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Barrington, IL 60010

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January 24, 2023

Mr. David Schuh  
Director of Operations  
Crystal Lake School District 47  
221 Liberty Road  
Crystal Lake, IL 60014

E-mail; [dsschuh@d47.org](mailto:dsschuh@d47.org)

**RE: Mold Indoor Air Quality Sampling  
Lundahl Middle School – IAQ Office 9**

Pepper Environmental Technologies, Inc. (PET) conducted a mold air sampling study for Crystal Lake Elementary School District 47 at Lundahl Middle School, located at 560 Nash Road in Crystal Lake, Illinois. The sampling was performed on January 17, 2023. Mold air samples were collected inside of Lower-Level Office 9. The control sample was collected within the building on the Lower Level near Stair N-4 for comparison purposes.

The mold sampling was conducted using a Calibrated High Volume Air Sampling Pump and Air-O-Cell cassettes. All samples were collected at 15 liters per minute rate for 5 minutes. All samples were transported to EMSL Analysis, Hillside, Illinois for laboratory analysis.

The primary purpose of the sampling was to determine mold spore concentrations within Office 9. 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 and, in the case of air samples, identify the mold specie types and quantities that might be present. Spores are found in both indoors and outdoors.

Currently there are no federal, state, or local standards regulating exposure to molds. In lieu of any standard, samples are usually evaluated in one of two ways. The first is by comparing the total airborne concentration of spores found inside the area of concern to those found outside the building or, during the winter months, within a control area inside the building and away from the area of concern. Typically, inside concentrations are less than control sample 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. This is typically done for both air and surface samples. In general, airborne mold specie types identified inside a building should be similar to those found on the control sample. If significant variations are observed, it may also be an indication of a potential mold problem.

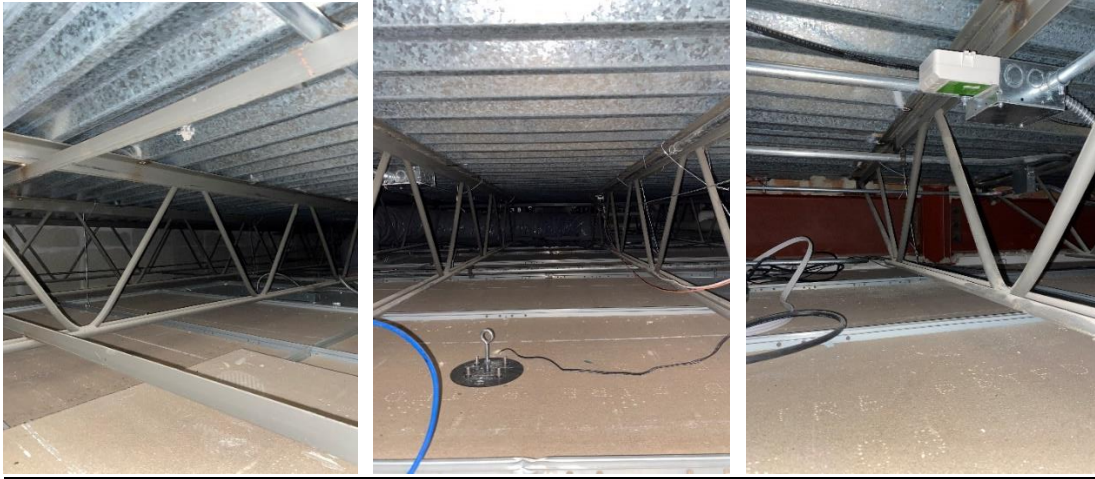
Please see the results from this study on the next page and in the attached laboratory report.

## RESULTS

AREA / ROOM SAMPLED	TOTAL FUNGAL SPORE COUNTS	SPORE COUNTS PER CUBIC METER OF AIR	IDENTIFICATIONS
LL9-1 LL Office 9, Adj. Teacher's Desks	6	200	<i>Aspergillus/Penicillium, Basidiospores, Unidentifiable Spores</i>
LL9-2 LL Office 9, Adj. Entrance	5	180	<i>Aspergillus/Penicillium, Basidiospores, Cladosporium</i>
LL9-3 Control Sample Stair N-4 Near Door 4	34	1410	<i>Aspergillus/Penicillium, Basidiospores, Cladosporium, Rust</i>

## PICTURES





## **CONCLUSIONS AND RECOMMENDATIONS**

There are no governmental standards for acceptable levels of mold spores. The American Conference of Governmental Industrial Hygienists (ACGIH) agrees that levels from 500 to 1,000 spores per cubic meter of air (sp/m<sup>3</sup>) could be a concern to those individuals that have a compromised respiratory system. Mold spore concentrations collected from inside Lower Level Office 9 during this study ranged from 180 to sp/m<sup>3</sup> to 200 sp/m<sup>3</sup>. The control sample results, collected in Stair N-4 adjacent to Entrance 4 for comparison purposes, were 1410 sp/m<sup>3</sup>. Air sample results collected during this study inside of Lower-Level Office 9 were below the ACGIH levels of concern.

At the time of air testing, no moldy or musty odors were noted. Visual inspections above drop ceilings or on exterior walls did not show signs of moisture, standing water or water infiltration. All air samples collected in Lower-Level Office 9 showed lower total spore counts than the control area concentrations, which is a normal finding. Additionally, the mold specie-types found in Lower-Level Office 9 were similar to specie types found on the control sample, which is also a normal finding.

Based on the air monitoring results obtained at the time of this study, Lower-Level Office 9 does not appear to harbor an active mold-growth reservoir. Please find the attached laboratory report and field drawing outlining the results and sampling locations, respectively.

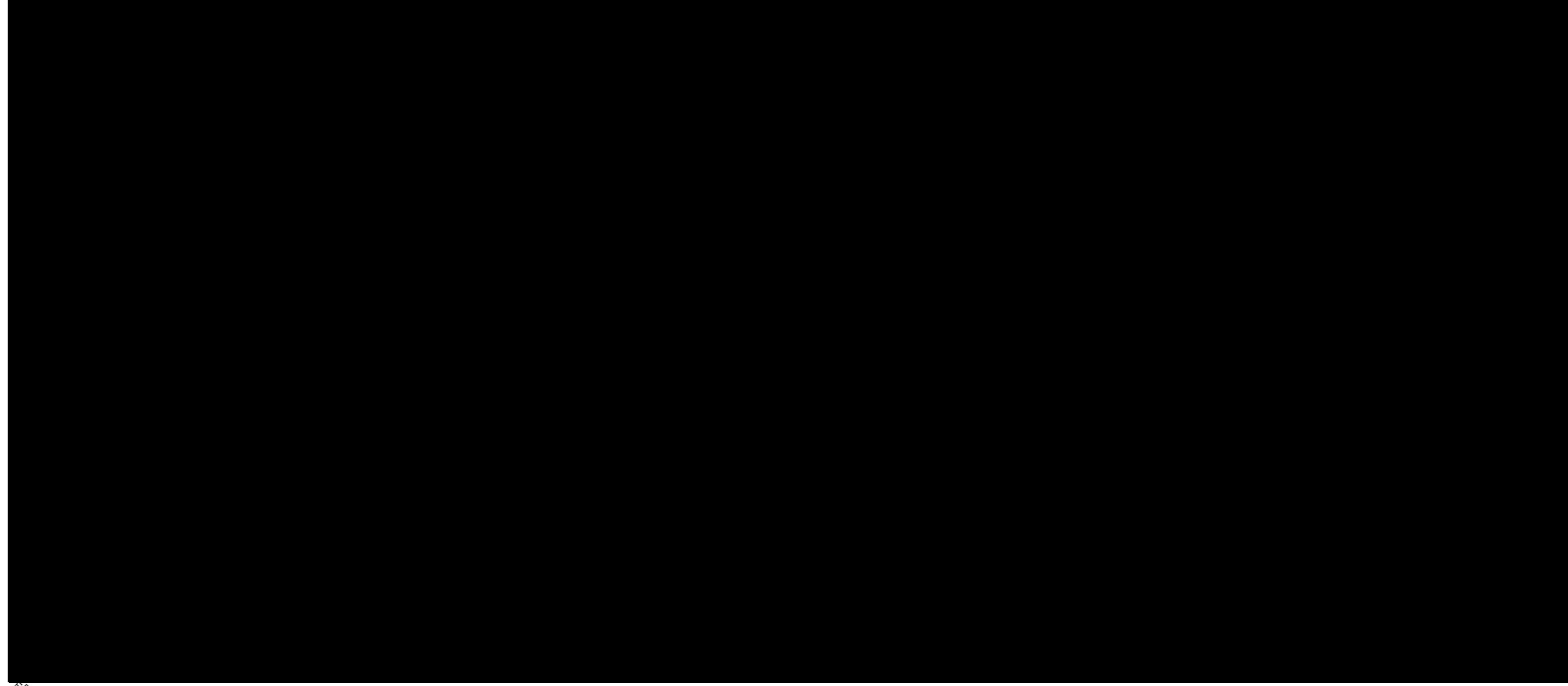
If you have any questions, please let us know.

Sincerely,



Pepper Environmental Technologies, Inc.  
Steve Soloma  
Senior Project Manager

# January 17, 2023 - Room 9 IAQ Mold Spore Air Sample Locations



LOWER LEVEL FLOOR PLAN

SCALE: 1/16" = 1'-0"

C:\Revit\22-19144-00\_Lundahl\_LAF\_2019\_mechmid.dwg  
1/14/2020 3:56:57 PM



# EMSL Analytical, Inc.

4140 Litt Drive Hillside, IL 60162  
Tel/Fax: (773) 313-0099 / (773) 313-0139  
<http://www.EMSL.com/chicagolab@emsl.com>

**EMSL Order:** 262300522  
**Customer ID:** PEPE25  
**Customer PO:** 2200797EEE  
**Project ID:**

**Attention:** Steve Soloma  
Pepper Environmental  
411 Lake Zurich Road  
Barrington, IL 60010

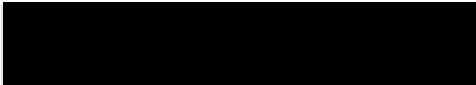
**Phone:** (630) 710-3834  
**Fax:**  
**Collected Date:** 01/17/2023  
**Received Date:** 01/17/2023 04:58 PM  
**Analyzed Date:** 01/24/2023

**Project:** 2200797EEE

### 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): Sample Location:	262300522-0001 LL9-1 75 RM 9 W- AT TEACHERS DESKS			262300522-0002 LL9-2 75 RM 9 E-NEAR ENTRANCE			262300522-0003 LL9-3 75 HALLWAY/STAIR ADJ DOOR 4			
	Spore Types	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total	Raw Count	Count/m <sup>3</sup>	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	3	100	50	3	100	55.6	25	1100	78	
Basidiospores	2	90	45	1	40	22.2	5	200	14.2	
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	1	40	22.2	3	100	7.1	
Curvularia	-	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	1*	10*	0.7	
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	1*	10*	5	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-	-
<b>Total Fungi</b>	<b>6</b>	<b>200</b>	<b>100</b>	<b>5</b>	<b>180</b>	<b>100</b>	<b>34</b>	<b>1410</b>	<b>100</b>	
Hyphal Fragment	-	-	-	-	-	-	3	100	-	
Insect Fragment	-	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	1*	10*	-	
Analyt. Sensitivity 600x	-	44	-	-	44	-	-	44	-	
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-	
Skin Fragments (1-4)	-	2	-	-	2	-	-	3	-	
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	2	-	
Background (1-5)	-	1	-	-	1	-	-	2	-	

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



Andrei Poluchowicz, Microbiology Technical Manager  
or other Approved Signatory

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

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 control criteria and met method specifications unless otherwise noted. 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. Skin & Fibrous ratings: 1 (1-25%), 2 (26-50%), 3 (51-75%), 4 (76-100%) of the background particles.  
Samples analyzed by EMSL Analytical, Inc. Hillside, IL AIHA LAP, LLC-EMLAP Accredited #102992

Initial report from: 01/24/2023 01:11 PM

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

EMSL ANALYTICAL, INC.  
TESTING LABS • PRODUCTS • TRAINING

262300522

PHONE: (800) 220-3675

EMAIL: CinnMicroLab@emsl.com

If Bill-To is the same as Report-To leave this section blank. Third-party billing requires written authorization.

Customer Information	Customer ID: <u>Pepe025</u>	Billing ID:	
	Company Name: <u>Pepper Env. Tech Inc.</u>	Company Name:	
	Contact Name: <u>Steve Soloma</u>	Billing Contact:	
	Street Address: <u>411 Lake Zurich Rd</u>	Street Address:	
	City, State, Zip: <u>Barrington, IL 60010</u> Country: <u>USA</u>	City, State, Zip:	Country:
	Phone: <u>(630) 710-3834</u>	Phone:	
Email(s) for Report: <u>ssoloma@pepperenvironmental.com</u>	Email(s) for Invoice:		

Project Information

Project Name/No: 2200797EEE Purchase Order:

EMSL LIMS Project ID: (If applicable, EMSL will provide)

State Samples Collected: 12 Zip Code Samples Collected: \_\_\_\_\_

State of Connecticut (CT) must select project location:  Commercial (Taxable)  Residential (Non-taxable)

Sampled By Name: Steve Soloma Sampled By Signat: \_\_\_\_\_ No. of Samples in Shipment: 3

Sterile, Sodium Thiosulfate Preserved Bottle Used:  Biocide Used in Source (specify): \_\_\_\_\_

Public Water Supply Samples:  Note: All results may automatically be reported to DOH if required by State.

Turn-Around-Time (TAT) Please call ahead for large projects and/or turnaround times 6 Hours or Less. \*32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

3 Hour  6 Hour  24 Hour  32\* Hour  48 Hour  72 Hour  96 Hour  1 Week  2 Week

MICROBIOLOGY TEST CODES

M001 Air-D-Cell	M174 MoldSnap	M012 Pseudomonas aeruginosa (PIA***)	M115 Sewage Screen - Water (PIA***)
M030 Micro 5	M032 Allergenco-D	M024 Pseudomonas aeruginosa (MFT*)	M116 Sewage Screen - Water (MPN**)
M041 Fungal Direct Examination		M015 Heterotrophic Plate Count	M117 Sewage Screen - Swab (PIA***)
M169 Pollen ID & Enumeration		M017 Total Coliform & E. Coli (Colilert PIA***)	M013 Sewage Screen - Swab (MFT*)
M280 Dust Characterization Level-1		M018 Total Coliform & E. Coli (MFT*)	M730 Methicillin-resistant Staph. aureus (MRSA)
M281 Dust Characterization Level-2		M114 Total Coliform & E. Coli Enumeration (Colilert MPN**)	M031 Rapid-growing non-TB Mycobacteria Detection & Enumeration
M005 Viable Fungi-Air Samples (Genus ID & Count)		M019 Fecal Coliform (MFT*)	M014 Endotoxin Analysis
M006 Viable Fungi-Air Samples (Includes Penicillium, Aspergillus, Cladosporium, Stachybotrys Species ID & Count)		M020 Fecal Streptococcus (MFT*)	M044 Group Allergen (Cat, Dog, Cockroach, Dust Mite)
M007 Culturable Fungi-Surface Samples (Genus ID & Count)		M029 Enterococci (MFT*)	M095 Bacteroides
M008 Culturable Fungi-Surface Samples (Includes Penicillium, Aspergillus, Stachybotrys Species ID & Count)		M129 Enterococci (Enterolert PIA***)	Other - See Analytical Price Guide for Test Code
M009 Bacteria Culture Gram Stain & Count		M180 Real Time qPCR-ERMI 36 Panel	Legionella Analysis Please use EMSL Legionella COC
M010 Bacteria Count & ID - 3 Most Prominent		M025 Sewage Screen - Water (MFT*)	
M011 Bacteria Count & ID - 5 Most Prominent		*MFT= Membrane Filtration Technique	
		**MPN = Most Probable Number	
		***PIA = Presence/Absence	

Sample #	Sample Location/Description	Sample Type (Matrix)	Potable / Non-Potable (Only for Water)	Test Code	Volume/Area	Date / Time Collected	Temperature (Lab Use Only)
Example: Sample 1	Kitchen	Water	-Potable	M017	1,000 ml	1/1/2021 3:30pm	--
LL9-1	Rm 9, W. @ teacher's desks	Air	—	M001	75L	1/17/23	
LL9-2	Rm 9, E near entrance	Air	—	↓	75L	↓	
LL9-3	Hallway/stair Adj. Door	Air	—	↓	75L	↓	

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Method of Shipment: \_\_\_\_\_ Sample Condition Upon Receipt: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date/Time: 1/17/23 Received by: \_\_\_\_\_ Date/Time: 1/17/23 4:58pm

Controlled Document - COC-34 Micro R13 03/02/2021

AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.