April 16, 2015

Clemson University
310 Klugh Avenue
Clemson, South Carolina 29634

Attn: Mr. W. Robert Newberry, IV
E: wnewber@clemson.edu

Re: Limited Mold Sampling Report
Clemson University
Lehotsky – Office 262
Clemson, South Carolina
Terracon Project No. 86127158

Dear Mr. Newberry:

Terracon Consultants, Inc. (Terracon) conducted limited mold sampling in office 262 at Lehotsky Hall located on Clemson University's main campus in Clemson, South Carolina. It is our understanding there are occupant complaints pertaining to mold in carpeting. The sampling was performed in general accordance with our IDC with Clemson University.

PROJECT DESCRIPTION

Mr. Wesley Smith of Clemson University requested carpet sampling for mold in office 262 of Lehotsky Hall on March 26, 2015. The occupant of the office had complaints of mold in the carpeting. Terracon representative Mr. Jeffrey Gurrie performed this sampling on March 30, 2015.

This sampling event was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. Terracon did not attempt to identify every potential exposure or hazard present in the subject building. The results, findings, conclusions, and recommendations expressed in this report are based on conditions observed during our sampling. Many factors, such as weather conditions, building occupancy, ventilation patterns, and seasonal variations in fungal/bacterial concentrations or local sources of volatile chemicals, can affect the conditions observed. The information contained in this report should not be relied upon to represent conditions that existed prior to or after this sampling. Terracon does not warrant the services of regulatory agencies, laboratories, or other third parties supplying information that may have been used in the preparation of this report.

INVESTIGATION CRITERIA AND METHODS

There are no state or federal exposure limits established for fungal aerosols. There are currently no regulatory standards or medically based threshold limit or dose-response relationships for exposure to airborne or surface concentrations of mold spores. High variability in airborne fungal spore concentrations can exist in different geographic locations, during different seasons, and weather patterns, and over the course of a given day. Terracon relies upon experience, professional judgment, current scientific literature, guidelines and recommendations made by professional organizations and experts, and statistical methods in interpreting mold sampling results.

In 2013 the New York Committee for Occupational Safety and Health (NYCOSH) published a document entitled *Methods for Evaluation of Indoor Mold Growth.* This document provides guidance on various mold levels within a conditioned environment. The NYCOSH presents guidance on micro-vac sampling of dusts where mold growth less than 50,000 colony forming units per gram of dust (cfu/g) may be interpreted as low or normal growth and results greater than 1,000,000 cfu/g may be interpreted as very active growth.

Terrracon collected dust samples of the carpeting in the complaint office 262 and non-complaint office 264. Carpet dust samples were collected using a 0.45 µm mixed cellulose ester filter inside a 25 millimeter sampling cassette. A vacuum pump was connected to the sampling cassette and set at a flow rate of approximately 5 liters per minute. Various areas of the office carpeting were vacuumed (approximately 5 square feet) to collect settled surface dust. After sample collection, the samples were shipped to Southeast Environmental Microbiology Laboratories, Inc. (SEEML), accredited by the AHIA® Laboratory Accreditation Programs, LLC under the Environmental Microbiology Laboratory Accreditation Program (EMLAP), Accreditation #173667. The samples were weighed, placed in solution, and incubated in malt extract agar (MEA) for 7-10 days. Mold growth was identified at the genus level and is reported in cfu/g.

FINDINGS

Terracon collected two carpet vacuum samples; the complaint office 262 and the adjacent non-complaint office 264. The laboratory results indicated the vacuum sample collected in office 262 contained 43,333 cfu/g with *cladosporium sp.* and *penicillium sp.* being the predominant molds recovered. For comparison the vacuum sample collected in the non-complaint adjacent office 264 contained 170,000 cfu/g with *cladosporium sp.* and *penicillium sp.* being the predominant molds recovered.

During our assessment no musty odors, staining on carpeting, or apparent visible mold was observed in either office. Terracon is not aware any recent water events or cleaning schedule.

A copy of the laboratory results is attached to this report.

CONCLUSIONS

The following conclusions and recommendations are provides based on our assessment:

- The carpet vacuum samples collected in the complaint office were lower than the non-complaint office. In addition both *cladosporium sp.* and *penicillium sp.* were the predominant molds recovered.
- In accordance with the NYCOSH guidelines micro-vac samples with less than 50,000 cfu/g may be interpreted as low or normal growth. Office 262 micro-vac sample contained 43,000 cfu/g and was less than the NYCOSH guideline. Office 264 micro-vac sample contained 170,000 cfu/g and may be considered low to moderate growth.
- Based on the comparison to the complaint versus non-complaint surface sampling and the comparison to the NYCOSH guidelines, the carpeting in office 262 appears to meet guidelines. If there is a continued concern with the carpeting, an increased cleaning schedule is recommended using a vacuum with a HEPA filter.

Terracon appreciates the opportunity to provide this service to Clemson University. If you have any questions regarding this limited mold sampling report, please contact the undersigned at 864-292-2901.

Sincerely,
Terracon Consultants, Inc.

Jeffrey Gurrie
Senior Project Industrial Hygienist

Jeffrey Mutchler, MPH
Approved Project Reviewer

Attachments: Laboratory Results

Laboratory Results

SEEML Reference Number:
150331001-QV

Southeast Environmental Microbiology Laboratories, Inc.
506 Laurens Rd
Greenville, SC 29607
Phone: (864) 233-3770
FAX: (864) 233-6589

The information and data for **Terracon** has been checked for thoroughness and accuracy. The following reports are contained within this document:

- ☐ Direct Exam Report
- ☐ Spore Trap Report
- ☐ Andersen Fungal Report
- ☐ Quantitative Direct Exam Report
- ☒ Quantitative Fungal Report

Lab Manager Review: Rafael Berrios Date: 04/07/15

Thank you for using SEEML laboratories, Inc. We strive to provide superior quality and service.
SEEML laboratories, Inc. are AIHA (American Industrial Hygiene Association) Environmental Microbiology Accredited laboratory for only fungal analysis Air-Direct Examination (EMLAP # 173667).

The data within this report is reliable to three significant figures. The third significant figure is technically unjustified. In this instance, the third figure is reported as an estimate to facilitate the interpretation by the customer.

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Guidelines for Interpretation:
No accepted quantitative regulatory standards currently exist by which to assess the health risks related to mold and bacterial exposure. Molds and bacteria have been associated with a variety of health effects and sensitivity varies from person to person.
Several organizations, including: the American Conference of Government Industrial Hygienists (ACGIH); the American Industrial Hygiene Association (AIHA); the Indoor Air Quality Association (IAQA); the United States Environmental Protection Agency (USEPA); the Centers for Disease Control (CDC), as well as the California Department of Health Services (CADHS), have all published guidelines for assessment and interpretation of mold resulting from water intrusion in buildings.

Interpretation of the data and information within this document is left to the company, consultant, and/or persons who conducted the fieldwork.

Quantitative Viable Fungal Report (Dust)

Attention: Jeff Gurrie				Date Sampled: 03/30/15					
Terracon				Date Received: 03/31/15					
3534 Rutherford Road				Date Analyzed: 04/07/15					
Taylors, SC 29687				Date Reported: 04/07/15					
				Project Name: Lehotsky					
				Project Number: 86127158					
Test Method: Viable Dust				SEEML Reference # : 150331001-QV					
Client Sample ID	262			264					
Location	Room 262 Carpet			Room 264 Carpet					
SEEML Sample ID	150331001-QV-001			150331001-QV-002					
Sample amount(gram)	.03			.01					
Media Used	MEA			MEA					
	raw ct.	cfu**/gram	%	raw ct.	cfu**/gram	%			
Alternaria									
Aspergillus flavus									
Aspergillus fumigatus									
Aspergillus glaucus									
Aspergillus nidulans									
Aspergillus niger									
Aspergillus sydowii									
Aspergillus versicolor									
Aspergillus other									
Aureobasidum									
Botrytis									
Chaetomium									
Cladosporium	7	23333	54	6	60000	35			
Epicoccum	2	6667	15						
Fusarium									
Mucor	1	3333	8						
Non-sporulating Fungi				2	20000	12			
Paecilomyces									
Penicillium	3	10000	23	9	90000	53			
Phoma sp.									
Pithomyces									
Rhizopus									
Stachybotrys									
Stemphylium									
Ulocladium									
Yeast									
Dilutions	$1:10^1$, $1:10^2$, $1:10^3$			$1:10^1$, $1:10^2$, $1:10^3$					
TOTAL cfu/gram	13	**43333**		17	**170,000**				
Quality Control									

**colony forming units(The reporting limit is cfu/sample adjusted for weight dilution factor used)

Comments: Condition of the sample(s) upon receipt: Acceptable.

Total % may not equal 100 due to rounding.

Superscripts = $1:10^1$, $1:10^2$, $1:10^3$ are dilution factors. For example a count of 9 on a 1:100 equals 900cfu/gram

Disclaimer: This report relates only to the samples tested.

Respectfully submitted, SEEML, Inc.

Rafael Berrios

Rafael Berrios, Approved Laboratory Signatory

506 Laurens Road
Greenville, SC 29607
Phone: (864) 233- 3770
Fax: (864) 233- 6589
AIHA-LAP EMLAP # 173667

Southeast Environmental Microbiology Laboratories
Chain of Custody

506-A Laurens Rd, Greenville, SC 29607
Phone : 864-233-3770, Fax: 864-233-3779, www.seeml.com, AIHA-LAP, LLC. (EMLAP) #173667

For Lab Use Only

Condition of samples is acceptable	☐ YES ☐ NO	SEEML Ref #: 150381001 -QV	Lab ID: 001-002

Company Information		Client Information		Environmental Conditions	
(Project Manager)	JEFF GURLEY	Date Sampled:	3/30/15	Precipitation in last 16hrs:	
(Company Name)	TERRACON	Project Name:	86127158 ~~LEHOTSKY~~	Relative Humidity I/O:	/
(Address)		Project Address:	LEHOTSKY	Temperature I/O:	/
(City, State, Zip)	TAYLORS SC	City, State, Zip:		Wind Conditions	
(Phone)	864 360-7572				
(Email)	JAGURLEY@TERRACON.C-				

Sample Type Abbreviations:
A- Allergenco **S**-Swab **AP**-Andersen Plate
AOC- Air O Cell **T**-Tape **W**- Water
M5- Micro 5 **B**- Bulk **D**- Dust

Analysis Type:
1. SporeTrap, Air Sample Analysis-Same Day
2. Direct Exam Surface Sample Analysis -Same Day
3. Culturable Air / Surface Samples -7-10 days

Sample ID	Sample Location	Sample Type	Analysis Type	*Area	**Volume (L)	Notes
262	Rm 262 CARPET	B/D	3			.03g
264	Rm 264 CARPET	B/D	3			.01g

Reliquished By:	Date/Time	Recieved By:	Date/Time
	3/30/15		3-30-15

* Area is only required for culturable surface samples.
** Volume = Pump setting (L/min) x minutes