Pepper
Environmental Technologies

Crystal Lake School District 47
Lundahl Middle School
Crystal Lake, IL 60014
Mold Indoor Air Quality Study
Rooms 14 and 8

PREPARED FOR:

David Schuh
Crystal Lake Elementary School District 47 | Director of Operations
221 Liberty Rd, Crystal Lake, IL 60014
dschuh@d47.org

PREPARED ON: August 12, 2025

PREPARED BY:

Pepper Environmental Technologies, Inc.
411 Lake Zurich Road
Barrington, Illinois 60010

Pepper
Environmental Technologies

Pepper
Environmental Technologies

Contents

Pepper
Environmental Technologies

1. INTRODUCTION

Pepper Environmental Technologies, Inc. (PET) is pleased to provide you with this letter summarizing the laboratory results from the indoor air quality testing for mold/fungus spores at Lundahl Middle School, located at 560 Nash Rd, Crystal Lake, Illinois 60014.

This study was performed on Monday August 11, 2025. The building was occupied by teachers and students during the time of the study. Frequent opening of exterior doors was observed during the sampling process. Mold air samples were collected in Room 14 and Room 8. Samples were also collected outdoors, for comparison purposes.

2. SAMPLING

The mold air sampling was conducted using a Calibrated High Volume Air Sampling Pump (Zefon Bio Pump Plus) and Air-O-Cell cassettes. Both indoor and outdoor samples were collected. All samples were collected at a flow rate of 15 liters per minute at a rate of 5 minutes each. Samples were hand delivered under a chain of custody to Sterling Laboratories in Chicago, Illinois, for laboratory analysis. The laboratory results can be found in Attachment A.

The primary purpose of the sampling was to determine mold spore concentrations within Room 14 and Room 8. Mold spores are like microscopic seeds. Virtually all molds produce spores. Each species of mold produces spores that are unique to its species. This morphology is used to identify the mold specie types and quantities that may be present. Mold spores are found both indoors and outdoors.

Currently there are no federal, state, or local standards regulating exposure to molds. Mold air sample results from this study can be found on the following pages and in the attached laboratory report.

3. FINDINGS / AIR-O-CELL TEST RESULTS

AREA / ROOM SAMPLED	TOTAL FUNGAL SPORES RAW COUNTS	SPORE COUNTS PER CUBIC METER OF AIR	IDENTIFICATIONS
#1 ROOM 14	87	1,160	*Alternaria, Ascospores, Aspergillus/Penicillium, Cladosporium, Pithomyces, Rusts, Smuts/Myxomycetes*
#2 ROOM 8	19	253	*Ascospores, Aspergillus/Penicillium, Cladosporium, Rusts, Smuts/Myxomycetes*

AREA / ROOM SAMPLED	TOTAL FUNGAL SPORES RAW COUNTS	SPORE COUNTS PER CUBIC METER OF AIR	IDENTIFICATIONS
#3 Outdoors, North Side of Building	277	3,693	*Alternaria, Ascospores, Aspergillus/Penicillium, Basidiospores, Cladosporium, Pithomyces, Rusts, Smuts/Myxomycetes*
#4 Outdoors, South Side of Building	337	4,493	*Alternaria, Ascospores, Aspergillus/Penicillium, Basidiospores, Cladosporium, Epicoccum, Pithomyces, Rusts, Smuts/Myxomycetes*

4. METHODOLOGIES / SUMMARY OF RESULTS

Currently, there are no governmental standards for acceptable levels of mold spores. In lieu of any standard, mold air samples are usually evaluated in one of two ways. The first is by comparing the total airborne concentration of spores found inside the building to those found outside the building. Typically, inside concentrations are less than outdoor concentrations. If the opposite occurs, it may be an indication of a concern. The second method is to evaluate the genus/species of the mold spores identified. In general, airborne mold specie-types identified inside a building should be similar to those found outside the building. If significant variations are observed, it may also be an indication of a potential concern.

Mold concentrations found inside the building during this study ranged from 253 to 1,160 spores per cubic meter of air (sp/m^3). The outdoor comparison samples ranged from 3,693 to 4,493 sp/m^3.

The mold specie-types found on the indoor samples during this study were similar to the specie types found on the outdoor samples. The outdoor concentrations were also higher than those found on the indoor samples, which is a normal finding. According to the Centers for Disease Control (CDC), the most common indoor molds specie-types are *Cladosporium* and *Aspergillus/Penicillium*, and these specie-types can also be found outdoors. The National Institute of Health reports that the *Aspergillus* species is a ubiquitous mold which can be found in many structures. Some literature suggests that total airborne spore concentrations indoors should generally be less than 1,500 sp/m^3, with *Aspergillus/Penicillium* spores being on average less than 700 sp/m^3. *Ascospore* concentrations over 5,000 sp/m^3 may be a concern to a susceptible population. The average *Aspergillus/Penicillium and Ascospore* concentrations found indoors during this study were below these theoretical thresholds. Average outdoor mold spore concentrations during this study were 4,093 sp/m^3, which is 3.5 to 16 times higher than the indoor concentrations, which is also a desirable finding.

5. CONCLUSION

At the time of air testing, no musty or damp odors and no standing water were noted in the test locations. In general, the mold specie-types found inside the building during this study were similarly present in the specie types found outdoors, which is a normal finding. Indoor spore concentrations were also much lower than the outdoor concentrations, which is also a normal finding.

The indoor results in Room 14 were higher than Room 8 during this study. This was likely due to the exterior doors in Stairwell N-4 being repeatedly opened and closed during the testing. The exterior doors in Stairwell 2, adjacent to Room 8, were observed as being closed the entire time of the testing.

Please find the attached Laboratory Report (Attachment A), and Sample Location Map (Attachment B) outlining the mold air sampling results and sampling locations, respectively. PET's Environmental Credentials can be found in Attachment C.

PET appreciates the opportunity to perform this IAQ study for Crystal Lake Elementary School District 47. If you have any questions or concerns, please do not hesitate to contact us.

Sincerely,

PEPPER ENVIRONMENTAL TECHNOLOGIES, INC.

[redacted]

Steve Soloma, PM-ASP
Senior Project Manager

[redacted]

Michael J. Grant, CIEC, CMI
Vice President

ATTACHMENT A

ANALYTICAL LABORATORY RESULTS

2242 West Harrison St., Suite 200, Chicago, IL 60612-3766
Tel: (312) 733-0551 Fax: (312) 733-2386 Info@TheSterlingLab.com

August 12, 2025

Pepper Environmental Technologies
411 Lake Zurich Road
Barrington, IL 60610
Telephone: (847) 304-1326
Fax: (847) 304-0121

Analytical Report for Work Order: 25080080 Revision 0

RE: D47 Lundah/IAQ, Crystal Lake, IL

Dear Pepper Environmental Technologies:

Sterling Labs received 4 samples for the referenced project on 8/11/2025 12:28:00 PM. The analytical results are presented in the following report.

Enclosed are the analytical results for the above referenced project. The samples were analyzed as per the enclosed chain of custody.

All analyses were performed in accordance with established microbiology methodology. All Quality Control criteria as specified in the methods have been met. QA/QC documentation and raw data will remain on file for future reference. Sample acceptance criteria has been met unless noted in the Case Narrative or Sample Receipt Checklist. If required, an estimate of uncertainty for the analyses can be provided.

Thank you for the opportunity to serve you and I look forward to working with you in the future. If you have any questions about the enclosed materials, please contact me at (312) 733-0551.

Sincerely,

[redacted]

Daniel Mikos
Microscopist

2242 West Harrison St., Suite 200, Chicago, Illinois 60612-3766
Tel: 312.733.0551; Fax: 312.733.2386; e-mail address: info@thesterlinglab.com

Analytical Report for Microbiological Analysis - Fungal Spores in Air

Client:	Pepper Environmental Technologies	Date/Time Received:	8/11/25 12:28
Project ID:	D47 Lundah/IAQ, Crystal Lake, IL	Date Analyzed:	8/12/2025
STAT Project No.:	25080080	Analyzed By:	DM
		QC By:	ZN

Client Sample No.:	L1				L2				L3				L4			
Sample Description:	Rm B14				Rm B8				Outdoors North				Outdoors South			
Date Sampled:	8/11/2025				8/11/2025				8/11/2025				8/11/2025			
STAT Sample No.:	25080080-001				25080080-002				25080080-003				25080080-004			
Volume (m^3):	0.075				0.075				0.075				0.075			
	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%
Total Fungal Spores:	87	1,160	13	100	19	253	13	100	277	3,693	13	100	337	4,493	13	100
Alternaria	1	13		1.1					1	13		0.4	1	13		0.3
Ascospores	6	80		6.9	4	53		21.1	125	1,667		45.1	130	1,733		38.6
Aspergillus/Penicillium	70	933		80.5	11	147		57.9	65	867		23.5	55	733		16.3
Basidiospores									24	320		8.7	34	453		10.1
Botrytis																
Cercospora																
Chaetomium																
Cladosporium	2	27		2.3	1	13		5.3	51	680		18.4	80	1,067		23.7
Curvularia																
Drechslera/Bipolaris																
Epicoccum													1	13		0.3
Fusarium																
Nigrospora																
Oidium/Erysiphe																
Periconia																
Phoma																
Pithomyces	1	13		1.1					2	27		0.7	3	40		0.9
Pleospora																
Polythrincium																
Rhizopus/Mucor																
Rusts	5	67		5.7	1	13		5.3	2	27		0.7	29	387		8.6
Smuts/Myxomycetes	2	27		2.3	2	27		10.5	7	93		2.5	4	53		1.2
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Unidentified Fungi																
Other																
Mycelial Fragments																
Debris Level	Moderate				Moderate				Moderate				Moderate			
Organic Material	Present				Present				Present				Present			

DL - Detection Limit = Spores/m^3

SOP 6110

sterling labs
2242 W. Harrison, Suite 200, Chicago, Illinois 60612 Phone: (312) 733-0551 Fax: (312) 733-2386
e-mail address: info@thesterlinglab.com

CHAIN OF CUSTODY RECORD

Page : 1 of 1

Client: Pepper Env. Tech Inc
Street Address: 411 Lake Zurich Rd
City, State, Zip: Barrington, IL 60010
Phone: 630 710 3834
Fax:
e-mail/Alt. Fax: SSoloma@pepperenvironmental.com
Project Number:
Project Name: D47 Lundahl IAQ
Project Location: Crystal Lake, IL
Project Manager: Steve Soloma
P.O. Number:

Office Use Only Below:
Work Order No.: 25080080
Samples Acceptable: Yes: ☑ No: ☐
Checked by (Initial and date): 8/12/25
Comments:

Turn Around Time: <1 ☐ 1 ☒ 2 ☐ 3 ☐ Viable: '6-10 ☐
Other TAT: Date Due: Time Due:
Relinquished by: [redacted] Date/Time: 8/11/25 16:30
Received by: [redacted] Date/Time: 8/11/25 17:28
Relinquished by: Date/Time:
Received for lab by: Date/Time:
Relinquished by: Date/Time:
Received by: Date/Time:

Client Sample Number/Description:	Date Taken	Time Taken	Volume (Liters)	Area Wiped (Units)^2	Laboratory Sample No.	Non-Viable:	Air Cassette	Direct Exam-Tape	Direct Exam-Swab	Direct Exam-Bulk		Viable:	Air Impact	Swab	Bulk		Other:					
L1 / Rm B14	8/11/25	~10 A	75		001		X															
L2 / Rm B8			75		002		X															
L3 / Outdoors North			75		003		X															
L4 / Outdoors South			75		004		X															

Comments:

ATTACHMENT B

SAMPLE LOCATIONS

NORTH

LOWER LEVEL FLOOR PLAN
SCALE: 1/16" = 1'-0"

[redacted]

DLR Group
Architecture Engineering Planning Interiors

A1.0
22-19144-00
12/09/19
REVISIONS

LOWER LEVEL FLOOR PLAN

LUNDAHL MIDDLE SCHOOL
2020 HEALTH/LIFE SAFETY WORK

LUNDAHL MIDDLE
560 NASH RD
CRYSTAL LAKE, IL 60014

DISTRICT ADDRESS
300 COMMERCE DRIVE
CRYSTAL LAKE, IL 60014

FOR REFERENCE ONLY

ATTACHMENT C

ENVIRONMENTAL CREDENTIALS

American Council for Accredited Certification

hereby certifies that

Michael J. Grant

has met all the specific standards and qualifications of the re-certification process, including continued professional development, and is hereby re-certified as a

CIEC

Council-certified
Indoor Environmental Consultant

This certificate expires on August 31, 2025

[redacted]

Charles F. Wiles, Executive Director

1108018

Certificate Number

CERTIFICATE OF COMPLETION

THIS CERTIFICATE DEMONSTRATES THAT

MICHAEL GRANT

COMPLETED THE FOLLOWING COURSE TAUGHT BY INDOOR SCIENCES INC.:

CERTIFIED MICROBIAL INVESTIGATOR (CMI)

THE COURSE WAS ATTENDED ON **AUGUST 20 – 21, 2012** AND
INCLUDED **16 HOURS** OF INDOOR AIR QUALITY TRAINING.

IndoorSciences

[redacted]

8/22/2012

IAN CULL, PE, CIEC
PRESIDENT
INDOOR SCIENCES, INC.

DATE