

**Report For**

**Airborne Mold Testing  
AT THE  
Warren Elementary School  
Ashland, MA**

**Study Date:**

September 20, 2018

**Project# 218 476.00**

**STUDY CONDUCTED BY:**

***UNIVERSAL ENVIRONMENTAL CONSULTANTS  
12 Brewster Road Framingham MA***



**EMSL Analytical, Inc.**

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**EMSL Order:** 131806501  
**Customer ID:** UEC63  
**Customer PO:**  
**Project ID:**



September 26, 2018

Mr. Joseph Richardson  
Ashland Public Schools  
87 West Union Street  
Ashland, MA 01720

Reference: **Airborne Mold Testing**  
**Warren Elementary School, Ashland, MA**

Dear Mr. Richardson:

Thank you for the opportunity for Universal Environmental Consultants (UEC) to provide professional services.

Enclosed please find the report for Airborne Mold Testing at the Warren Elementary School, Ashland, MA conducted on Thursday, September 20, 2018.

Please do not hesitate to call should you have any questions.

Very truly yours,

Universal Environmental Consultants

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Ammar M. Dieb  
President

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Enclosure

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. \*\* Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. 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. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC --EMLAP Accredited #180179

Initial report from: 09/21/2018 13:28:41

For information on the fungi listed in this report, please visit the Resources section at [www.emsl.com](http://www.emsl.com)

### **1.0 Scope:**

It was requested that visual inspection and testing for airborne mold be performed at the Warren Elementary School. Testing was performed to determine if mold growth is occurring. Inspection and testing was performed at the following areas:

- Room 27
- Room 4
- Room 9
- Room 16

### **2.0 Methodology:**

Airborne mold testing was performed utilizing Zefon International Incorporated's Air-O-Cell® sampling device following all manufacturer supplied recommended sampling procedures.

The Air-O-Cell® is a direct read total particulate air sampling device. It works using the inertial impaction principle similar to other spore trap devices. It is designed for the rapid collection and analysis of airborne particulate including bioaerosols. The particulate includes fibers (e.g. asbestos, fiberglass, cellulose, clothing fibers) opaque particles (e.g. fly ash, combustion particles, copy toner, oil droplets, paint), and bioaerosols (e.g. mold spores, pollen, insect parts, skin cell fragments).<sup>1</sup>

The method involves drawing a known quantity of air through a sterile sampling cassette. Subsequent to sampling, the cassette is sealed and transferred to a microbiology laboratory under chain of custody protocol for microscopic analysis. This method counts both viable and nonviable mold spores.

The outside sample was collected within the courtyard.

Samples results can be found in Appendix A.

### **3.0 Results:**

## **AIRBORNE MOLD and PARTICULATE**

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<sup>1</sup> Zefon International Inc. <[www.zefon.com](http://www.zefon.com)>



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Lab ID #	Location	Total Mold Counts/M <sup>3</sup>	Pollen	Insect Fragment	Hyphal Fragments
131806501-0001	Room 27 Right Side of Door Near Electrical Outlet	4,140	20	ND	20
131806501-0002	Room 27 Left Side of Door Near Electrical Outlet	20	ND	ND	ND
131806501-0003	Room 4 Right Side of Door Near Electrical Outlet	270	ND	ND	7
131806501-0004	Room 4 Left Side of Door Near Electrical Outlet	ND	ND	ND	21
131806501-0005	Room 9 Right Side of Door Near Electrical Outlet	ND	ND	ND	ND
131806501-0006	Room 9 Left Side of Door Near Electrical Outlet	980	ND	ND	10
131806501-0007	Room 16 Right Side of Door Near Electrical Outlet	ND	ND	ND	ND
131806501-0008	Room 16 Left Side of Door Near Electrical Outlet	590	ND	ND	7
131806501-0009	Outside	9,208	75	20	20

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. \*\* Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. 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. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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**AIRBORNE MOLD and PARTICULATE  
(Subjective Scales)**

Lab ID #	Location	Skin Fragment Density (SFD)	Fibrous Particulates (FP)	Total Background Particulate (TBP)
131806501-0001	Room 27 Right Side of Door Near Electrical Outlet	2	1	2
131806501-0002	Room 27 Left Side of Door Near Electrical Outlet	1	1	1
131806501-0003	Room 4 Right Side of Door Near Electrical Outlet	2	1	2
131806501-0004	Room 4 Left Side of Door Near Electrical Outlet	1	1	1
131806501-0005	Room 9 Right Side of Door Near Electrical Outlet	1	1	1
131806501-0006	Room 9 Left Side of Door Near Electrical Outlet	1	1	1
131806501-0007	Room 16 Right Side of Door Near Electrical Outlet		1	
Lab ID #	Location	Skin Fragment Density (SFD)	Fibrous Particulates (FP)	Total Background Particulate (TBP)
131806501-0008	Room 16 Left Side of Door Near Electrical Outlet	2	1	2
131806501-0009	Outside	1	1	1

**Legend:**

ND – Not Detected

Skin Fragment Density: 1 - 4 scale where 1 is low and 4 is high

Background Particulate Density: 1 - 5 scale where 1 is low and 5 is high



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## 4.0 Observations and Interpretation of Results:

There are currently no guidelines or standards promulgated by a government agency or widely recognized scientific organizations for the interpretation of airborne mold spore levels. The most commonly employed tool used to assess if mold growth is occurring and there is amplification in a structure is to evaluate the indoor levels and species as well as to compare levels and species of mold outdoors to indoors. Typically, if there were more molds indoors, and/or if species were present indoors which were not present outdoors, then growth and amplification is likely occurring and further evaluation and perhaps remediation is recommended.

Indoor airborne mold spore concentrations were mostly non-detected and lower than the outside sample. Based on comparisons with historical data from projects of similar type, building utilization, geographic location and season, breathing zone indoor airborne levels are considered very low. Indoor mold spore counts in late summer are typically in the 5,000-7,500 spores/cubic meter range. Slightly elevated level (1,900 Counts/m<sup>3</sup>) of the mold Aspergillus/Penicillium was detected in Room 27 right side of entry door by electrical outlet. Aspergillus/Penicillium was detected in the outside sample (480 Counts/m<sup>3</sup>). It is recommended that indoor levels; should not exceed outdoor level by not more than 34 times.

Mold is ubiquitous in the environment and we are constantly exposed to mold. Although there are no mold standards or guidelines indoor environments with less than 4,000 spores per cubic meter are often presumed to be non problematic.

The most represented genera of mold in the indoor samples were Aspergillus/Penicillium and Basidiospores which were also detected outside. The indoor and outdoor samples also yielded lower levels of 3-5 other common environmental molds, which are not necessarily considered health threats.

Total background particulate on all samples was assessed as "1-2" on a scale of 1 - 5 where 1 is low and 5 is high. Skin fragment density on all samples was assessed as "1-2" on a scale where 1 is low and 4 is high. The total background levels are measured to determine airborne dust not related to airborne mold. Skin fragments are measured to determine proper housing cleaning.

Pollen Hyphal fragments were either low or not present in the samples. Hyphal fragment is a nonreproductive part of the mold.

## 5.0 Conclusion and Recommendations:

With the exception of the sample collected in Room 24 right side of entry door all airborne mold levels were within acceptable ranges. No visible mold growth was detected during testing.

We have recently encountered outdoor levels of the mold Aspergillus/Penicillium that reached (5,750 Counts/m<sup>3</sup>), which might indicate that the level detected in Room 27 is normal.

High levels of background particulate can obscure spores and other particulates leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. \*\*\* Denotes particles found at 300X. \*\* Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. 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. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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It is however, recommended that the maintenance staff wet wipe items within the vicinity of the outlet utilizing bleach or other daily solutions.

Additional testing is not required.

#### **6.0 Limitations and Conditions:**

This report has been completed based on visual and physical observations made and information available at the time of the site visits, as well as an interview with the Owner's representatives. This report is intended to be used as a summary of available information on existing conditions with conclusions based on a reasonable and knowledgeable review of evidence found in accordance with normally accepted industry standards, state and federal protocols, and within the scope and budget established by the client. Any additional data obtained by further review must be reviewed by UEC and the conclusions presented herein may be modified accordingly.

This report and attachments, prepared for the exclusive use of Owner for use in an environmental evaluation of the subject site, are an integral part of the inspections and opinions should not be formulated without reading the report in its entirety. No part of this report may be altered, used, copied or relied upon without prior written permission from UEC, except that this report may be conveyed in its entirety to parties associated with Owner for this subject study.

#### **REFERENCES:**

1. AIHA, 2700 Prospect Ave., Fairfax, VA. IAQ Paper #130. June 23, 1999.
2. Seifert, B. Regulation Indoor Air. In: Indoor Air '90, Proceedings of the 5th International Conference on Indoor Air Quality and Climate, Volume V, p. 35. Toronto, 1990.
3. American Society of Heating, Refrigeration and Air-conditioning Engineers' ANSI/ASHRAE 55-1992 "**Thermal Environmental Conditions for Human Occupancy.**"
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5. SBBRS, 1997. Mechanical Ventilation, State Board of Building Regulations and Standards. Code of Massachusetts Regulations 780 CMR 1209.0
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