	Max	Average	
Room 19	21	21	21	≤ 65
Media Center	23	23	23	≤ 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 March 8, 2021 are summarized in Table 4. On the day of the assessment, the average outdoor carbon dioxide concentration was 381 ppm, which calculates to a maximum indoor concentration of 1,081 ppm (700 + 381). All tested locations indoors were less than the recommended maximum for the day of the assessment.

On the day of the reassessment, the average outdoor carbon dioxide concentration was 355 ppm, which calculates to a maximum indoor concentration of 1,055 ppm (700 + 355). All tested locations indoors were less than the recommended maximum for the day of the reassessment.

Table 4: Carbon Dioxide

Sample Location	3/8/2021 Initial Assessment Concentration (parts per million)			ASHRAE Standard (ppm), NTE
	Min	Max	Average	
Outdoors	380	382	381	N/A
Indoors				
Main Office	450	451	451	< 1,081
Cafeteria	398	400	399	< 1,081
Gym	406	408	407	< 1,081
Media Center	450	452	451	< 1,081
Room 12	420	422	421	< 1,081
Room 17	427	428	428	< 1,081
Room 19	430	431	431	< 1,081
Room 27	433	434	432	< 1,081
Room 30	420	421	421	< 1,081
Room 42	410	411	411	< 1,081
4/2/2021 Reassessment Concentration (parts per million)				
Outdoors	354	355	355	N/A
Indoors				
Room 17	388	390	389	< 1,055

Sample Location	3/8/2021 Initial Assessment Concentration (parts per million)			ASHRAE Standard (ppm), NTE
	Min	Max	Average	
Room 19	394	395	395	< 1,055
Media Center	392	394	393	< 1,055

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 initial assessment on March 8, 2021 and reassessment on April 2, 2021 were less than the Q-Trak's detection limit throughout the school.

Table 5: Carbon Monoxide

Sample Location	3/8/2021 Initial Assessment Concentration (parts per million)			ASHRAE Standard (ppm)
	Min	Max	Average	
Outdoors	< 3	< 3	< 3	N/A
Indoors				
Main Office	< 3	< 3	< 3	< 9
Cafe	< 3	< 3	< 3	< 9
Gym	< 3	< 3	< 3	< 9
Media Center	< 3	< 3	< 3	< 9
Room 12	< 3	< 3	< 3	< 9
Room 17	< 3	< 3	< 3	< 9
Room 19	< 3	< 3	< 3	< 9
Room 27	< 3	< 3	< 3	< 9
Room 30	< 3	< 3	< 3	< 9
Room 42	< 3	< 3	< 3	< 9

Sample Location	4/2/2021 Reassessment Concentration (parts per million)			ASHRAE Standard (ppm)
	Min	Max	Average	
Outdoors	< 3	< 3	< 3	N/A
Indoors				
Room 17	< 3	< 3	< 3	< 9
Room 19	< 3	< 3	< 3	< 9
Media Center	< 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 March 8, 2021 and April 2, 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 March 8, 2021 spore trap sampling results suggested that indoor mold amplification was present in Room 19, which had an *Aspergillus/Penicillium*-like spore concentration of 31,520 spores/m3, greater than the outdoor concentration of 159 spores/m^3. Room 17 had an *Aspergillus/Penicillium*-like spore concentration of 2,756 spores/m^3. Although the concentration is greater than the typical occupied space, it does not necessarily suggest active indoor mold amplification. These spore types can make up large portions of common settled dust, which can accumulate spores over time. Airborne spore releases can occur when the dust is disturbed through non-HEPA vacuuming, sweeping, general foot traffic and normal occupant activities. The Media Center had an *Aspergillus/Penicillium*-like spore concentration of 954 spores/m^3, which is on the upper end of typical and lower end of being atypical. All other tested spaces had spore concentrations that were typical of normal occupied spaces.

The Media Center, Room 17 and Room 19 were reassessed on April 2, 2021. Rooms 17 and 19 had a significant reduction in *Aspergillus/Penicillium*-like spore concentrations, 85% and more than 99%, respectively. Room 17 had a *Stachybotrys/Memnoniella* concentration of 212 spores/m^3, which are mold spore genera associated with chronic water damage issues. The *Stachybotrys/Memnoniella* concentrations were at the lowest range of what is commonly considered atypical, but all other mold type concentrations were low, so it does not suggest significant mold growth in the area. It is possible previous mold growth was disturbed between the two assessments. Typically, when *Stachybotrys/Memnoniella* are actively growing indoors, the *Aspergillus/Penicillium* and/or *Cladosporium* concentrations will be orders of magnitude greater than what was measured on April 2, 2021. Even though the results do not suggest active mold growth, ATI does recommend an additional visual inspection of Room 17 and the surrounding areas to ensure there are no chronically wet building materials, specifically cellulose-based building materials like wallpaper lining, gypsum wall boards, ceiling tiles, and paper products.

The Media Center had a 14% increase in *Aspergillus/Penicillium*-like spores. The Media Center carpet was partially removed between the two assessments, which likely mixed dust and spores into the air. The concentration measured in the Media Center during both assessments does not suggest significant mold amplification but is likely related to either accumulation of spores in dust or trivial mold growth related to mild moisture such as condensation issues or elevated humidity during the warmer months. Mold spores can account for a large portion of accumulated dust in carpets, on uncleaned surfaces, and in HVAC systems. ATI recommends additional HEPA vacuuming, surface cleaning and brief reinspection to ensure there are no moisture issues like condensation and heavy dust accumulation.

Differences in concentrations between both dates of assessment are summarized in Table 6. The official laboratory reports with spore trap samples are presented in Appendix A.

Table 6: *Aspergillus/Penicillium* Concentration Comparison

Sample Location	March 8, 2021 Concentrations	April 2, 2021 Concentrations	% Change
Room 17	2,756	424	- 85%
Room 19	31,520	53	- 99%
Media Center	954	1,113	+ 14%

6 Summary of Findings

1. Two of the tested spaces had a temperature less than the ASHRAE recommended winter range of 68°F - 75°F during the March 8, 2021 assessment. All three retested locations on April 2, 2021 had a temperature within the ASHRAE recommended winter range.
2. The relative humidity in all tested spaces was less than the ASHRAE maximum recommended guidelines of ≤ 65% during the March 8, 2021 and April 2, 2021 assessments, but was also less than 30%, which can cause occupant discomfort.
3. Carbon dioxide concentrations in all tested spaces were less than the ASHRAE limits for carbon dioxide, which were 1,081 parts per million (ppm) for March 8, 2021, and 1,055 ppm for April 2, 2021.
4. Carbon monoxide concentrations were less than the IAQ meter's detection limit throughout the tested spaces during both assessments.
5. The *Aspergillus/Penicillium*-like mold spore concentrations on March 8, 2021 in the Media Center, Room 17 and Room 19 were greater than the outdoor sample and greater than the mold spore concentrations in a typical occupied space. Corrective actions occurred to repair any moisture issues and clean the spaces to reduce the presence of mold spores. All other tested spaces during this assessment had mold spore concentrations typical of occupied spaces.
6. The *Aspergillus/Penicillium*-like mold spore concentrations on April 2, 2021 in Rooms 17 and 19 had an 85% and 99% spore reduction, respectively, after corrective actions were completed.
7. Room 17 had a low concentration of *Stachybotrys/Memnoniella*, which is a chronic water issue indicator. The results do not suggest active mold growth, but ATI recommends an additional inspection of the room and surrounding areas to ensure there are no water damaged building materials.
8. The Media Center had a 14% increase in *Aspergillus/Penicillium*-like mold spore concentration, which is possibly from mold containing dust. The room's carpet was partially removed for flooring work between the two assessments, which likely stirred dust and spores into the air. The measured concentration in the Media Center is borderline typical/atypical, and not suggest significant mold amplification. Thus, ATI recommends additional HEPA vacuuming, surface cleaning and a brief visual reinspection to ensure there are no moisture issues like condensation and heavy dust accumulation.

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.

Courtney E. McCall
Project Manager

Nate Burgei, CIH, CSP
Certified Industrial Hygienist

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:	285283	**Job Name:**	Langley Park McCormick Elementary School	**Date Submitted:**	03/08/2021
Client:	ATI, Inc.	**Job Location:**	E School Classrooms	**Person Submitting:**	Sama W.
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	Not Provided	**Date Analyzed:**	03/08/2021
		P.O. Number:	Not Provided	**Report Date:**	03/08/2021
Attention:	Courtney McCall				

AMA Sample #	285283-1	**AMA Sample #**	285283-2	**AMA Sample #**	285283-3
Client ID	3214-0764	**Client ID**	3214-0766	**Client ID**	3214-0781
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**	2
Location	Outside	**Location**	Main Office	**Location**	Media Center

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores	3	15	53	159	27.3%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	2	15	53	106	18.2%
Curvularia					
Penicillium / Aspergillus	3	15	53	159	27.3%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown	1	15	53	53	9.1%
Other Colorless	2	15	53	106	18.2%
Nigrospora					
Hyphal Fragments*					
Total Raw Ct:	11	**Total sp/m³:**	583		

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	53	53	50%
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes	Present	15	53	<53	
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	1	15	53	53	50%
Nigrospora	Present	15	53	<53	
Hyphal Fragments*					
Total Raw Ct:	2	**Total sp/m³:**	106		

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	53	53	5.3%
Curvularia					
Penicillium / Aspergillus	18	15	53	954	94.7%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Nigrospora					
Hyphal Fragments*					
Total Raw Ct:	19	**Total sp/m³:**	1007		

Comments

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody: 285283
Client: ATI, Inc.
Address: 9220 Rumsey Road
Suite 100
Columbia, MD 21045
Attention: Courtney McCall

Job Name: Langley Park McCormick Elementary School
Job Location: E School Classrooms
Job Number: Not Provided
P.O. Number: Not Provided

Date Submitted: 03/08/2021
Person Submitting: Sama W.
Date Analyzed: 03/08/2021
Report Date: 03/08/2021

AMA Sample #	285283-4
Client ID	3214-0789
Analyst ID	TLW
Collection Apparatus	Air-O-Cell
Sample Volume (L)	75
Sample Condition	Acceptable
Debris Loading	1
Location	Gym

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	53	53	100%
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Nigrospora					
Hyphal Fragments*					
Total Raw Ct:	1		**Total sp/m³:**	53	

Comments
No visible trace.

AMA Sample #	285283-5
Client ID	3214-0828
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/m³	%
Alternaria					
Ascospores	1	15	53	53	14.3%
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	6	15	53	318	85.7%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Nigrospora					
Hyphal Fragments*					
Total Raw Ct:	7		**Total sp/m³:**	371	

Comments

AMA Sample #	285283-6
Client ID	3214-0829
Analyst ID	TLW
Collection Apparatus	Air-O-Cell
Sample Volume (L)	75
Sample Condition	Acceptable
Debris Loading	1
Location	Classroom 17

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium	1	15	53	53	1.9%
Cladosporium					
Curvularia					
Penicillium / Aspergillus	52	15	53	2756	98.1%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Nigrospora					
Hyphal Fragments*	1	15	53	53	1.9%
Total Raw Ct:	53		**Total sp/m³:**	2809	

Comments

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285283	**Job Name:**	Langley Park McCormick Elementary School	**Date Submitted:**	03/08/2021
Client:	ATI, Inc.	**Job Location:**	E School Classrooms	**Person Submitting:**	Sama W.
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	Not Provided	**Date Analyzed:**	03/08/2021
		P.O. Number:	Not Provided	**Report Date:**	03/08/2021
Attention:	Courtney McCall				

AMA Sample #	285283-7	**AMA Sample #**	285283-8	**AMA Sample #**	285283-9
Client ID	3214-0770	**Client ID**	3214-0776	**Client ID**	3214-0768
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	1	**Debris Loading**	1	**Debris Loading**	1
Location	Classroom 42	**Location**	Classroom 30	**Location**	Classroom 27

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	1	15	53	53	100%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Nigrospora					
Hyphal Fragments*					
Total Raw Ct:	1		**Total sp/m³:**	53	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	1	15	53	53	100%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Nigrospora					
Hyphal Fragments*					
Total Raw Ct:	1		**Total sp/m³:**	53	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	3	15	53	159	60%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	2	15	53	106	40%
Nigrospora					
Hyphal Fragments*					
Total Raw Ct:	5		**Total sp/m³:**	265	

Comments
No visible trace.

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285283	**Job Name:**	Langley Park McCormick Elementary School	**Date Submitted:**	03/08/2021
Client:	ATI, Inc.	**Job Location:**	E School Classrooms	**Person Submitting:**	Sama W.
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	Not Provided	**Date Analyzed:**	03/08/2021
		P.O. Number:	Not Provided	**Report Date:**	03/08/2021
Attention:	Courtney McCall				

AMA Sample #	285283-10	**AMA Sample #**	285283-11	**AMA Sample #**	285283-12
Client ID	3156-9832	**Client ID**	3214-0767	**Client ID**	3214-0773
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	2	**Debris Loading**	1	**Debris Loading**	1
Location	Classroom 19	**Location**	Classroom 12	**Location**	Field Blank

Sample 285283-10 (Classroom 19)

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	197	5	160	31520	100%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Nigrospora					
Hyphal Fragments*					
Total Raw Ct:	197		**Total sp/m^3:**	31520	

Comments

Sample 285283-11 (Classroom 12)

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium	1	15	53	53	6.3%
Cladosporium					
Curvularia					
Penicillium / Aspergillus	15	15	53	795	93.8%
Smuts/Periconia/Myxomycetes	Present	15	53	<53	
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Nigrospora					
Hyphal Fragments*					
Total Raw Ct:	16		**Total sp/m^3:**	848	

Comments

Sample 285283-12 (Field Blank)

	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					
Other Colorless					
Nigrospora					
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:	285283	**Job Name:**	Langley Park McCormick Elementary School	**Date Submitted:**	03/08/2021
Client:	ATI, Inc.	**Job Location:**	E School Classrooms	**Person Submitting:**	Sama W.
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	Not Provided	**Date Analyzed:**	03/08/2021
		P.O. Number:	Not Provided	**Report Date:**	03/08/2021
Attention:	Courtney McCall				

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

Interpretation of the data contained in this report is the sole responsibility of the client or the persons who conducted the field work. There are no federal or national standards for the number of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should be comparable to those that are present outdoors at any given time. There will always be some mold spores present in "Normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.

This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. Sampling techniques, possible contaminants, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical evaluation provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. AMA Analytical Services, Inc. hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285283	**Job Name:**	Langley Park McCormick Elementary School	**Date Submitted:**	03/08/2021
Client:	ATI, Inc.	**Job Location:**	E School Classrooms	**Person Submitting:**	Sama W.
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	Not Provided	**Date Analyzed:**	03/08/2021
		P.O. Number:	Not Provided	**Report Date:**	03/08/2021
Attention:	Courtney McCall				

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.

Chaetomium

Chaetomium is a genus of ascomycete fungi. It is a cosmopolitan, dark colored fungus (grayish-green to brown) commonly isolated from soil, seeds, dung, wood, and straw materials. Indoors, it is very commonly found on damp sheetrock and paper or cellulose-containing materials. There are certain characteristics such as color, shape, and size of the Chaetomium ascopores, asci, and ascomata that are unique in identification of the different species. Wind, insects, and water aid dispersal of spores. Due to their large size, they settle out of the air after just a few minutes. As a consequence, airborne mold levels are usually low even in infested environments. Due to this, exposure levels are likely to be low as well. Health Effects: Chaetomium does produce a variety of mycotoxins called chaetoglobsins, whose health effects on humans are unknown. Due to its toxigenic nature, special precautions may be required during remediation.

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.

Nigrospora

Nigrospora is a ubiquitous, filamentous, dark colored fungus commonly isolated from soil, decaying plants, and seeds. Indoors, it is considered a laboratory contaminant. Colonies grow rapidly, initially white and woolly, later turning gray with black areas, and eventually turning black (both front and reverse). Its conidia are black, solitary, unicellular, slightly flattened horizontally, and have a thin equatorial germ slit. Health Effects: This mold may be a potential allergen. It is uncertain whether it is pathogenic to humans.

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.

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) 285283

Mailing/Billing Information:
1. Client Name: ATI, Inc
2. Address 1: 4221 Forbes Blvd.
3. Address 2: Lanham MD 20706
4. Address 3:
5. Phone #: 202-643-4283 Fax #:

Submittal Information:
1. Job Name: Langley Park McCormick ES
2. Job Location: E School. class rooms.
3. Job #: P.O. #:
4. Contact Person: Courtny McCall Cell: 703-399-5423
5. Collected by: Sana W. Cell: 240-413-3728

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
☐ Immediate Date Due:
☐ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
☐ 4 Hours ☐ 3 Day ☒ Results Required By Noon
☐ Same Day ☐ 5 Day +
☒ Next Day Date Due: 03/09/21
~~☐ 2 Day~~

REPORT TO:
☒ Email: courtny@atiinc.com
☐ Email 2:
☐ 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
☐ Vermiculite
☐ 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)
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: Spr Trap.
Collection Media Air w cells.
☒ *Spore-Trap 12 (QTY) ☐ Surface Vacuum Dust (QTY)
☐ *Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ *Surface Tape (QTY) ☐ Culturable ID Species (Media) (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	CLIENT CONTACT (LABORATORY STAFF ONLY)
3214-0764	Outside.	03/06/21	75 L					✓					✓			Date/Time: Contact:By:
3214-0766	Main Office															
3214-0781	Media Center															
3214-0789	Gym															
3214-0828	Cafeteria.															Date/Time: Contact:By:
3214-0829	Class Room 17															
3214-0770	" Room 42															
3214-0776	" Room 30															
3214-0768	" Room 27															Date/Time: Contact:By:
3156-9832	" Room 19							↓					↓			
3214-0767	" Room 12	↓	↓					✓					✓			
3214-0773	Field Blank	–	–					–					–			

	Print Name	Signature	Date	Time
Relinquished by:	Don Sana W.		03/06/21	1300 hours.
Received by:				
Relinquished by:				
Received for Lab by:			3/8/21	0800

Shipping Information
☐ UPS ☒ In-Person ☐ Other
☐ FedEx ☒ Drop Box
☐ USPS ☐ Courier
Airbill/Tracking No:

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285287	**Job Name:**	PGCPS	**Date Submitted:**	04/02/2021
Client:	ATI, Inc.	**Job Location:**	Langley Park Elementary School	**Person Submitting:**	Sama
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-626	**Date Analyzed:**	04/05/2021
		P.O. Number:	Not Provided	**Report Date:**	04/05/2021
Attention:	Courtney McCall				

AMA Sample #	285287-1	**AMA Sample #**	285287-2	**AMA Sample #**	285287-3
Client ID	2157-0308	**Client ID**	3157-0164	**Client ID**	3114-0798
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**	3	**Debris Loading**	1
Location	Outside	**Location**	Media Center	**Location**	RM 19

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores	3	15	53	159	42.9%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	53	53	14.3%
Curvularia					
Penicillium / Aspergillus	3	15	53	159	42.9%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	7	**Total sp/m^3:**	371		

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores	2	15	53	106	7.1%
Basidiospores	2	15	53	106	7.1%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	2	15	53	106	7.1%
Curvularia					
Penicillium / Aspergillus	21	15	53	1113	75%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	1	15	53	53	3.6%
Hyphal Fragments*	1	15	53	53	3.6%
Total Raw Ct:	28	**Total sp/m^3:**	1484		

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores					
Basidiospores	2	15	53	106	50%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	1	15	53	53	25%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Other Colorless	1	15	53	53	25%
Hyphal Fragments*					
Total Raw Ct:	4	**Total sp/m^3:**	212		

Comments

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285287	**Job Name:**	PGCPS	**Date Submitted:**	04/02/2021
Client:	ATI, Inc.	**Job Location:**	Langley Park Elementary School	**Person Submitting:**	Sama
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-626	**Date Analyzed:**	04/05/2021
		P.O. Number:	Not Provided	**Report Date:**	04/05/2021
Attention:	Courtney McCall				

AMA Sample #	285287-4	**AMA Sample #**	285287-5
Client ID	3157-0271	**Client ID**	3157-0170
Analyst ID	TLW	**Analyst ID**	TLW
Collection Apparatus	Air-O-Cell	**Collection Apparatus**	Air-O-Cell
Sample Volume (L)	75	**Sample Volume (L)**	0
Sample Condition	Acceptable	**Sample Condition**	Acceptable
Debris Loading	2	**Debris Loading**	1
Location	RM 17	**Location**	Field Blank

	Raw Ct	Trav/Flds	A.S.	sp/m^3	%
Alternaria					
Ascospores	Present	15	53	<53	
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	6	15	53	318	30%
Curvularia					
Penicillium / Aspergillus	8	15	53	424	40%
Smuts/Periconia/Myxomycetes	Present	15	53	<53	
Stachybotrys/Memnoniella	4	15	53	212	20%
Ulocladium					
Unknown	2	15	53	106	10%
Other Colorless					
Hyphal Fragments*	2	15	53	106	10%
Total Raw Ct:	20		**Total sp/m^3:**		1060

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					
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:	285287	**Job Name:**	PGCPS	**Date Submitted:**	04/02/2021
Client:	ATI, Inc.	**Job Location:**	Langley Park Elementary School	**Person Submitting:**	Sama
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-626	**Date Analyzed:**	04/05/2021
		P.O. Number:	Not Provided	**Report Date:**	04/05/2021
Attention:	Courtney McCall				

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

Interpretation of the data contained in this report is the sole responsibility of the client or the persons who conducted the field work. There are no federal or national standards for the number of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should be comparable to those that are present outdoors at any given time. There will always be some mold spores present in "Normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.

This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. Sampling techniques, possible contaminants, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical evaluation provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. AMA Analytical Services, Inc. hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

AMA Analytical Services, Inc.
Focused On Results.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody:	285287	**Job Name:**	PGCPS	**Date Submitted:**	04/02/2021
Client:	ATI, Inc.	**Job Location:**	Langley Park Elementary School	**Person Submitting:**	Sama
Address:	9220 Rumsey Road Suite 100 Columbia, MD 21045	**Job Number:**	21-626	**Date Analyzed:**	04/05/2021
		P.O. Number:	Not Provided	**Report Date:**	04/05/2021
Attention:	Courtney McCall				

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.

Memnoniella

Memnoniella is closely related Stachybotrys and they are often found growing together. Like Stachybotrys, it is a cosmopolitan fungus and commonly found in soil, plant debris as well as plants and trees. It is also cellulolytic or has the capacity to degrade cellulose and found on wet materials containing cellulose as well as other substrates. Unlike Stachybotrys, the spores form chains and not aggregated in slimy heads. Spores are spherical to sub-spherical, gray, dark brown or black in color, and smooth to rough walled. Colonies are black to blackish-green. Health Effects: Some species may produce mycotoxins with similar toxicities as some species of Stachybotrys. These mycotoxins may have the ability to infect humans and animals after ingestion, inhalation or absorption through unbroken skin.

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.

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.

Stachybotrys

Stachybotrys is known as black mold or toxic black mold. It is a worldwide, filamentous fungus that is commonly found growing on water damaged materials such as ceiling tiles, insulation, wallpaper, wood, and sheetrock. It is highly cellulolytic (has the capacity to degrade cellulose) and commonly isolated on wet materials containing cellulose, such as wallboard, jute carpet backing along with associated glues, straw baskets, and paper materials. The spores are slimy, ellipsoidal to, sub-spherical in shape, single-celled, gray to black in color, and smooth to rough walled. They usually form in clusters on the phialides. Colonies have a powdery to cottony texture and white in color at first, later turning dark gray to black. Health Effects: Certain species of Stachybotrys produce mycotoxins that may be harmful to human and animal after ingestion. They can cause allergic and asthmatic reactions in sensitive individuals.

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) 285287

Mailing/Billing Information:
1. Client Name: ATI, Inc.
2. Address 1: 4221 Forbes Blvd
3. Address 2: Lanham MD 20706
4. Address 3:
5. Phone #: 202-643-4283 Fax #: -

Submittal Information:
1. Job Name: PGCPS
2. Job Location: Langley Park ES.
3. Job #: 21-626 P.O. #:
4. Contact Person: Courtney McCall Cell: 703-399-5423
5. Collected by: Sama W. Cell: 240-413-3728

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
- ☐ Immediate Date Due:
- ☐ 24 Hours Time Due:
- Comments:

NORMAL BUSINESS HOURS
- ☐ 4 Hours
- ☒ Same Day
- ~~☒ Next Day~~
- ☐ 2 Day ~~TAT~~
- ☐ 3 Day
- ☐ 5 Day +
- Date Due: 04/05/21 noon
- ☒ Results Required By Noon

REPORT TO:
- ☒ Email: Courtny@atiinc.com
- ☒ Email 2: Samapriya@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
- ☐ Vermiculite
- ☐ 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)

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 Air-O-Cell
- ☒ *Spore-Trap 5 (QTY)
- ☐ *Surface Swab (QTY)
- ☐ *Surface Tape (QTY)
- ☐ Other (Specify) (QTY)
- ☐ Surface Vacuum Dust (QTY)
- ☐ Culturable ID Genus (Media) (QTY)
- ☐ Culturable ID Species (Media) (QTY)

CLIENT ID #	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	CLIENT CONTACT (LABORATORY STAFF ONLY)
																Date/Time: Contact:By:
2157-0308	Outside	04/02/21	75					✓					✓			
3157-0164	Media Center	"	"					✓					✓			
3114-0798	Room 19							✓					✓			
3157-0271	Room 17	↓	↓					✓					✓			Date/Time: Contact:By:
3157-0170	Field Blank	-	-					-					-			
																Date/Time: Contact:By:

	Print Name	Signature	Date	Time
Relinquished by:	Don Sama W.		04/02/21	4.00 PM
Received by:				
Relinquished by:				
Received for Lab by:			4/2/21	1600

Shipping Information: ☐ UPS ☒ In-Person ☐ Other ☐ FedEx ☐ Drop Box ☐ USPS ☐ Courier
Airbill/Tracking No:

Appendix B: Instrument Calibration Records

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	71.33 (21.9)	°F (°C)
RELATIVE HUMIDITY	53.9	%RH
BAROMETRIC PRESSURE	28.81 (975.6)	inHg (hPa)

MODEL	7575-X
SERIAL NUMBER	7575X1711004

☒ AS LEFT ☐ AS FOUND

☒ IN TOLERANCE ☐ 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)	71.1 (21.7)	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	28.82 (976.0)	28.82 (976.0)	28.24~29.40 (956.3~995.6)				

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	07-21-20	01-31-21	DC Voltage	E003493	06-17-20	06-30-21

CALIBRATED

August 31, 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	71.24 (21.8)	°F (°C)
RELATIVE HUMIDITY	54.8	%RH
BAROMETRIC PRESSURE	28.74 (973.2)	inHg (hPa)

MODEL	7575-X
SERIAL NUMBER	7575X1711004

☐ 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)	70.5 (21.4)	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	28.75 (973.6)	28.84 (976.6)	28.17~29.33 (953.9~993.2)				

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	07-21-20	01-31-21	DC Voltage	E003493	06-17-20	06-30-21

VERIFIED

August 31, 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	75.8 (24.3)	°F (°C)
RELATIVE HUMIDITY	48	%RH
BAROMETRIC PRESSURE	28.72 (972.6)	inHg (hPa)

MODEL	982
SERIAL NUMBER	P17100006

☐ AS LEFT ☐ IN TOLERANCE
☒ AS FOUND ☒ 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	3020.5	* 2874.5	2929.9~3111.1
2	504	460	454~554	5	5037	* 4771.8	4885.9~5188.1
3	1008	964	958~1058				

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

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	35.3	* 30.8	32.3~38.3	2	100.7	* 87.7	97.7~103.7

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

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	32.0 (0.0)	32.6 (0.3)	31.0~33.0 (−0.5~0.6)	2	139.8 (59.9)	140.6 (60.3)	138.8~140.8 (59.4~60.5)

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

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	10.0	10.5	7.0~13.0	4	70.0	69.6	67.0~73.0
2	30.0	30.4	27.0~33.0	5	90.0	88.9	87.0~93.0
3	50.0	50.4	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	Measurement Variable	System ID	Last Cal.	Cal. Due
5000 CO_2	T-0660	07-15-20	07-15-28	200 CO	149848	03-24-20	03-24-28
N2	CT308798	06-28-20	06-28-28	Air	T608955	06-17-20	06-17-28
Flow	E003341	09-03-19	09-30-20	Flow	E003980	04-22-20	04-30-21
Flow	E003525	01-06-20	01-31-21	Flow	E003342	09-03-19	09-30-20
2000 C4H8	EB0054467	08-13-19	08-12-22	100 C4H8	CC507339	03-24-20	03-24-28
Temperature	E010657	02-14-20	02-28-21	Temperature	E010658	02-14-20	02-28-21
Temperture	E010655	01-21-20	01-31-21	Humidity	E003539	08-21-20	02-28-21

ChaoVang
VERIFIED

August 31, 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	71.33 (21.9)	°F (°C)
RELATIVE HUMIDITY	53.9	%RH
BAROMETRIC PRESSURE	28.81 (975.6)	inHg (hPa)

MODEL	982
SERIAL NUMBER	P17100006

☒ 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	32.0 (0.0)	32.6 (0.3)	31.0~33.0 (−0.5~0.6)	2	139.8 (59.9)	140.6 (60.3)	138.8~140.8 (59.4~60.5)

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

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	10.0	10.5	7.0~13.0	4	70.0	69.6	67.0~73.0
2	30.0	30.4	27.0~33.0	5	90.0	88.9	87.0~93.0
3	50.0	50.4	47.0~53.0				

CO_2 GAS VERIFICATION — SYSTEM G-101 — *Unit: ppm*

#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	0	0	0~50	4	3020	3025	2929~3110
2	504	501	454~554	5	5037	5026	4886~5188
3	1008	1027	958~1058				

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 CO_2	T-0660	07-15-20	07-15-28
N_2	CT308798	06-28-20	06-28-28
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	08-21-20	02-28-21
200 CO	149848	03-24-20	03-24-28
Air	T608955	06-17-20	06-17-28
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

Bao Yang
CALIBRATED

August 31, 2020
DATE

Doc. ID. CERT_GEN_WCC

TSI P/N 2300157

Certificate of Calibration

(✓) Buck™ BioAire Pump Calibration Rotameter
( ) Buck™ BioSlide Pump Calibration Rotameter

Serial number: R15042
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: Moroni Menk

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

BUCK