PO Box 385 Oceanville, NJ 08231-0385 E-Mail ahera@comcast.net

Fax 609.652.1140 Phone 609.652.1833

# INDOOR AIR QUALITY EVALUATION REPORT

# **Annual Assessment**

South Mountain Elementary School 444 West S. Orange Avenue South Orange, NJ 07079

Prepared for

South Orange/Maplewood School District 525 Academy Street Maplewood, NJ 07040 Attn: Mr. Thomas Giglio

> <u>Survey dates</u>: <u>Inspection performed by:</u>

03/10/2022 Mr. Eric Clarkson Section I Introduction

AHERA Consultants Inc. was retained by the South Orange / Maplewood School District to conduct an annual indoor air quality (IAQ) assessment at the South Mountain Elementary School located in South Orange, New Jersey. This assessment was performed at the request of Mr. Thomas Giglio, Facilities Director with the South Orange Maplewood School District.

Section II Physical Inspection

## **Existing Conditions**

On March 10, 2022, I Eric Clarkson of AHERA Consultants, Inc. arrived at the South Mountain Elementary School. The custodial staff provided access to various areas within the building.

Testing and visual inspection of random areas was performed. HVAC systems within this facility consist of boilers, radiators, unit ventilators and window air conditioning units. Periodic maintenance is performed on the system(s).

Based on my observations I determined that ambient air sampling to assess current air quality conditions with respect to temperature, humidity, carbon dioxide CO2, carbon monoxide CO, mold screening and airborne asbestos in random locations inside the building would be appropriate.

Section III Sampling Procedures

- ♦ Indoor air quality measurements for temperature, humidity, CO² and CO were taken utilizing a Model 7545 IAQ-Calc Indoor Air Quality Meter. (See IAQ Investigation Logs provided within this report)
- Asbestos air sampling was conducted utilizing TEM sampling media and a high-volume air sampling pump calibrated to 10 LPM. Testing was conducted in the 1<sup>st</sup> floor hallway.
- Air sampling for airborne fungal bioaerosols was performed utilizing Air-O-Cell Cassettes. 150 liters of air was drawn through each sample. The sampling media was submitted to EMSL Analytical Laboratories in Piscataway, NJ for analysis. Air samples were analyzed within a 72-hour turnaround period.

Section IV Testing Results



#### ANALYSIS OF FUNGAL SPORES & PARTICULATES BY OPTICAL MICROSCOPY: AIR-O-CELL Cassette

SAMPLE ID #	SAMPLE LOCATION	PARTICLE ID	COUNT/ m3
		Aspergillus/Penicillium	100
		Basidiospores	420
		Cladosporium	7
SM-01	1 <sup>st</sup> floor hallway	Myxomycetes	7
		Scopulariopsis/Microascus	20
		Triadelphia	10
		Total Fungi	564
		Ascospores	20
		Aspergillus/Penicillium	90
		Basidiospores	330
SM-02	Outdoor Control Sample	Cladosporium	1800
	·	Myxomycetes	20
		Pestalotia	20
		Total Fungi	2280

**Results:** Concentrations of indoor fungal spores were comparable to and lower than the outdoor control sample with respect to the total counts of fungal structures per cubic meter of air (FS/m³). No visible active mold growth was observed at the time of this assessment.

♦ Asbestos Air Sampling Results	March 10, 2022
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#### Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM)

SAMPLE ID #	SAMPLE LOCATION	Asbestos Type(s)	Asbestos Concentration (S/CC <sup>2</sup> )
SM-01	1st Floor hallway	None Detected	<.0044

Results: Sample was "none detected" for asbestos structures.

Section V	Interpretation of Results
0001.0	into protation or recently

At this time there are no governmental standards regarding Indoor Air Quality. The Occupational Safety and Health Association (OSHA) and the National Institute of Occupational Safety and Health (NIOSH), as well as other occupational health related associations, have not established permissible exposure levels (PELs), recommended exposure limits (RELs), or other limit values for aeroallergens. (See EMSL Expanded Fungal Report) provided herein.

Most of the fungi detected in typical indoor investigations are considered common to both indoor and outdoor environments. These include species that belong to the genera Cladosporium, Aspergillus, Penicillium, Alternaria, Basidiospores and others. False negative and false positive data are possible. However, it is generally accepted in the "indoor air quality" industry that indoor fungal growth is undesirable and may necessitate removal or other appropriate remedial actions.

No remedial project should be based solely on data obtained from culturable fungal bioaerosols to represent a threshold value having a medical or health significance with respect to exposure, nor is it necessarily representative of an unacceptable indoor environment. Rather, it is intended to be a "reactionary threshold" to incite further investigation as to the cause(s) of what is considered to be an above average concentration for culturable indoor bioaerosols.



Under the Public Employees Occupational Safety and Health Program there is currently an indoor air quality standard for the state of New Jersey (NJAC 12:100-13). Additionally, there are recommendations under ASHRAE "The American Society of Heating, Refrigeration, and Air Conditioning Engineers for the Indoor Environment.

Under NJAC 12:100-13 a range of 68 to 79 degrees Fahrenheit is the desired temperature range to maintain with Carbon Dioxide (CO<sup>2</sup>) not exceeding 1000 ppm. If Carbon Dioxide (CO<sup>2</sup>) exceeds 1000 PPM the HVAC system should be evaluated for proper operation.

ASHRAE recommends that a relative humidity between 30% and 60% are acceptable, readings in excess of 70% is considered a friendly environment to microorganisms such as mold.

Carbon Monoxide (CO) levels based on OSHA limits long-term workplace exposure levels to 50 ppm over an 8-hour time weighted average. The Threshold Limit Value or TLV for carbon monoxide is 25 ppm.

#### Section VI

## **Observations/Recommended Response Actions**

#### **Observations:**

Results of the air testing conducted during this assessment did not indicate abnormal or exceptional concentrations of airborne fungal bioaerosols at the time of testing. Relative humidity throughout the building was well below the recommended 30% at the time of testing indicating very dry conditions. The temperature on the 2<sup>nd</sup> floor of the facility was slightly elevated also. Carbon dioxide and carbon monoxide levels were both within acceptable ranges.

Sampling results for airborne asbestos fibers were none detected.

#### **Recommendations:**

Continue to monitor relative humidity (RH) within the building during different times of the year. RH is typically lower during the winter months due to the heating season. Maintain temperatures between the desired range of 68 and 79 degrees.

Solutions to moderate the temperature to within acceptable limits should be explored.

To prevent creating environments that would promote mold proliferation all sources of excessive moisture/water infiltration should be identified, controlled and/or eliminated when/if they occur.

Finally, increasing fresh air exchanges within interior spaces should help ameliorate and/or maintain acceptable indoor air quality. Proper cleaning procedures will help eliminate dirt/dust & fungal spore accumulations as well.

Maintain all asbestos containing materials in an intact condition and do not disturb.

#### **ATTACHMENTS:**

IAQ Investigation Logs - (4 Pages)
Asbestos Fiber Analysis Report (1 Page)
EMSL Expanded Fungal Assessment Report - (14 Pages)



Test ID:	South Mountai	n Elementary School
Model Number:	IAQ Calc 7545	
Serial Number:	T75451321002	
Test ID:	5	
Test Abbreviation:	Test 005	
Start Date:	3/10/2022	
Start Time:	16:18:24	
Duration (dd:hh:mm:ss):	0:00:02:33	
Log Interval (mm:ss):	0:05	
Number of points:	5	
Notes:	Test 005	



Statistics	Channel:	CO2 - Carbon Dioxide	T - Temperature	H - Humidity	CO - Carbon Monoxide
	Units:	ppm	deg F	%rh	ppm
	Average:	550	74.4	19	4.9
	Minimum:	521	73.1	17.3	4.7
	Time of Minimum:	16:20:57	16:19:46	16:20:57	16:19:05
	Date of Minimum:	3/10/2022	3/10/2022	3/10/2022	3/10/2022
	Maximum:	563	75.7	20.4	5.3
	Time of Maximum:	16:19:05	16:20:57	16:19:46	16:20:21
	Date of Maximum:	3/10/2022	3/10/2022	3/10/2022	3/10/2022

Calibration	Meter:	6/2/2021			
Calibration	Sensor:	CO2 - Carbon Dioxide	T-Temperature	H-Humidity	CO - Carbon Monoxide
-	Cal. Date	6/2/2021	6/2/2021	6/2/2021	6/2/2021

Date	Time	CO2 - Carbon Dioxide	T-Temperature	H-Humidity	CO - Carbon Monoxide
MM/DD/YYYY	hh:mm:ss	ppm	deg F	%rh	ppm
3/10/2022	16:18:29	552	73.6	20.2	4.9
3/10/2022	16:19:05	563	74.6	18.8	4.7
3/10/2022	16:19:46	550	73.1	20.4	5
3/10/2022	16:20:21	562	74.9	18.4	5.3
3/10/2022	16:20:57	521	75.7	17.3	4.8

Test ID:	South Mountai	n Elementary School
Model Number:	IAQ Calc 7545	
Serial Number:	T75451321002	
Test ID:	6	
Test Abbreviation:	Test 006	
Start Date:	3/10/2022	
Start Time:	16:23:36	
Duration (dd:hh:mm:ss):	0:00:01:44	
Log Interval (mm:ss):	0:05	
Number of points:	5	
Notes:	Test 006	



Statistics	Channel:	CO2 - Carbon Dioxide	T - Temperature	H - Humidity	CO - Carbon Monoxide
	Units:	ppm	deg F	%rh	ppm
	Average:	475	80.7	16.7	5
	Minimum:	466	79.6	15.6	4.6
	Time of Minimum:	16:24:34	16:23:41	16:25:20	16:24:04
	Date of Minimum:	3/10/2022	3/10/2022	3/10/2022	3/10/2022
	Maximum:	497	81.2	18.1	5.3
	Time of Maximum:	16:24:51	16:25:20	16:24:51	16:25:20
	Date of Maximum:	3/10/2022	3/10/2022	3/10/2022	3/10/2022

Calibration	Meter:	6/2/2021			
Calibration	Sensor:	CO2 - Carbon Dioxide	T-Temperature	H-Humidity	CO - Carbon Monoxide
-	Cal. Date	6/2/2021	6/2/2021	6/2/2021	6/2/2021

Date	Time	CO2 - Carbon Dioxide	T-Temperature	H-Humidity	CO - Carbon Monoxide
MM/DD/YYYY	hh:mm:ss	ppm	deg F	%rh	ppm
3/10/2022	16:23:41	469	79.6	17.2	5.3
3/10/2022	16:24:04	471	80.5	16.6	4.6
3/10/2022	16:24:34	466	81.1	15.9	4.8
3/10/2022	16:24:51	497	81	18.1	5
3/10/2022	16:25:20	470	81.2	15.6	5.3

Test ID:	South Mountai	n Elementary School
Model Number:	IAQ Calc 7545	
Serial Number:	T75451321002	
Test ID:	7	
Test Abbreviation:	Test 007	
Start Date:	3/10/2022	
Start Time:	16:32:06	
Duration (dd:hh:mm:ss):	0:00:01:28	
Log Interval (mm:ss):	0:05	
Number of points:	5	
Notes:	Test 007	



Statistics	Channel:	CO2 - Carbon Dioxide	T - Temperature	H - Humidity	CO - Carbon Monoxide
	Units:	ppm	deg F	%rh	ppm
	Average:	529	77.4	16.8	5.3
	Minimum:	510	77.1	16.5	5.1
	Time of Minimum:	16:33:34	16:32:11	16:33:20	16:32:23
	Date of Minimum:	3/10/2022	3/10/2022	3/10/2022	3/10/2022
	Maximum:	568	568 78 17.1		5.3
	Time of Maximum:	16:32:11	16:33:34	16:32:23	16:33:34
	Date of Maximum:	3/10/2022	3/10/2022	3/10/2022	3/10/2022

Calibration	Meter:	6/2/2021			
Calibration	Sensor:	CO2 - Carbon Dioxide	T-Temperature	H-Humidity	CO - Carbon Monoxide
	Cal. Date	6/2/2021	6/2/2021	6/2/2021	6/2/2021

Date	Time	CO2 - Carbon Dioxide	T-Temperature	H-Humidity	CO - Carbon Monoxide
MM/DD/YYYY	hh:mm:ss	ppm	deg F	%rh	ppm
3/10/2022	16:32:11	568	77.1	17	5.3
3/10/2022	16:32:23	536	77.3	17.1	5.1
3/10/2022	16:32:40	520	77.4	16.8	5.3
3/10/2022	16:33:20	510	77.5	16.5	5.3
3/10/2022	16:33:34	510	78	16.8	5.3

Test ID:	South Mountai	n Elementary School
Model Number:	IAQ Calc 7545	
Serial Number:	T75451321002	
Test ID:	8	
Test Abbreviation:	Test 008	
Start Date:	3/10/2022	
Start Time:	16:37:17	
Duration (dd:hh:mm:ss):	0:00:01:03	
Log Interval (mm:ss):	0:05	
Number of points:	5	
Notes:	Test 008	



Statistics	Channel:	CO2 - Carbon Dioxide	T - Temperature	H - Humidity	CO - Carbon Monoxide
	Units:	ppm	deg F	%rh	ppm
	Average:	484	50	36	4.7
	Minimum:	479	49.4	34.7	4.4
	Time of Minimum:	16:37:22	16:38:20	16:37:22	16:38:20
	Date of Minimum:	3/10/2022	3/10/2022	3/10/2022	3/10/2022
	Maximum:	487	50.5	36.7	5.1
	Time of Maximum:	16:37:32	16:37:22	16:37:32	16:37:22
	Date of Maximum:	3/10/2022	3/10/2022	3/10/2022	3/10/2022

Calibration	Meter:	6/2/2021			
Calibration	Sensor:	CO2 - Carbon Dioxide	T-Temperature	H-Humidity	CO - Carbon Monoxide
•	Cal. Date	6/2/2021	6/2/2021	6/2/2021	6/2/2021

Date	Time	CO2 - Carbon Dioxide	T-Temperature	H-Humidity	CO - Carbon Monoxide
MM/DD/YYYY	hh:mm:ss	ppm	deg F	%rh	ppm
3/10/2022	16:37:22	479	50.5	34.7	5.1
3/10/2022	16:37:32	487	49.7	36.7	5
3/10/2022	16:37:41	484	50.3	36.6	4.6
3/10/2022	16:38:03	483	50.1	36.3	4.5
3/10/2022	16:38:20	485	49.4	35.9	4.4
		·			



EMSL Order: 052200976 Customer ID: AHER50

Customer PO: Project ID:

Attention: Ahera Consultants, INC
Ahera Consultants, Inc.

Phone: (609) 652-1833
Fax: (609) 652-1140

PO Box 385 Received Date: 03/11/2022 09:00 AM

**Project:** 22-6032 / South Mountain Elementary School, 444 W South Orange Avenue, South Orange, NJ 07079

# Test Report: Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CFR Part 763 Appendix A to Subpart E

		Volume	Area Analyzed	Non	Asbestos	#Structu	ıres	Analytical Sensitivity		estos entration
Sample	Location	(Liters)	(mm²)	Asb	Type(s)	≥0.5µ < 5µ	≥5µ	(S/cc)	(S/mm²)	(S/cc)
SME-01	1st Floor Hallway	1350.00	0.0645	0	None Detected	0	0	0.0044	<16.00	<0.0044
052200976-0001										

Analyst(s)

Colin Slattery (1)

Chaiyut Sae Lao, Laboratory Manager or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Results reported in structures/cm3 are not covered by the laboratory's NVLAP accreditation. Measurement of uncertainty available upon request.

Samples analyzed by EMSL Analytical, Inc. Piscataway, NJ NYS ELAP 11423, NVLAP Lab Code 101048-2, NJ NELAC 12037, Philadelphia 289, CT PH-0266





# EXPANDED FUNGAL ASSESSMENT REPORT \*\*

**Prepared Exclusively For** 

AHERA Consultants, Inc.

PO Box 385 Oceanville, NJ 08231-0385 Phone:609-652-1833

Report Date: 3/17/2022

Project: 22-6032 / South Orange / Maplewood School District , South Mountain Elementary School,

444 West South Orange Avenue, South Orange, NJ 07079

EMSL Order: 052200970

AIHA-LAP, LLC-EMLAP Accredited #167035





1056 Stelton Road Piscataway, NJ 08854 Phone: (732) 981-0550 Fax: (732) 981-0551

981-0550 Fax: (732) 981-0551 Web: http://www.EMSL.com Email:piscatawaylab@emsl.com

Attn: AHERA Consultants, INC AHERA Consultants, Inc.

PO Box 385

Oceanville, NJ 08231-0385

EMSL Order: 052200970 Customer ID: AHER50 Collected: 3/10/2022 Received: 3/11/2022 Analyzed: 3/15/2022

**Proj:** 22-6032 / South Orange / Maplewood School District , South Mountain Elementary School, 444 W South Orange Avenue,

South Orange, NJ 07079

1. Description of Analysis

#### **Analytical Laboratory**

EMSL Analytical, Inc. (EMSL) is a nationwide, full service, analytical testing laboratory network providing Asbestos, Mold, Indoor Air Quality, Microbiological, Environmental, Chemical, Forensic, Materials, Industrial Hygiene and Mechanical Testing services since 1981. Ranked as the premier independently owned environmental testing laboratory in the nation, EMSL puts analytical quality as its top priority. This quality is recognized by many well-respected federal, state and private accrediting agencies, and assured by our high-quality personnel, including many Ph.D. microbiologists and mycologists.

EMSL is an independent laboratory that performed the analysis of these samples. EMSL did not conduct the sampling or site investigation for this report. The samples referenced herein were analyzed under strict quality control procedures using state-of-the-art microbiological methods. The analytical methods used and the data presented are scientifically and legally defensible.

The laboratory data is provided in compliance with ISO-IEC 17025 guidelines for the particular test(s) requested, including any associated limitations for the methods employed. These data are intended for use by professionals having knowledge of the testing methods necessary to interpret them accurately.



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#### Air Samples - Spore traps:

Spore traps are commercially available sampling devices that capture airborne particles on an adhesive slide. Air is pulled through the device using a vacuum pump. Spores, as well as other airborne particles, are impacted on the collection adhesive. Using spore trap collection methods has inherent limitations. These collection methods are biased towards larger spore sizes.

The analysis for total spore counts is a direct microscopic examination and does not include culturing or growing the fungi. Therefore, the results include both viable and non-viable spores. Some fungal groups produce similar spore types that cannot be distinguished by direct microscopic examination alone (i.e., *Aspergillus/Penicillium*, and others). Other spore types may lack distinguishing features that aid in their identification. These types are grouped into larger categories such as Ascospores or Basidiospores.

Fungal spores are identified and grouped by morphological characteristics including color, shape, septation, ornamentation, and fruiting structures (if present) which are compared to published mycological identification keys and texts. EMSL reports provide spore counts per cubic meter of air to three significant figures. Please note that each spore category is reported to three significant figures. Due to rounding and the application of three significant figures the sum of the individual spore numbers may not equal the total spore count on the report. EMSL does not maintain responsibility for final volume concentrations (counts/m3) since this volume is provided by the field collector and cannot be verified by EMSL.

EMSL analyzes spore traps using phase contrast microscopy. There is a wide choice of collection devices (Air-O-Cell, Micro-5, Burkhard, etc.) on the market. Differences in analytical method may exist between spore trap devices.

Spore trap results are reported in spores per cubic meter of air. Due to the other airborne particles collected with the spores, EMSL reports a background particle density. Background density is an indication of overall particulate matter present on the sample (i.e. dust in the air). High background concentrations may obscure spores such as the *Penicillium/Aspergillus* group. The rating system is from 1-5 with 1 = 1 - 25% of the background obscured by material, 2 = 26 - 50%, 3 = 51 - 75%, 4 = 76% - 99%, 5 = 100% or overloaded. A background rating of 4 or higher should be regarded as a minimum count since the actual concentrations may be higher than those reported. EMSL will not be held responsible for overloading of samples. Sample volumes are left to the discretion of the company or persons conducting the fieldwork.

Skin fragment density is the percentage of skin cells making up the total background material, 1 = 1 - 25%, 2 = 26 - 50%, 3 = 51 - 75%, 4 = 76-100%. Skin fragment density is considered an indication of the general cleanliness in the area sampled. It has been estimated that up to 90% of household dust consists of dead skin cells.



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Oceanville, NJ 08231-0385

EMSL Order: 052200970 Customer ID: AHER50 Collected: 3/10/2022 Received: 3/11/2022 Analyzed: 3/15/2022

Proj: 22-6032 / South Orange / Maplewood School District , South Mountain Elementary School, 444 W South Orange Avenue,

South Orange, NJ 07079

## 2. Analytical Results

See attached data reports and charts.



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Oceanville, NJ 08231-0385

EMSL Order: 052200970 Customer ID: AHER50 Collected: 3/10/2022

Received: 3/11/2022 Analyzed: 3/15/2022

**Proj:** 22-6032 / South Orange / Maplewood School District , South Mountain Elementary School, 444 W South Orange Avenue,

South Orange, NJ 07079

Test Report: Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L):	052200970-0001 SME-01 150			09	052200970-0002 SME-02 150				,
Sample Location:	1st Floor Hallway			Outdo	or Control Sai	mple			
Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total	-	-	-
Alternaria (Ulocladium)	-	-	-	-	-	-		-	-
Ascospores	-	-	-	1	20	0.9	-		
Aspergillus/Penicillium	5	100	17.7	4	90	3.9			
Basidiospores	19	420	74.5	15	330	14.5	-		
Bipolaris++	-	-	-	-	-	-			
Chaetomium++	-	-	-	-	-	-	-		
Cladosporium	1*	7*	1.2	81	1800	78.9			
Curvularia	-	-	-	-	-	-	-		
Epicoccum	-	-	-	-	-	-			
Fusarium++	-	-	-	-	-	-	-		
Ganoderma	-	-	-	-	-	-			
Myxomycetes++	1*	7*	1.2	1	20	0.9	-		
Pithomyces++	-	-	-	-	-	-			
Rust	-	-	-	-	-	-	-		
Scopulariopsis/Microascu	1	20	3.5	-	-	-	-		
Stachybotrys/Memnoniella	-	-	-	-	-	-	-		
Unidentifiable Spores	-	-	-	-	-	-	-		
Zygomycetes	-	-	-	-	-	-	-		
Pestalotia++	-	-	-	1	20	0.9			
Triadelphia	2*	10*	1.8	-	-	-	-		
Total Fungi	29	564	100	103	2280	100			
Hyphal Fragment	2	40	-	-	-	-	-		
Insect Fragment	-	-	-	-	-	-	-		
Pollen	-	-	-	-	-	-	-		
Analyt. Sensitivity 600x	-	22	-	-	22	-	-		
Analyt. Sensitivity 300x	-	7*	-	-	7*	-	-		
Skin Fragments (1-4)	-	2	-	-	1	-	-		
Fibrous Particulate (1-4)	-	1	-	-	1	-	-		
Background (1-5)	-	3	-	-	2	-	-		

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Nicholas Maslowski, Microbiology Lab Manager or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality contro criteria and met method specifications unless otherwise noted. High levels of background particulates are not according to the control of the

Initial report from: 03/16/2022 07:16:56



1056 Stelton Road Piscataway, NJ 08854 Phone: (732) 981-0550 Fax: (732) 981-0551

Attn: AHERA Consultants, INC AHERA Consultants, Inc.

PO Box 385

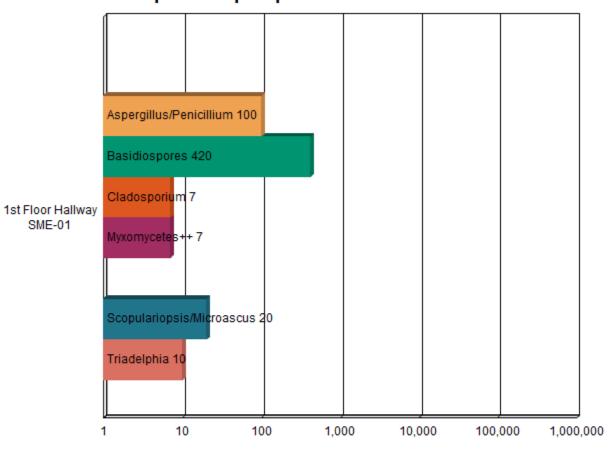
Oceanville, NJ 08231-0385

EMSL Order: 052200970 Customer ID: AHER50 Collected: 3/10/2022 Received: 3/11/2022 Analyzed: 3/15/2022

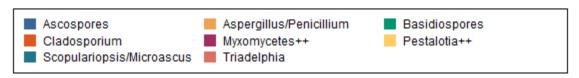
Proj: 22-6032 / South Orange / Maplewood School District , South Mountain Elementary School, 444 W South Orange Avenue,

South Orange, NJ 07079

## Spore Trap Report: Total Counts



Spore Counts per m3



<sup>\*</sup> The chart is displayed using a logarithmic scale. Bar size is not directly proportional to the number of spores.



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Attn: AHERA Consultants, INC AHERA Consultants, Inc.

PO Box 385

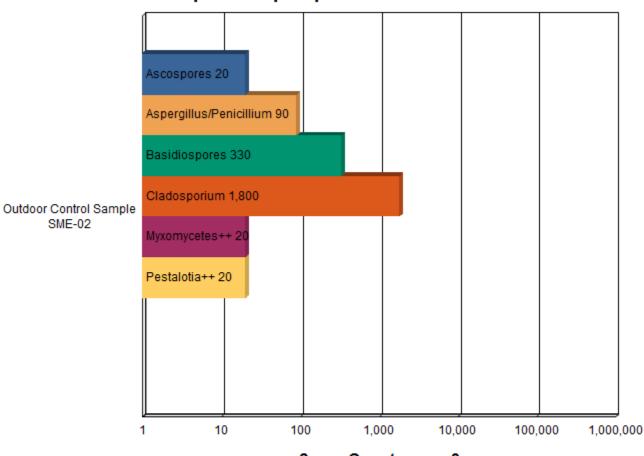
Oceanville, NJ 08231-0385

EMSL Order: 052200970 Customer ID: AHER50 Collected: 3/10/2022 Received: 3/11/2022 Analyzed: 3/15/2022

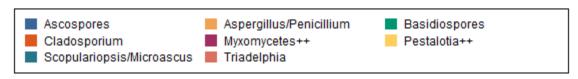
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## Spore Trap Report: Total Counts



Spore Counts per m3



<sup>\*</sup> The chart is displayed using a logarithmic scale. Bar size is not directly proportional to the number of spores.



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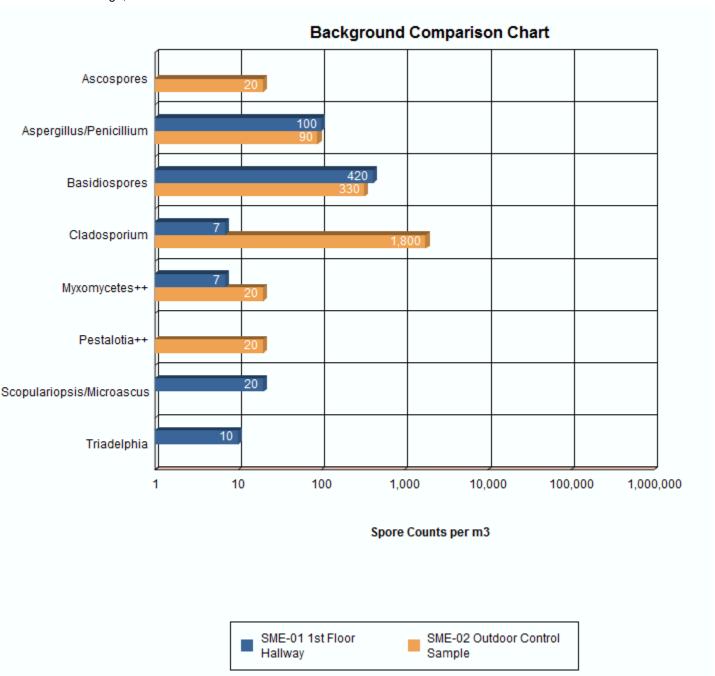
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<sup>\*</sup> The chart is displayed using a logarithmic scale. The bar size is not directly proportional to the number of spores.



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## 3. Understanding the Results

EMSL Analytical, Inc. is an independent laboratory, providing unbiased and scientifically valid results. These data represent only a portion of an overall IAQ investigation. Visual information and environmental conditions measured during the site assessment (humidity, moisture readings, etc.) are crucial to any final interpretation of the results. Many factors impact the final results; therefore, result interpretation should only be conducted by qualified individuals. The American Conference of Governmental Industrial Hygienists (ACGIH) has published a good reference book covering sampling and data interpretation. It is entitled, <u>Bioaerosols:</u> Assessment and Control, 1999.

Fungal spores are found everywhere. Whether or not symptoms develop in people exposed to fungi depends on the nature of the fungal material (e.g., allergenic, toxic, or infectious), the exposure level, and the susceptibility of exposed persons. Susceptibility varies with the genetic predisposition (e.g., allergic reactions do not always occur in all individuals), age, pre-existing medical conditions (e.g., diabetes, cancer, or chronic lung conditions), use of immunosuppressive drugs, and concurrent exposures. These reasons make it difficult to identify dose/response relationships that are required to establish "safe" or "unsafe" levels (i.e., permissible exposure limits).

It is generally accepted in the industry that indoor fungal growth is undesirable and inappropriate, necessitating removal or other appropriate remedial actions. The New York City guidelines and EPA guidelines for mold remediation in schools and commercial buildings define the conditions warranting mold remediation. Always remember that water is the key. Preventing water damage or water condensation will prevent mold growth.

This report is not intended to provide medical advice or advice concerning the relative safety of an occupied space. Always consult an occupational or environmental health physician who has experience addressing indoor air contaminants if you have any questions.



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4. Glossary of Fungi

ASCOSPORES	
Natural Habitat	Everywhere in nature.
Suitable Substrates in the Indoor Environment	Depends on genus and species.
Water Activity	Depends on genus and species.
Mode of Dissemination	Forcible ejection or passive release and dissemination by wind or insects.
Allergic Potential	Depends on genus and species.
Potential or Opportunistic	Depends on genus and species.
Pathogens	
Industrial Uses	Depends on genus and species.
Potential Toxins Produced	Depends on genus and species.
Other Comments	Ascospores are the result of sexual reproduction and produced in a saclike structure called an ascus. All ascospores belong to members of the Phylum Ascomycota, which encompasses a plethora of genera worldwide.

ASPERGILLUS/PENI	ASPERGILLUS/PENICILLIUM				
Natural Habitat	Plant debris ·Seed ·Cereal crops				
Suitable Substrates in the Indoor Environment	Grows on a wide range of substrates indoors ·Prevalent in water damaged buildings ·Foods (blue mold on cereals, fruits, vegetables, dried foods) ·House dust ·Fabrics ·Leather ·Wallpaper ·Wallpaper glue				
Water Activity	Aw=0.75-0.94				
Mode of Dissemination	Wind ·Insects				
Allergic Potential	Type I (hay fever, asthma) ·Type III (hypersensitivity)				
Potential or Opportunistic	Possible depending on the species.				
Pathogens					
Industrial Uses	Many depending on the species				
Potential Toxins Produced	Possible depending on the species.				
Other Comments	Spores of Aspergillus and Penicillium (including others such as Acremonium, Talaromyces, and Paecilomyces) are small and spherical with few distinguishing characteristics. They cannot be differentiated or speciated by non-viable impaction sampling methods. Some species with very small spores may be undercounted in samples with high background debris.				



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BASIDIOSPORES	
Natural Habitat	Forest floors. Lawns .Plants (saprobes or pathogens depending on genus)
Suitable Substrates in the Indoor Environment	Depends on genus. Wood products
Water Activity	Unknown.
Mode of Dissemination	Forcible ejection. Wind currents.
Allergic Potential	Type I allergies (hay fever, asthma) . Type III (hypersensitivity pneumonitis)
Potential or Opportunistic Pathogens	Depends on genus.
Industrial Uses	Edible mushrooms are used in the food industry.
Potential Toxins Produced	Amanitins. monomethyl-hydrazine. muscarine. ibotenic acid. psilocybin.
Other Comments	Basidiospores are the result of sexual reproduction and formed on a structure called the basidium. Basidiospores belong to the members of the Phylum Basidiomycota, which includes mushrooms, shelf fungi, rusts, and smuts.

CLADOSPORIUM	
Natural Habitat	Dead plant matter. Straw. Soil. Woody plants
Suitable Substrates in the Indoor Environment	Fiberglass duct liner. Paint. Textiles. Found in high concentration in water-damaged building materials.
Water Activity	Aw 0.84-0.88
Mode of Dissemination	Air
Allergic Potential	Type I (asthma and hay fever).
Potential or Opportunistic Pathogens	Edema. keratitis. onychomycosis. pulmonary infections. Sinusitis.
Industrial Uses	Produces 10 antigens.
Potential Toxins Produced	Cladosporin and Emodin.

MYXOMYCETES++		
Natural Habitat	Decaying logs, Dead leaves , Dung , Lawns , Mulched flower beds, Lawns	
Suitable Substrates in the Indoor Environment	Rotting lumber	
Free moisture required for mold growth	Unknown	
Mode of Dissemination	Insects, Water, Wind	
Allergic Potential	Type I	
Potential or Opportunistic Pathogens	Unknown	
Industrial Uses		
Other Comments	Includes Myxomycetes, Smut, Rust, and Periconia.	



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PESTALOTIA++	
Suitable Substrates in the Indoor Environment	Unknown; some require a living plant host for growth.
Allergic Potential	Unknown
Potential Opportunist or Pathogen	Unknown
Potential Toxins Produced	Unknown
Free moisture required for mold growth	Unknown
Mode of Dissemination	Unknown; air dispersal likely.
Industrial Uses	None known

PESTALOTIA-LIKE	
Natural Habitat	Saprophyte on dead leaves of different plants. Some are plant pathogens that attack foliage or fruit of different plant species. Genera with like spores include Pestalotia, Diploceras, Diversimediispora, Heterotruncatella, Monochaetia, Neopestalotiopsis, Parabartalinia, Pestalotiopsis, Pseudopestalotiopsis, Pseudosarcostroma, Truncatella, and others.

SCOPULARIOPSIS/MICROASCUS						
Natural Habitat	Worldwide saprophytic fungi, being isolated from dead plant material and soil.					
Suitable Substrates in the Indoor Environment	Dairy products, fruit, grain, paper, wood					
Water Activity	Unknown					
Mode of Dissemination	Wind					
Allergic Potential	Hypersensitivity					
Potential or Opportunistic Pathogens	While Scopulariopsis is commonly considered a contaminant, it may cause onychomycosis, skin lesions, keratitis, pulmonary infections, endocarditis, particularly in immunocompromised patients.					
Other Comments	Scopulariopsis is the anamorphic name (asexual stage) and Microascus is the teleomorphic name (sexual stage).					



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Proj: 22-6032 / South Orange / Maplewood School District , South Mountain Elementary School, 444 W South Orange Avenue,

South Orange, NJ 07079

#### 5. Important Terms, Conditions, and Limitations

Sample Retention

Samples analyzed by EMSL will be retained for 60 days after analysis date Storage beyond this period is available for a fee with written request prior to the initial 30-day period. Samples containing hazardous/toxic substances which require special handling will be returned to the client immediately. EMSL reserves the right to charge a sample disposal fee or return samples to the client.

#### Change Orders and Cancellation

All changes in the scope of work or turnaround time requested by the client after sample acceptance must be made in writing and confirmed in writing by EMSL. If requested changes result in a change in cost the client must accept payment responsibility. In the event work is cancelled by a client, EMSL will complete work in progress and invoice for work completed to the point of cancellation notice. EMSL is not responsible for. holding times that are exceeded due to such changes.

#### Warranty

EMSL warrants to its clients that all services provided hereunder shall be performed in accordance with established and recognized analytical testing procedures and with reasonable care in accordance with applicable federal, state and local laws. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied. EMSL disclaims any other warranties, express or implied, including a warranty of fitness for particular purpose and warranty of merchantability.

## Limits of Liability

In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. EMSL will not be held responsible for the improper selection of sampling devices even if we supply the device to the user. The user of the sampling device has the sole responsibility to select the proper sampler and sampling conditions to ensure that a valid sample is taken for analysis. Any resampling performed will be at the sole discretion of EMSL, the cost of which shall be limited to the reasonable value of the original sample delivery group (SDG) samples. In no event shall EMSL



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be liable to a client or any third party, whether based upon theories of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder.

Indemnification

Client shall indemnify EMSL and its officers, directors and employees and hold each of them harmless for any liability, expense or cost, including reasonable attorney's fees, incurred by reason of any third-party claim in connection with EMSL services, the test result data or its use by client

## **Chain of Custody**

Client:				-	•	22-		C -l1
-	PO Box							
Oceanville, NJ 08231-0385			• —			=		
	ie:(609) 652-1833					South	Orange, NJ 0707	<u> </u>
E-Mail:				·			<u>-</u>	
Fax:	(609) 65	52-1140	<del>_</del> ·	. Cont	act:	E. Clark	son	
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MAR 1 1 2022 BY SP 9:00 am
EMSL PISCATAWAY
Drop Box OrderID: 052200976

057200976

#### AIR MONITORING DATA SHEET

CLIENT:	AHERA Consultants, Inc.		D	ATE:	03/10	1202	2	
ADDRESS	S:PO Box 385		J	OB #:	22	-6032		
	Oceanville, NJ 08231-0385		А	NALYS	IS:	TEM		
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SITE ADD	RESS: South Mountain Elementary Sch	<u>iool</u>	Lo	OT #:	<u>.</u>			
	444 W. South Orange Avenue,		В	LDG:_		FLOOR:		<u> </u>
	South Orange, NJ 07079	<u>_</u>						
PRE-CALI INITIALS:	BRATED DATE: <u>03/10/2022</u>	<u> </u>	P	OST-CA	ALIBRATED DATE:_	03/1	10/202	<u>2</u>
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AHERA Consultants

MAR 1 1 2022

EMSL PISCATAWAY

FO Box 385 Oceanville, NJ 08231-0385 Phone: 609 652.1833 Fax: 609.652.1140 E-mail: <u>ahera@aherainc.com</u>

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PO Box 385 Oceanville, NJ 08231-0385 PHONE: 609.652.1833 FAX: 609.652.1140

MICROBIOLOGY – CHAIN OF CUSTODY							
Date Collected: 03/10/2022			Date Submitted: //3/10/2022				
Contact: E. Clarks Project Location: S	Compan	PO Box 385 Oceanville, NJ 08231-0385					
Client: South O	South Orange, NJ 07079  Client: South Orange / Maplewood School District			(609) 652-1140 info@aherainc.com			
	Job Number:	22-6032					
Air Samples  Mold & Fungi by Air-O-Cell Cassette (Select turn around time)  Mold & Fungi by Agar Plate (Count & identification)  Mold & Fungi by Agar Plate (Count only)  Bacterial Count & Gram Stain  Bacterial Count & Identification (Three most prominent types)  Water Samples  Total Count, Coliforms, Fecal Coliforms (Specify)  Other (Specify)  TURN AR			Id & Fungi- lect turn ar omit cellopl Id & Fungi- Id & Fungi- Id & Fungi- Iterial Coun- terial Coun- terial Coun- terial Coun- terial Coun-	ipe & Bulk Samp  Direct Examination ound time)  hane tape sample of Direct Examination by culture  Culture (ID & Count or at & Gram Stain at & Identification rominent types)	on or bulk on- of necessary ont)		
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Received by:	boratory Representative:	$\angle$		Date:	Time: MAR 1 12022		

BY SP 9:00 am EMSL PISCATAWAY

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