



 Like us  Follow us @LEWCorporation

181 US Hwy 46  
Mine Hill, NJ 07803  
(908) 654-8068  
(800) 783-0567  
Fax 908-654-8069

# MICROBIAL INVESTIGATION REPORT

**Performed At:**

Patrick McGaheran School  
63 Allerton Road  
Lebanon, NJ 08833

**Performed For:**

Clinton Township Schools  
P.O. Box 6  
Annandale, NJ 08801

**Prepared By:**

LEW Corporation  
181 US Hwy 46  
Mine Hill, NJ 07803

(908) 654-8068 Phone  
(908) 654-8069 Fax

Date of Inspection: 9/5/2018  
Project Number: 181000

# TABLE OF CONTENTS

<i>Contact Information</i>	5
<i>Introduction To Fungi</i>	6
<b>Background Information About Fungi</b>	6
<b>Fungi Prevention Tips</b>	6
<i>Scope of Work</i>	7
<i>Procedures</i>	7
<b>General</b>	7
<b>Surface Fungi</b>	8
<b>Airborne Fungi</b>	8
<i>Inspection</i>	8
<i>Discussion and Recommendations</i>	9

APPENDIX A	LABORATORY RESULTS
APPENDIX B	FLOOR PLAN(S)
APPENDIX C	PHOTOGRAPH(S)

## CONTACT INFORMATION

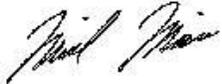
### Site:

Name	Patrick McGaheran School
Street Address:	63 Allerton Road Lebanon, NJ 08833
Date Inspected	9/5/2018

### Owner:

Name:	Clinton Township Schools
Street:	P.O. Box 6 Annandale, NJ 08801
Phone Number:	(908) 236-7235

### Microbial Consultant:

Consultant Name:	Michael Mosier
Signature:	
Date:	9/13/2018
Email:	mmosier@lewcorp.com

### Consultant Information:

Organization:	LEW Corporation
Street:	181 US Hwy 46
City, State & Zip:	Mine Hill, NJ 07803
Phone number:	908-654-8068
Web address:	www.LEWCorp.com

### Laboratory Information:

Organization:	Environmental Hazards Services, LLC
Street:	7469 White Pine Rd.
City, State & Zip:	Richmond, VA 23237
Phone number:	800-347-4010
AIHA Lab ID #:	100420

## **INTRODUCTION TO FUNGI**

### **Background Information About Fungi**

Fungi can be found almost anywhere; they can grow on virtually any organic substance, as long as moisture and oxygen are present. There are fungi that can grow on wood, paper, carpet, foods, and insulation. When excessive moisture accumulates in buildings or on building materials, fungal growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed. It is impossible to eliminate all fungi and fungal spores in the indoor environment. However, fungi growth can be controlled indoors by controlling moisture indoors.

Fungi reproduce by making spores that usually cannot be seen without magnification. Spores waft through the indoor and outdoor air continually. When fungal spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. Fungi gradually destroy the things they grow on. Many types of fungi exist. All fungi have the potential to cause health effects. Fungi can produce allergens that can trigger allergic reactions or even asthma attacks in people allergic to fungi. Some Genus of fungi are known to produce potent toxins and/or irritants. Potential health concerns are an important reason to prevent fungal growth and to remediate/clean up any existing indoor fungal growth.

Since fungi require water to grow, it is important to prevent moisture problems in buildings. Moisture problems can have many causes, including uncontrolled humidity. Some moisture problems in buildings have been linked to changes in building construction practices during the 1970s, 80s, and 90s. Some of these changes have resulted in buildings that are tightly sealed, but may lack adequate ventilation, potentially leading to moisture buildup. Building materials, such as drywall, may not allow moisture to escape easily. Moisture problems may include roof leaks, landscaping or gutters that direct water into or under the building, and poorly vented combustion appliances. Delayed maintenance or insufficient maintenance is also associated with moisture problems.

When fungal growth occurs in buildings, some building occupants, particularly those with allergies or respiratory problems, may report adverse health problems. Remediators should avoid exposing themselves and others to fungal-laden dusts as they conduct their cleanup activities. Caution should be used to prevent fungi and fungal spores from being dispersed throughout the air where building occupants can inhale them.

### **Fungi Prevention Tips**

- Fix leaky plumbing and leaks in the building envelope as soon as possible.
- Watch for condensation and wet spots. Fix source(s) of moisture problem(s) as soon as possible.

- Prevent moisture due to condensation by increasing surface temperature or reducing the moisture level in air (humidity). To increase surface temperature, insulate or increase air circulation. To reduce the moisture level in air, repair leaks, increase ventilation (if outside air is cold and dry), or dehumidify (if outdoor air is warm and humid).
- Keep heating, ventilation, and air conditioning (HVAC) drip pans clean, flowing properly, and unobstructed.
- Vent moisture-generating appliances, such as dryers, to the outside where possible.
- Maintain low indoor humidity, below 60% relative humidity (RH), ideally 30-50%, if possible.
- Perform regular building/HVAC inspections and maintenance as scheduled.
- Clean and dry wet or damp spots within 24 - 48 hours.
- Don't let foundations stay wet. Provide drainage and slope the ground away from the foundation.

## **SCOPE OF WORK**

LEW Corporation performed an investigation at Patrick McGaheran School, 63 Allerton Road, Lebanon, NJ 08833 to determine the presence or absence of mold growth and the level of concern. Specifically, LEW Corporation investigated room 35. The investigation included a visual survey, interview with knowledgeable parties, and sampling as necessary. The visual survey did not include inspecting every surface of every content in each area but was rather a general survey with a random selection of objects being inspected. Measurements collected included air temperature, relative humidity, and relative moisture content. Samples collected included spore trap air sampling and tape lifts. LEW Corporation will have the samples analyzed and based on all the data collected provide a written report discussing the results and recommendations.

## **PROCEDURES**

### **General**

The inspection protocols were based on the guidelines of the EPA “Building Air Quality Guide for Building Owners and Facility Managers”, ISBN-0-16-035919-8, published in December 1991, *Bioaerosols: Assessment and Control*, published by the American Conference of Governmental Industrial Hygienists in 1999 and Recognition, Evaluation and Control of Indoor Mold, published by the American Industrial Hygiene Association in 2008. These guides describe a process of building inspection and evaluation, information exchange and problem solving to enhance occupant health, comfort and productivity. The process involves the assessment of numerous air quality issues, including thermal comfort, emission sources, biological contamination, fresh air ventilation, and energy management.

## Surface Fungi

One method of testing of surfaces for fungi is conducted with the use of Fisherbrand Transport Swabs, manufactured by Fisher Healthcare in Houston, Texas. The swabs are wetted with a nutrient solution held by the transport sponge, wiped over a surface area of approximately one square inch, and transported to the laboratory sealed against the sponge. In the laboratory, the solution is plated onto agar media for fungi. Viable colonies are quantified and identified to the genus level for fungal isolates and speciated when possible. The concentrations of surface swabs are reported in units of colony-forming units per swab (CFU/swab). The laboratory can also analyze the swab using direct microscopic examination. Spores and other particles are quantified and identified to only the genus level.

Tape lift sampling is another method of collecting surface samples. A piece of clear adhesive tape is laid over the sample area. The tape is then removed and placed on either a glass slide or clear plastic slide lockable bag. In the laboratory, the tape is analyzed using direct microscopic examination. Spores and other particles are quantified and identified to the genus level. Tape lift samples cannot be cultured therefore identification can only be made to the genus level.

## Airborne Fungi

Air sampling for non-viable fungi (spores) is conducted with Air-O-Cell cassettes manufactured by Zefon Analytical Accessories of Ocala, Florida. These cassettes are also known as spore traps. A high-volume sampling pump is connected to the cassette and at least fifteen liters of air per minute are pulled through the cassette. The sampling time varies from two minutes to ten minutes depending upon the site conditions and the investigator's best judgment. The goal is to not overload the cassette.

## INSPECTION

### September 5, 2018

LEW Corporation was requested to perform an inspection of room 35. It had been reported that mold growth was found along a metal door buck that leads to the bathroom in room 35.

### Room 35

Upon visual inspection, there appeared to be a potential area of growth located on the left side of the metal door buck. The classroom side of the door buck appeared to have suspected mold growth, but mold growth was not located on the bathroom side or in any other area visually in the room. Moisture readings collected from the various surfaces indicated normal moisture content. Relative humidity of the space was 67.2% and temperature was 76.7 °F.

A tape lift surface sample was collected from the metal door buck (181000-T1). The laboratory results indicated the presence of *Penicillium/Aspergillus* growth. A spore trap air sample was collected from breathing height near the middle of room 35 (181000-1). The laboratory results of the air sample indicated the presence of moderately elevated concentration of *Penicillium/Aspergillus* spores.

Please see Appendix A for Laboratory Results

## **DISCUSSION AND RECOMMENDATIONS**

It is not possible to conclude with absolute assurance that fungi/mold germination is caused by a specific condition, without extensive testing and evaluation. It is possible, however, to identify conditions that are likely to result in biological amplification, based on visual inspection and problem solving. This approach was used in this investigation.

### Room 35

Mold growth was observed on one metal door buck leading to the bathroom in room 35. The laboratory results of the tape sample collected from the metal door buck confirms this observation. Humidity in this space was elevated at 67.2%. EPA recommends maintaining indoor relative humidity levels between 30 and 60% to inhibit mold growth. Based on the findings, it is LEW Corporation's opinion that the growth observed was the result of elevated humidity on the metal door buck and potential condensation within the main classroom area.

LEW Corporation recommends performing remediation of the areas exhibiting mold growth such as the chairs and books following the guidelines set forth in IICRC's S520-2015 "Standard for professional mold remediation". This investigation did not include a comprehensive visual survey of all surfaces. If a comprehensive survey is not performed, then all surfaces should be assumed to exhibit growth and cleaned accordingly. After all remediation is complete but prior to removing containment, post-remediation verification should be performed.

APPENDIX A  
Laboratory Results



# Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.  
7469 Whitepine Rd  
Richmond, VA 23237

Report Number: 18-09-00486

Telephone: 800.347.4010

Received Date: 9/6/2018

Client: LEW Corp  
181 US Hwy 46  
Mine Hill, NJ 07803

Analyzed Date: 09/06/2018

Reported Date: 09/07/2018

Project/Test Address: Patrick McGaheran School; 63 Allenton Road; Clinton, NJ

Client Number:  
201327

## Laboratory Results

Fax Number:  
Ext 18

Lab # :	18-09-00486-001		18-09-00486-002							
Client Sample ID :	181000-1		181000-2							
Date Collected :	9/5/2018		9/5/2018							
Collection Location :	RM 35		OUTSIDE							
Sampling Media :	Air-O-Cell		Air-O-Cell							
Analytical Sensitivity (spores/m3) :	13.3		13.3							
Volume (L) :	75		75							
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	5	67	36	480						
Penicillium/Aspergillus group spores	65	870	6	80						
Alternaria spores			1	13						
Pyricularia spores			1	13						
Pithomyces spores			1	13						
Epicoccum spores			1	13						
Cercospora spores			3	40						
smuts, Periconia, myxomycetes	1	13	5	67						
ascospores	24	320	272	3600						
basidiospores	10	130	114	1500						

TOTAL SPORES(Spores/m3) 1400 5900

Analyst: Kathy Fletcher Kathy Fletcher

# Environmental Hazards Services, L.L.C

Client Number: 201327

Report Number: 18-09-00486

Project/Test Address: Patrick McGaheran School; 63 Allenton Road; Clinton,  
NJ

Method: Non-Culturable Spore Trap Examination

Reviewed By Authorized Signatory:



---

*Tasha Eaddy*  
QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, volume, etc., was provided by the client. The Client is hereby notified that due to the subjective nature of fungal analysis and the growth process of fungal infestation, laboratory samples can and do change over time relative to the originally sampled material. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.



# Non-Viable Surface/Bulk Analysis Report

Environmental Hazards Services, L.L.C.  
7469 Whitepine Rd  
Richmond, VA 23237

Telephone: 800.347.4010

Client: LEW Corp  
181 US Hwy 46  
Mine Hill, NJ 07803

Report Number: 18-09-00486

Received Date: 9/6/2018

Analyzed Date: 09/06/2018

Reported Date: 09/07/2018

Project/Test Address: Patrick McGaheran School; 63 Allenton Road; Clinton, NJ

Client Number:

201327

## Laboratory Results

Fax Number:

Ext 18

Lab # :	18-09-00486-003	Collection Location:	RM 35 BATHROOM DR FRAME
Client Sample ID :	Tape 181000-T1	Date Analyzed:	9/6/2018
Date Collected :	9/5/2018	Analyst:	Felicia Butler

Occasional Penicillium/Aspergillus group spores

Note:

Quantification Key:

Numerous:	Several spores seen in every field
Moderate:	At least 1 spore seen in 5 fields
Few:	Over 5 spores seen per cover slip, but less than 1 spore seen in 5 fields
Occasional:	1-5 spores seen per a cover slip

Method: Direct Microscopic Exam

Reviewed By Authorized Signatory:

Tasha Eaddy  
QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, volume, etc., was provided by the client. The Client is hereby notified that due to the subjective nature of fungal analysis and the growth process of fungal infestation, laboratory samples can and do change over time relative to the originally sampled material. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.



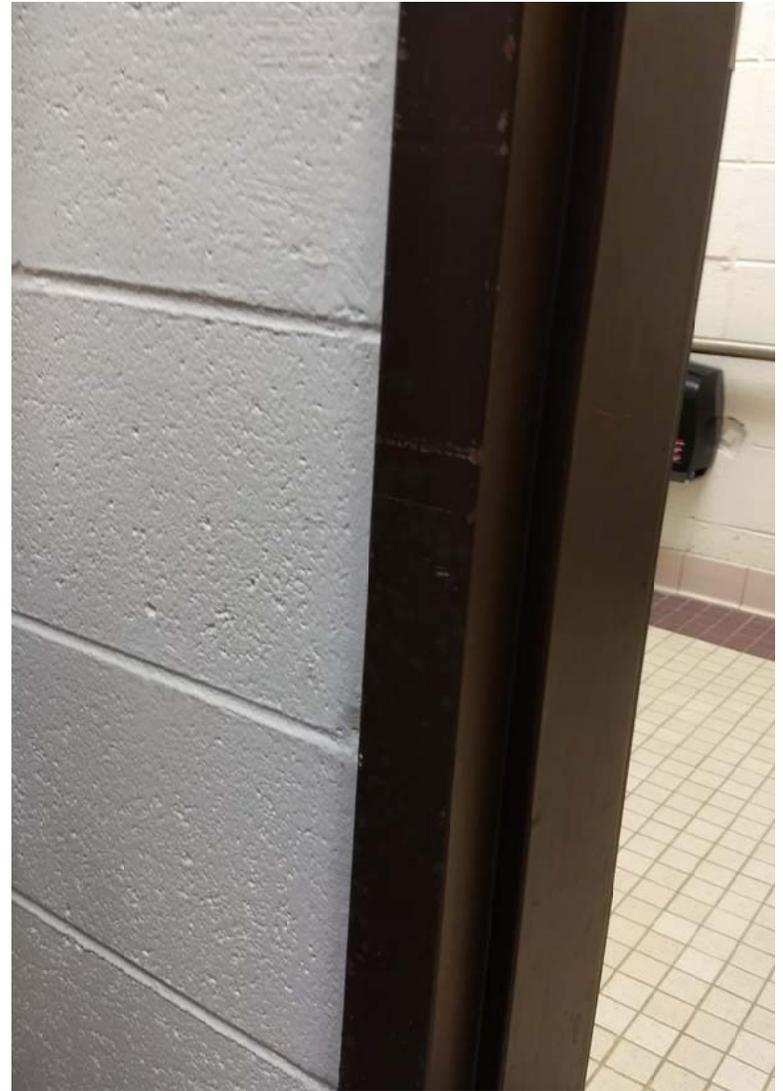
APPENDIX B  
Floor Plan(s)

 Areas of concern

APPENDIX C  
Photograph(s)



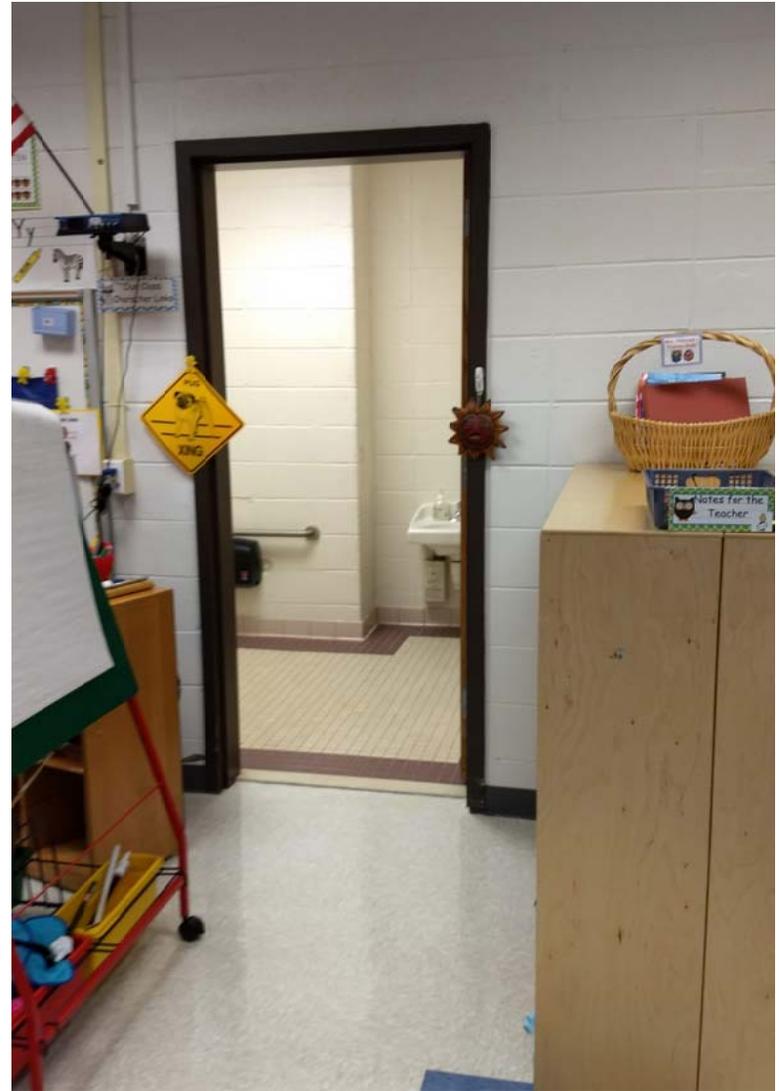
Metal Door Buck to Bathroom



Metal Door Buck Classroom



Room 35



Metal Doorbuck