



4221 Forbes Boulevard · Suite 250
Lanham, Maryland 20706
T: 202.558.7487 | <http://www.atimd.com>

January 7, 2022

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

RE: Indoor Air Quality Assessment, Bowie HS Annex
Purchase Order:
ATI Project Number:21-699

Dear Mr. Baylor:

Prince George's County Public Schools requested that ATI, Inc., conduct a proactive indoor air quality (IAQ) assessment at Bowie High School Annex on December 27, 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 and approved by:

Brian Chapman
Project Manager

Nate Burgei
CIH, CSP



4221 Forbes Boulevard · Suite 250
Lanham, Maryland 20706
T: 202.558.7487 | <http://www.atimd.com>

Intentionally left blank

Indoor Air Quality Assessment Report

Prince George's County Public Schools
Bowie High School Annex
3021 Belair Drive
Bowie, MD 20715

Prepared for:

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

January 07, 2022

Submitted by:



4221 Forbes Blvd.
Suite 250
Lanham, Maryland 20706

ATI Job # 21-699

Intentionally left blank

1. Contents

1. EXECUTIVE SUMMARY	1
1.1. FINDINGS.....	1
2. BACKGROUND	2
3. ASSESSMENT METHODS	2
4. VISUAL OBSERVATIONS.....	2
5. INDOOR DIRECT READING AIR PARAMETERS.....	4
5.1. TEMPERATURE	4
5.2. RELATIVE HUMIDITY.....	5
5.3. CARBON DIOXIDE	5
5.4. CARBON MONOXIDE	5
6. TOTAL FUNGAL SPORE TRAP SAMPLING RESULTS AND DISCUSSION	6
7. SUMMARY OF FINDINGS	7

Appendix A: Laboratory Analytical Report

Appendix B: Calibration Certificates

1. Executive Summary

ATI conducted a proactive Indoor Air Quality (IAQ) assessment on December 27, 2021, at Bowie High School Annex located at 3021 Belair Drive, Bowie, MD 20715.

The assessment 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. As part of the assessment, ATI measured temperature, relative humidity, carbon dioxide, and carbon monoxide using direct-reading instruments, and measured total airborne fungal spore concentrations by collecting and submitting samples to a microbiological laboratory for analysis. The major assessment findings are in Section 1.1, while more in-depth results and discussion are contained in the technical sections of this report.

1.1. Findings

1. It was brought to ATI's attention the school is under an interior renovation since 2020. Renovations consisting of new drop ceiling and LED lighting, removal and replacement of interior walls, removal and replacement of interior floor and wall coverings, i.e., vinyl floor tiling, paint, ceramic tiling, and a new HVAC system with convector wall units for each classroom. The units are controlled (temperature for heat and air conditioning, and on and off) within the occupied spaces throughout the facility, which feeds from the main HVAC system inside the boiler room area.
2. ATI observed possible fungal growth under the sink cabinet in Room C-202, directly under the C pipe, which should be appropriately cleaned, sterilized and encapsulated following EPA's published guidelines.
3. ATI observed a possible missing air-return for the teacher's lounge, Room A-102, which could lead to poor air circulation when at or exceeding high occupancy, followed by poor air quality if the door were to stay closed when occupied. Confirm with the building engineers if the ceiling AHU has the ability to draw air back into the system and exhausting it into a return duct or ceiling plenum.
4. The average temperature in several locations were less than the ASHRAE recommended winter occupancy comfort range of 68-75°F. However, the school was not occupied at the time of the survey, and the HVAC may have been operating on a more efficient mode. The rooms with the operating wall units at the time of the survey were within the recommended winter occupant comfort range.
5. The average relative humidity in all indoor sampled locations was less than the ASHRAE recommended maximum humidity of 65%. Most sampled locations were also less than 30%, which can cause respiratory discomfort in occupants.
6. The average carbon dioxide concentration in all indoor locations was less than the maximum recommended indoor concentration of 1,069 ppm for the day of the assessment.
7. The average carbon monoxide concentrations in all areas was less than the EPA and ASHRAE recommended limit of 9 ppm.
8. The measured fungal concentrations within the tested areas were common species and quantity for the Mid-Atlantic region and for the outside conditions involving the time of day, and weather conditions. Every tested area but the cafeteria had basidiospores on the samples, which are known haploids coming from the outdoors and not generated indoors for this region.
9. The spore trap sampling results suggest that significant indoor amplification of mold was not present. While concentrations of *Smuts/Periconia/Myxomycetes*, *Epicoccum* and *Nigrospora* detected in some of the tested locations exceeded the ambient sample, the observed concentrations of these spores indoors do not suggest noteworthy amplification.

2. Background

ATI, Inc. conducted a proactive indoor air quality assessment to identify any indoor air quality issues that may have arisen in the past year and correct any current or potential future conditions that may degrade the indoor air in Bowie High School Annex. ATI sampled approximately 10% of the classrooms, or a minimum of five classrooms, and any common areas such as the main office, cafeteria, gymnasium and library or media rooms. Any rooms that have unusual spore concentrations that may suggest a water issue are reported to PGCPs and are reassessed after action items are complete.

3. Assessment Methods

ATI Industrial Hygienist Mr. Brian Chapman conducted the assessment on December 27, 2021, which consisted of a qualitative assessment via visual observations and through measuring temperature, relative humidity, carbon dioxide, and carbon monoxide using direct-reading instruments. He also conducted active air sampling for total viable and non-viable airborne fungal spores.

Temperature, relative humidity, carbon dioxide, and carbon monoxide were measured with a calibrated TSI Q-Trak 7575-X Indoor Air Quality Meter (serial number: 7575X1711006) with attached 982-probe (serial number: P17100007). ATI sends the Q-Trak and IAQ probe to TSI annually for service and calibration.

The total fungal spore samples were collected on ALLERGENCO-D spore trap cassettes (cassette lot number: 430; expiration date: July 2022) using a Buck BioAire sampling pump (serial number: B153524) calibrated to a flow rate of 15 liters of air per minute (lpm) using a Buck BioAire rotameter (serial number: 15484) affixed to a standard spore trap cassette. The rotameter is calibrated annually to a primary standard calibrator to ensure the appropriate $\pm 5\%$ accuracy for a secondary standard pump calibration device.

ATI relinquished all biological samples to AMA Analytical, Inc., (AMA) of Lanham, MD, for laboratory analysis, via direct drop-off. AMA analyzed the spore trap samples via direct microscopic examination per ASTM D7391. 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 laboratory analytical report is included in Appendix A.

ATI collected all samples between three-six feet from floor elevation, representing a typical breathing zone range, and away from air supply and air return diffusers, unless otherwise noted. ATI references ASHRAE Standard 62.1 and ASHRAE 55, along with any other applicable regulations or consensus standards, when interpreting IAQ results.

4. Visual Observations

While airborne mold and musty odors are contributing factors to many IAQ complaints, other sources of IAQ contaminants, such as pollen, dust, animal and pest dander, chemical exposures, atmospheric issues and even lighting issues can cause or contribute occupant discomfort or illness. Many of these factors can cause similar symptoms in some individuals or the combination of several or all of these factors can contribute to occupant complaints. The visual conditions observed during this assessment, along with the quantitative data, were used to support the conclusions in this report.

Table 1 lists the areas, conditions, observations, and other pertinent details related to this IAQ investigation.

Table 1: Visual Observations and Sampling Locations

Sample Location	December 27, 2021 - Observations
Outdoors	<ul style="list-style-type: none"> • Cloudy skies with rain in the near forecast. Outdoor temperatures averaged 39.7°F with relative humidity averaging 74.2% and SW winds at 2 MPH. • Outside parameters were measured in the front parking lot of the facility at approximately 8:45 AM.
A-215 (Cafeteria/Multipurpose Area)	<ul style="list-style-type: none"> • Area has approximately 3,840 SF of floor space with seven air-diffusers and five air-returns. • A kitchen is adjacent to the open space. • Space is also used for other purposes, such as plays or concerts. • Three entrances to the space with the main entrance to school sharing the same corridor as the cafeteria. If the school is under negative pressure, unfiltered contaminants (pollen, spores, etc.) can enter the space through the main corridor. • No concerns were found at the time of the survey.
A-201 (Main Office)	<ul style="list-style-type: none"> • Area is approximately 400 SF in size with adjacent spaces. • New overhead ceiling tiles and LED lighting throughout. • One wall convector unit. • Temperature is cooler than normal, but the facility was not opened at the time of the survey. This is typical for any commercial facility to be cooler in winter during off business hours. • No issues or concerns at the time of the survey
A-202 (Principal's Office)	<ul style="list-style-type: none"> • Area is 190 SF of floor space with an additional 81SF of space for a table and chairs. • Space is equipped with overhead air-diffusers and air-returns and also equipped with a wall unit. Also observed is a window AC unit. • Area has a private lavatory with no observed concerns. • Occupant has a Fellowes DX95US Air Purifier, which is equipped with a True HEPA filter (99.97%), and a charcoal prefilter. The Instrument should be on a regular changing filter interval by the owner of the instrument for proper air cleaning. Air instruments and humidifying/dehumidifying instruments can have a negative impact on the air if not properly maintained. Please refer to their owner's manuals for maintenance procedures. • No concerns found at the time of the survey.
A-210 (Library)	<ul style="list-style-type: none"> • Area is approximately 2400 SF in size with three wall convector units supplying reconditioned air. Additionally, there is a relief exhaust within the ceiling and windows along the one wall. Library has two adjacent rooms not included with the square footage of the space. • Two entrances to the space plus one passageway from the one adjacent room from another corridor. • No concerns at the time of the survey.
B-215 (Gymnasium)	<ul style="list-style-type: none"> • Area is a large occupied area and is equipped with two large air-diffusers for reconditioned air, and three air-returns, in addition with two relief exhaust fans. • Along the one wall there are 46 windows that open but are generally closed. • Area has wood floors and wood bleachers.

Sample Location	December 27, 2021 - Observations
	<ul style="list-style-type: none"> Two exits directly lead to the outdoors, while three entrances lead to interior corridors of the school. No concerns at the time of the survey.
Classroom C-202	<ul style="list-style-type: none"> Area has approximately 960 SF of floor space and is equipped with one wall unit for reconditioned air. Under the room's sink within the cabinet, a stain with possible fungal growth is under the C pipe. After the sink leak is corrected, consider applying an antimicrobial encapsulant to the wood to prevent additional growth. Windows running along the one wall of the perimeter classroom. No other observations were observed that would negatively impact the air during the survey.
A-205 (Health Unit)	<ul style="list-style-type: none"> Area is approximately 50 SF with two additional rooms adjacent to the space, each adjacent room is approximately 35 SF in size, excluding the lavatory per room. One wall convector unit and one smaller wall unit per adjacent room. No concerns at the time of the survey.
Classroom C-103	<ul style="list-style-type: none"> Area is approximately 900 SF with one wall unit for reconditioned air, and two air-returns within the two door entrances but were sealed by metal plates. The new air return is within the overhead ceiling near the one entrance to the building. Wall unit was continuously operating at the time of the survey. No concerns at the time of the survey.
C-109 Teacher's Lounge	<ul style="list-style-type: none"> Area is approximately 170 SF of floor space, with one overhead ceiling AHU. Return could not be found within the space, but the unit itself may pull air back into the system and exhaust it into the ceiling plenum. Area has two microwaves, one refrigerator, which is in poor physical condition but still operating, one two-tub sink, two vending machines and a copier machine. No concerns at the time of the survey. Area had trace dirt load, which is common.
Classroom A-102	<ul style="list-style-type: none"> Area is approximately 900 SF and is equipped with one wall unit and one air-return in the overhead ceiling. AC was on and fan was operating at the time of the survey. There are two different doorways to enter through the room. No concerns during the survey.

5. Indoor Direct Reading Air Parameters

5.1. Temperature

The American Society of Heating Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 55, *Thermal Environmental Conditions for Human Occupancy*, outlines recommendations for year-round acceptable temperatures in an office environment, where a majority of occupants wearing clothing for the season 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 most of the building occupants.

The 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 this assessment are summarized in Table 2. The average indoor temperatures ranged from 61.0°F to 71.0°F, which in some locations is less than ASHRAE's recommended thermal range for personal comfort. However, the school was not fully open during the survey, and thus, does not pose a concern.

5.2. Relative Humidity

Relative humidity is a key factor for mold growth. Mold has the potential of growing on suitable building material surfaces when relative humidity is greater than 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 cool surfaces. Relative humidity less than 30% may result in drying of the occupants' mucous membranes and skin, which can lead to sinusitis, respiratory discomfort, increased risk of respiratory infections and allergic reactions, and even nasal bleeding. The measured relative humidity from each sampled location is in Table 2. The relative humidity in all sampled areas was less than 65%, but some of the areas did fall below 30%, which does not promote mold growth but can cause possible dryness and discomfort for occupants. This is also common for a facility that is not equipped with a humidifying system within the HVAC design.

5.3. Carbon Dioxide

The carbon dioxide concentration in an occupied building is often used as a surrogate contaminant to gauge the ventilation system's efficiency at providing enough fresh air to the space based on the number of individuals in the space. Carbon dioxide is a by-product of human respiration and does not pose an acute health hazard in typical commercial buildings, but a buildup of carbon dioxide from human respiration may suggest that the ventilation system is not providing enough fresh air to overcome the rate of occupant respiration. This can be from lack of outdoor air supplied to the space, or the space is beyond the occupancy limit of the ventilation system design. The logic is that if carbon dioxide can accumulate in the space over a single workday, then other, potentially more hazardous, contaminants may also accumulate in the space. Indoor air quality professionals rely on standards established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) when evaluating indoor concentrations of carbon dioxide. ASHRAE Standard 62.1 states that comfort criteria with respect to human bioeffluents (odors) are likely to be satisfied if the ventilation maintains an indoor carbon dioxide concentration to less than 700 parts per million (ppm) greater than the outdoor air concentration.

The carbon dioxide concentration measured in each sampled location is summarized in Table 2. The average outdoor carbon dioxide concentration on the day of the assessment was 369 ppm, which calculates to a maximum recommended indoor concentration of 1,069 ppm (369 ppm + 700 ppm). The average carbon dioxide concentration in the sampled locations ranged from 422 ppm to 513 ppm, which is less than the maximum recommended indoor concentrations for the day of the assessment.

5.4. 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. The EPA and ASHRAE (via ASHRAE Standard 62.1.2016) recommend that carbon monoxide concentration in office environments be maintained to less than 9 ppm. As indicated by the data in Table 2, carbon monoxide in all sampled locations was less than 9 ppm.

Table 2: Average Indoor Direct Reading Air Quality Parameters

Assessment: December 27, 2021				
Sample Location	Carbon Dioxide (ppm)	Temperature (°F)	Relative Humidity (%RH)	Carbon Monoxide (ppm)
Outdoors	369	39.5	74.0	0
A-215 (Cafeteria/Multipurpose)	441	70.0	48.0	0
A-201 (Main Office)	443	65.0	42.0	0
A-202 (Principal's Office)	447	64.0	45.0	0
A-210 (Library)	443	66.0	25.0	0
B-215 (Gymnasium)	422	63.0	31.0	0
Classroom C-202	513	65.0	35.0	0
A-205 (Health Unit)	453	65.0	33.0	0
Classroom C-103	464	71.0	27.0	0
C-109 Teacher's Lounge	490	71.0	25.0	0
Classroom A-102	439	62.0	27.0	0

6. Total Fungal Spore Trap Sampling Results and Discussion

The mold spore trap analytical results collected on December 27, 2021 and are presented in this report as spore counts per cubic meter of air (spores/m³). Total fungal spore trap counts include both viable spores that are able to reproduce and non-viable spores which are unable to reproduce. Spore trap results cannot differentiate mold from current activity or past mold growth; however, both viable and non-viable spores can cause allergic response in individuals who are allergic to mold.

There are currently no established exposure limits or regulations regarding safe mold spore concentrations. The generally accepted standard industry practice is to compare indoor mold concentrations in areas of concern with outdoor mold spore concentrations and use this quantitative data along with qualitative data such as visual observations to develop evidence supported conclusions. Indoor spaces without active or past mold growth typically have similar fungal types that were or are commonly identified outdoors and in similar ratios, but typically in much lesser magnitude. Conversely, the dominating presence of one or two fungal spore types identified indoors in much greater concentrations than the outdoor sample may suggest the mold spores originated indoors and there may be a source of indoor moisture accumulation. The presence of certain fungi indoors such as *Aspergillus*, *Penicillium*, *Cladosporium*, *Chaetomium*, and *Stachybotrys* in concentrations greater than outdoor concentrations are common in spaces that have or have had moisture or humidity issues; however, a minor presence of certain mold types indoors may also suggest insufficient housekeeping rather than ongoing water issues.

Mold can grow on any organic-based building material like wall boards, insulation, paper, or even accumulated dust on surfaces and in carpets, if sufficient moisture and temperature are provided. Fungi is typically found in all indoor environments from unfiltered outdoor air entering the space or carried in on people or objects brought in from the outdoors. Indoor fungal investigations typically focus on sources of water inside the building like air duct condensation, plumbing leaks or operational processes, sources of water intrusion from outside the building like roof or window leaks, and possibly insufficient housekeeping or air filtration.

The results suggest the indoor concentrations were generally favorable compared to the outdoor concentrations. The total ambient, outdoor spore concentration was 3,016 spores/m³, and all tested spaces had total spore concentrations less than the ambient total and less than 1,000 spores/m³. The highest total spore concentration was 780 spores/m³ in the Gymnasium. Every tested area except for the cafeteria had a detectable concentration of basidiospores, which are known haploids coming from the outdoors and not generated indoors for this region. When these are prevalent indoors in higher concentrations it is an indication the building is under negative pressure, and unfiltered air is entering the facility. This result can negatively impact the air quality and cause allergy-like symptoms to the occupants who are allergic to the pollens and molds coming from outside.

ATI observed possible fungal growth under the sink cabinet in Room C-202, directly under the C pipe, which if tested positive for microbial growth, it could still be viable and continue to grow. This can be corrected easily by applying an antimicrobial encapsulant after cleaning the area and making sure the surfaces are dry before applying the encapsulant.

The mold spore concentrations measured indoors were less than the outdoor spore concentrations and in similar prevalence ratios; therefore, the results do not suggest indoor mold spore amplification or growth.

The official laboratory reports with spore trap samples collected on December 27, 2021, are presented in Appendix A.

7. Summary of Findings

1. It was brought to ATI's attention the school is under an interior renovation since 2020. Renovations consisting of new drop ceiling and LED lighting, removal and replacement of interior walls, removal and replacement of interior floor and wall coverings, i.e., vinyl floor tiling, paint, ceramic tiling, and a new HVAC system with convector wall units for each classroom. The units are controlled (temperature for heat and air conditioning, and on and off) within the occupied spaces throughout the facility, which feeds from the main HVAC system inside the boiler room area.
2. ATI observed possible fungal growth under the sink cabinet in Room C-202, directly under the C pipe, which should be appropriately cleaned, sterilized and encapsulated following EPA's published guidelines.
3. ATI observed a possible missing air-return for the teacher's lounge, Room A-102, which could lead to poor air circulation when at or exceeding high occupancy, followed by poor air quality if the door where to stay closed when occupied. Confirm with the building engineers if the ceiling AHU has the ability to draw air back into the system and exhausting it into a return duct or ceiling plenum.
4. The average temperature in several locations were less than the ASHRAE recommended winter occupancy comfort range of 68-75°F. However, the school was not occupied at the time of the survey, and the HVAC may have been operating on a more efficient mode. The rooms with the operating wall units at the time of the survey were within the recommended winter occupant comfort range.
5. The average relative humidity in all indoor sampled locations was less than the ASHRAE recommended maximum humidity of 65%. Most sampled locations were also less than 30%, which can cause respiratory discomfort in occupants.
6. The average carbon dioxide concentration in all indoor locations was less than the maximum recommended indoor concentration of 1,069 ppm for the day of the assessment.

7. The average carbon monoxide concentrations in all areas was less than the EPA and ASHRAE recommended limit of 9 ppm.
8. The measured fungal concentrations within the tested areas were common species and quantity for the Mid-Atlantic region and for the outside conditions involving the time of day, and weather conditions. Every tested area but the cafeteria had basidiospores on the samples, which are known haploids coming from the outdoors and not generated indoors for this region.
9. The spore trap sampling results suggest that significant indoor amplification of mold was not present. While concentrations of *Smuts/Periconia/Myxomycetes*, *Epicoccum* and *Nigrospora* detected in some of the tested locations exceeded the ambient sample, the observed concentrations of these spores indoors do not suggest noteworthy amplification.

Thank you for the opportunity to provide Industrial Hygiene services. Should you have any questions or concerns involving this report, please contact us at your earliest convenience at (202) 368-1376.



4221 Forbes Boulevard · Suite 250
Lanham, Maryland 20706
T: 202.558.7487 | <http://www.atimd.com>

Appendix A: Laboratory Documents

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody: 631826
Client: ATI, Inc.
Address: 9220 Rumsey Road
Suite 100
Columbia, MD 21045
Attention: Courtney McCall

Job Name: Bowie HS Annex
Job Location: 3021 Belair, Bowie MD
Job Number: 21-699
P.O. Number: Not Provided

Date Submitted: 12/27/2021
Person Submitting: Brian Chapman
Date Analyzed: 01/04/2022
Report Date: 01/04/2022

AMA Sample # 631826-1
Client ID 4303682-21-699-01
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 2
Location Outdoors

AMA Sample # 631826-2
Client ID 4303683-21-699-02
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 0
Sample Condition Acceptable
Debris Loading 1
Location Field Blank

AMA Sample # 631826-3
Client ID 4303677-21-699-03
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 3
Location A-215 Cafeteria

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores	2	15	52	104	3.4%
Basidiospores	48	15	52	2496	82.8%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	52	52	1.7%
Curvularia					
Penicillium / Aspergillus	7	15	52	364	12.1%
Smuts/Periconia/Myxomycetes	Present	15	52	<52	
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora					
Other Colorless					

	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					
Epicoccum					
Nigrospora					
Other Colorless					

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores					
Basidiospores					
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	52	52	100%
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora					
Other Colorless					

Hyphal Fragments*
Total Raw Ct: 58 **Total sp/m³:** 3016

Comments

Hyphal Fragments*
Total Raw Ct: 0 **Total sp/m³:** 0

Comments
No mold spores observed.

Hyphal Fragments*
Total Raw Ct: 1 **Total sp/m³:** 52

Comments

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody: 631826
Client: ATI, Inc.
Address: 9220 Rumsey Road
Suite 100
Columbia, MD 21045
Attention: Courtney McCall

Job Name: Bowie HS Annex
Job Location: 3021 Belair, Bowie MD
Job Number: 21-699
P.O. Number: Not Provided

Date Submitted: 12/27/2021
Person Submitting: Brian Chapman
Date Analyzed: 01/04/2022
Report Date: 01/04/2022

AMA Sample # 631826-4
Client ID 4303679-21-699-04
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 2
Location A-201 Main Office

AMA Sample # 631826-5
Client ID 4303681-21-699-05
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 2
Location A-202 Principal

AMA Sample # 631826-6
Client ID 4303684-21-699-06
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 2
Location A-210 Library

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores	1	15	52	52	20%
Basidiospores	4	15	52	208	80%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes	Present	15	52	<52	
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	5		Total sp/m³:	260	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores					
Basidiospores	2	15	52	104	28.6%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	1	15	52	52	14.3%
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes	2	15	52	104	28.6%
Stachybotrys/Memnoniella					
Ulocladium					
Unknown	1	15	52	52	14.3%
Epicoccum	1	15	52	52	14.3%
Nigrospora					
Other Colorless					
Hyphal Fragments*	1	15	52	52	14.3%
Total Raw Ct:	7		Total sp/m³:	364	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores					
Basidiospores	2	15	52	104	50%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	1	15	52	52	25%
Smuts/Periconia/Myxomycetes	Present	15	52	<52	
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora	1	15	52	52	25%
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	4		Total sp/m³:	208	

Comments



CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody: 631826
Client: ATI, Inc.
Address: 9220 Rumsey Road
 Suite 100
 Columbia, MD 21045
Attention: Courtney McCall

Job Name: Bowie HS Annex
Job Location: 3021 Belair, Bowie MD
Job Number: 21-699
P.O. Number: Not Provided

Date Submitted: 12/27/2021
Person Submitting: Brian Chapman
Date Analyzed: 01/04/2022
Report Date: 01/04/2022

AMA Sample # 631826-7
Client ID 4303692-21-699-07
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 1
Location B-215 Gym

AMA Sample # 631826-8
Client ID 4303697-21-699-08
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 2
Location C-202

AMA Sample # 631826-9
Client ID 4303687-21-699-09
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 1
Location A-205 Health Unit

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores					
Basidiospores	10	15	52	520	66.7%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	2	15	52	104	13.3%
Smuts/Periconia/Myxomycetes	2	15	52	104	13.3%
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora					
Other Colorless	1	15	52	52	6.7%
Hyphal Fragments*					
Total Raw Ct:	15		Total sp/m³:	780	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores					
Basidiospores	5	15	52	260	62.5%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	Present	15	52	<52	
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora					
Other Colorless	3	15	52	156	37.5%
Hyphal Fragments*	Present	15	52	<52	
Total Raw Ct:	8		Total sp/m³:	416	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores					
Basidiospores	2	15	52	104	40%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	3	15	52	156	60%
Curvularia					
Penicillium / Aspergillus	Present	15	52	<52	
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora					
Other Colorless					
Hyphal Fragments*	1	15	52	52	20%
Total Raw Ct:	5		Total sp/m³:	260	

Comments

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody: 631826
Client: ATI, Inc.
Address: 9220 Rumsey Road
 Suite 100
 Columbia, MD 21045
Attention: Courtney McCall

Job Name: Bowie HS Annex
Job Location: 3021 Belair, Bowie MD
Job Number: 21-699
P.O. Number: Not Provided

Date Submitted: 12/27/2021
Person Submitting: Brian Chapman
Date Analyzed: 01/04/2022
Report Date: 01/04/2022

AMA Sample # 631826-10
Client ID 4303693-21-699-10
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 2
Location C-103

AMA Sample # 631826-11
Client ID 4303700-21-699-11
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 1
Location C-109

AMA Sample # 631826-12
Client ID 4303691-21-699-12
Analyst ID TLW
Collection Apparatus Allergenco
Sample Volume (L) 75
Sample Condition Acceptable
Debris Loading 2
Location A-102

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores					
Basidiospores	1	15	52	52	33.3%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus	2	15	52	104	66.7%
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	3		Total sp/m³:	156	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores					
Basidiospores	5	15	52	260	100%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium					
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora					
Other Colorless					
Hyphal Fragments*					
Total Raw Ct:	5		Total sp/m³:	260	

Comments

	Raw Ct	Trav/Flds	A.S.	sp/m ³	%
Alternaria					
Ascospores					
Basidiospores	1	15	52	52	20%
Bipolaris/Drechslera/Helm.					
Chaetomium					
Cladosporium	3	15	52	156	60%
Curvularia					
Penicillium / Aspergillus					
Smuts/Periconia/Myxomycetes					
Stachybotrys/Memnoniella					
Ulocladium					
Unknown					
Epicoccum					
Nigrospora					
Other Colorless	1	15	52	52	20%
Hyphal Fragments*					
Total Raw Ct:	5		Total sp/m³:	260	

Comments

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody: 631826
Client: ATI, Inc.
Address: 9220 Rumsey Road
 Suite 100
 Columbia, MD 21045
Attention: Courtney McCall

Job Name: Bowie HS Annex
Job Location: 3021 Belair, Bowie MD
Job Number: 21-699
P.O. Number: Not Provided

Date Submitted: 12/27/2021
Person Submitting: Brian Chapman
Date Analyzed: 01/04/2022
Report Date: 01/04/2022

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.



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 evaluation 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.

CERTIFICATE OF ANALYSIS

ASTM D7391-09 Spore Trap Analysis Report

Chain of Custody: 631826
Client: ATI, Inc.
Address: 9220 Rumsey Road
Suite 100
Columbia, MD 21045
Attention: Courtney McCall

Job Name: Bowie HS Annex
Job Location: 3021 Belair, Bowie MD
Job Number: 21-699
P.O. Number: Not Provided

Date Submitted: 12/27/2021
Person Submitting: Brian Chapman
Date Analyzed: 01/04/2022
Report Date: 01/04/2022

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/m3 concentration 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

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations, and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client.

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 number 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. Basidiospores 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 occasionally 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.

Epicoccum

Epicoccum is a cosmopolitan fungus that is often found growing outside in soil, plant litter, decaying plants, and damaged plant tissue. Indoors, it can be found growing on a variety of building materials including paper and textiles. Colonies have a rapid growth rate with cottony texture, initially yellow or orange becoming brown to black in color. Conidiophores or fruiting bodies produce dense masses where conidia (spores) arise. Spores are round to pear-shaped, smooth to warty, brown to black in color and muriform (partitioned in both directions, like a soccer ball). Health Effects: This mold can act as a potential allergen. Some people may experience hay fever and or asthma. This mold has not been linked to any human or animal infection.

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.

MOLD SPORE DESCRIPTIONS

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 marneffeii (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 naturally 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. marneffeii) 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, flowering 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 (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

(Please Refer To This Number For Inquires)

631826

CHAIN OF CUSTODY

Mailing/Billing Information:

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

Submittal Information:

- 1. Job Name: Bowie HS Annex
- 2. Job Location: 3021 Belair, Bowie, MD
- 3. Job #: 21-699 P.O. #: _____
- 4. Contact Person: Courtney McCall @ phone # (703) 399-5423
- 5. Submitted by: Brian Chapman Signature: _____

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

AFTER HOURS (must be pre-scheduled) <input type="checkbox"/> Immediate Date Due: _____ <input type="checkbox"/> 24 Hours Time Due: _____ Comments: _____	NORMAL BUSINESS HOURS <input type="checkbox"/> Immediate <input type="checkbox"/> Next Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input checked="" type="checkbox"/> 5 Day + <u>1/4/22</u> Date Due: <u>01/03/22</u> <input type="checkbox"/> Results Required By Noon (Every Attempt Will Be Made to Accomodate)	REPORT TO: <input checked="" type="checkbox"/> Include COC/Field Data Sheets with Report <input checked="" type="checkbox"/> Email: <u>courtney@atiinc.com Brian@atiinc.com</u> <input type="checkbox"/> Fax: _____ <input type="checkbox"/> 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)

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 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 NUMBER	SAMPLE LOCATION/IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS											CLIENT CONTACT										
					TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	(LABORATORY STAFF ONLY)									
4303682 - 21-699-01	Outdoors	8:45	12/27/21	75L						X	X													Date/Time:	Contact:	By:
4303683 - 21-699-02	Field Blank			n/a						X	X															
4303677 - 21-699-03	A-215 Cafeteria	8:56 am		75L						X	X															
4303687 - 21-699-04	A-201 main office	9:04		75L						X	X															
4303681 - 21-699-05	A-202 Principal	9:12	12/27/21	75L						X	X															
4303684 - 21-699-06	A-210 Library			75L						X	X															
4303692 - 21-699-07	B-215 Gym			75L						X	X															
4303697 - 21-699-08	C-202			75L						X	X															
4303687 - 21-699-09	A-205 Health Unit		12/27/21	75L						X	X															
4303693 - 21-699-10	C-103			75L						X	X															
4303205 - 21-699-11	C-109			75L						X	X															
4303691 - 21-699-12	A-102			75L						X	X															

LABORATORY STAFF ONLY: (CUSTODY)

- 1. Date/Time RCVD: 12/27/21 @ _____ Via: DIO By (Print): _____ Sign: _____
- 2. Date/Time Analyzed: _____ / _____ / _____ @ _____ By (Print): _____ Sign: _____
- 3. Results Reported To: _____ Via: _____ Date: _____ / _____ / _____ Time: _____ Initials: _____
- 4. Comments: _____



AIHA Laboratory Accreditation Programs, LLC

acknowledges that

AMA Analytical Services, Inc.

4475 Forbes Boulevard, Lanham, MD 20706

Laboratory ID: LAP-100470

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA LAP), LLC accreditation to the ISO/IEC 17025:2017 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

<input checked="" type="checkbox"/>	INDUSTRIAL HYGIENE	Accreditation Expires: January 01, 2023
<input checked="" type="checkbox"/>	ENVIRONMENTAL LEAD	Accreditation Expires: January 01, 2023
<input checked="" type="checkbox"/>	ENVIRONMENTAL MICROBIOLOGY	Accreditation Expires: January 01, 2023
<input type="checkbox"/>	FOOD	Accreditation Expires:
<input type="checkbox"/>	UNIQUE SCOPES	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2017 and AIHA LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Cheryl O Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC



AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

AMA Analytical Services, Inc.

4475 Forbes Boulevard, Lanham, MD 20706

Laboratory ID: LAP-100470

Issue Date: 07/29/2021

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Environmental Microbiology Laboratory Accreditation Program (EMLAP)

Initial Accreditation Date: 08/01/2007

EMLAP Scope Category	Field of Testing (FOT)	Component, parameter or characteristic tested	Method	Method Description <i>(for internal methods only)</i>
Fungal	Air - Direct Examination	Spore Trap	SOP 4.2	-
Fungal	Bulk - Direct Examination	Bulk	SOP 903	Tech Guide Section 15 & Series 900 SOPs
Fungal	Bulk - Direct Examination	Bulk	SOP 904	Tech Guide Section 15 & Series 900 SOPs
Fungal	Surface - Direct Examination	Tape Lifts, Swabs	SOP 904	Tech Guide Section 15 & Series 900 SOPs
Fungal	Surface - Direct Examination	Tape Lifts, Swabs	SOP 906	Tech Guide Section 15 & Series 900 SOPs

A complete listing of currently accredited EMLAP laboratories is available on the AIHA LAP, LLC website at: <http://www.aihaaccreditedlabs.org>



4221 Forbes Boulevard · Suite 250
Lanham, Maryland 20706
T: 202.558.7487 | <http://www.atimd.com>

Appendix B: Calibration Certifications



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			MODEL	982
TEMPERATURE	75.4 (24.1)	°F (°C)	SERIAL NUMBER	P17100007
RELATIVE HUMIDITY	39	%RH		
BAROMETRIC PRESSURE	29.24 (990.2)	inHg (hPa)		

<input checked="" type="checkbox"/> AS LEFT	<input checked="" type="checkbox"/> IN TOLERANCE
<input type="checkbox"/> AS FOUND	<input type="checkbox"/> OUT OF TOLERANCE

- CALIBRATION VERIFICATION RESULTS -

HUMIDITY VERIFICATION				SYSTEM H-120				Unit: %RH
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE	
1	10.0	8.0	7.0~13.0	4	70.0	70.2	67.0~73.0	
2	30.0	29.3	27.0~33.0	5	90.0	90.2	87.0~93.0	
3	50.0	50.1	47.0~53.0					

TEMPERATURE VERIFICATION				SYSTEM T-101				Unit: °F (°C)
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE	
1	32.1 (0.0)	31.8 (-0.1)	31.1~33.1 (-0.5~0.6)	2	139.8 (59.9)	140.2 (60.1)	138.8~140.8 (59.4~60.5)	

CO2 GAS VERIFICATION				SYSTEM G-100				Unit: ppm
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE	
1	0	0	0~50	4	3000	3007	2910~3090	
2	500	487	450~550	5	5010	5002	4860~5160	
3	1000	993	950~1050					

CO GAS VERIFICATION				SYSTEM G-100				Unit: ppm
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE	
1	35	36	32~38	2	100	99	97~103	

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
Humidity	E002008	01-25-21	07-31-21	Temperature	E010657	02-02-21	02-28-22
Temperature	E010658	02-02-21	02-28-22	Temperature	E010655	02-02-21	02-28-22
Flow	E005600	08-27-20	08-31-21	Flow	E003981	06-04-20	06-30-21
5000 CO2	149267	10-13-20	10-14-28	200 CO	CC742265	03-16-21	03-17-29
N2	T326137	04-16-21	04-16-29	Air	CT314114	12-10-20	12-10-28
Flow	E003525	04-14-21	04-30-22	Flow	E005595	08-27-20	08-31-21
20 C4H8	EB0082263	09-06-19	09-06-22				

Chimosa Vuc
CALIBRATED

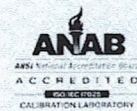
June 16, 2021
DATE

Doc. ID: CERT_GEN_WCC



CERTIFICATE OF CALIBRATION

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



CUSTOMER NAME:
ATI INC
C/O BRIAN CHAPMAN
18246 SOUTHAMPTON DR
LEWES DE 19958
USA

CERTIFICATE NUMBER	300350178
DATE OF CALIBRATION	15 JUNE, 2021
PAGE	1 OF 1

ENVIRONMENT CONDITIONS		
TEMPERATURE	73.45 (23.0)	°F (°C)
RELATIVE HUMIDITY	38	%RH
BAROMETRIC PRESSURE	29.23 (989.8)	inHg (hPa)

MODEL	7575-X
SERIAL NUMBER	7575X1711006

<input checked="" type="checkbox"/> AS LEFT	<input checked="" type="checkbox"/> IN TOLERANCE
<input type="checkbox"/> AS FOUND	<input type="checkbox"/> OUT OF TOLERANCE

- CALIBRATION VERIFICATION RESULTS -

THERMO COUPLE [^] †				SYSTEM PRESSURE01-02				Unit: °F (°C)
METHOD USED: 10000006236								
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE	
1	71.8 (22.1)	71.9 (22.2)	69.8-73.8 (21.0-23.2)					

BAROMETRIC PRESSURE				SYSTEM PRESSURE01-02				Unit: inHg (hPa)
METHOD USED: 10000006236								
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE	
1	29.37 (994.6)	29.36 (994.2)	28.78-29.96 (974.6-1014.6)					

[^] Circuit portion of temperature measurement only, not including probe.
[†] Excluded from ISO 17025 accreditation.

TSI Incorporated does hereby certify that the above described instrument conforms to the manufacturer's specifications (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to the International System of Units (SI) through the National Institute of Standards and Technology within the limitations of NIST's calibration services or have been derived from accepted values of natural physical constants or have been derived by the ratio type of self-calibration techniques. TSI is registered to ISO 9001:2015. TSI is accredited to ISO 17025:2017 by ANAB Certificate Number AC-2850.

The aforementioned uncertainty values represent expanded uncertainty and are based on a standard uncertainty multiplied by a coverage factor k=2 providing a confidence level of approximately 95%. This report may not be reproduced unless permission is obtained in writing from the TSI calibration service department issuing this report. The unit is found to have passed when the readings are within the specification limits of the device as presented as the allowable range stated with each measurement above. The customer shall assess the results and uncertainty in order to determine if the results meet their needs.

<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal</u>	<u>Cal Due</u>	<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal</u>	<u>Cal Due</u>
Temperature	E010623	02-19-21	02-28-22	Pressure	E005254	10-27-20	10-31-21
Pressure	E003982	01-18-21	07-31-21	DC Voltage	E003493	06-08-21	06-30-22

Performed By	Signature	Approved By	Signature	Date Issued
	<i>Ka Vang</i>		<i>Holly A. Freby</i>	6/15/2021

Doc. ID: CERT_GEN_WCC
END OF REPORT

Certificate of Calibration

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

Serial number: R15484
Date Calibrated: 10-13-21

Calibration Due Date: 10-13-22

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 $\pm 5\%$ of the actual flow rate.

AMBIENT CONDITIONS: Temperature $74 \pm 3^{\circ}$ F Relative Humidity $50 \pm 10\%$

Description	MFR.	Model	Serial #
Primary Calibrator	A.P. Buck Inc.	M30B	<input type="checkbox"/> A40020 <input checked="" type="checkbox"/> A40021

QA Approval By: Fernando

Information contained in this document should not be reproduced in any form without the written consent of A.P. Buck, Inc. It is for reference only and cannot be used as a form of endorsement by any private or governmental regulatory body.

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

