November 10, 2015

Clemson University
310 Klugh Avenue
Clemson, South Carolina 29634

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

Re: Limited IAQ Investigation Report
Clemson University
Edgar Brown University Union Building (Room 806)
Clemson, South Carolina
Terracon Project No. 86127158 – Task 40

Dear Mr. Newberry:

Terracon Consultants, Inc. (Terracon) conducted a limited indoor air quality (IAQ) investigation in Room 806 of the Edgar Brown University Union Building located on Clemson University's main campus in Clemson, South Carolina. It is our understanding there are occupant complaints pertaining to allergies. The sampling was performed in general accordance with our IDC with Clemson University.

PROJECT DESCRIPTION

At the request of Clemson University Terracon conducted a limited IAQ investigation of the office suite in Room 806 on the 8th floor of the Edgar Brown University Union Building. One of the occupants of the office (Mr. Todd Chamberlin) has allergy related symptoms which reportedly subside when he spends working hours in other locations (such as his home office).

Terracon previously visited these offices in July 2015 and collected both viable mold samples and total spore traps, along with measurements of temperature and relative humidity. While no fungal analyses indicated an ongoing indoor source, relative humidity readings were higher than levels recommended for office workers.

This office (Room 806) is located in the southwest corner of the building. The office includes a central administrative area and three additional office spaces, all of which are located along the outer wall on the west side of the building. Terracon representative Mr. Benjamin Hestir performed this investigation on September 30, 2015.

This investigation 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 investigation. 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 investigation. 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

Visual Inspection

A visual inspection was conducted of the coils in the air conditioning units in the four rooms. In addition, the maintenance covers were removed from two of the AC units in order to assess the condition of the condensate drains. The inspection focused primarily on collecting observational data (i.e., information obtained by physical inspection of the building and interviews with the building management, owners, and occupants). The visual inspection can help to formulate plans for more in-depth investigation. Destructive sampling or testing to inspect interior wall cavity spaces was not within the scope of work for this project.

The visual inspection included:

- an examination of the visible AC coils through the vent at the top of the AC units;
- the identification of any discoloration or odor that could indicate dust accumulations or fungal growth;
- an examination of the HVAC drain system(s) in select AC units.

Mold and Allergen Sampling from Carpeting

Pairs of dust samples were collected from carpet in three locations in the office using a high volume air sampling pump in conjunction with a Zefon 25-millimeter carpet/dust sampling cassette preloaded with a .45 micrometer mixed cellulose ester (MCE) filter.

After sample collection, the samples were shipped by overnight courier to EMSL in Cinnaminson, New Jersey. EMSL is accredited by the AIHA® Laboratory Accreditation Programs, LLC under the Environmental Microbiology Laboratory Accreditation Program (EMLAP), Accreditation #100194.

The sample pairs from each of the three locations were analyzed for viable mold and allergens (dust mites, mouse, rat, cat, dog, and cockroach). Mold results are reported in colony forming units bulk (CFUs/in^2) and allergen results are reported in micrograms per filter (µg/filter).

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 surface sampling of dusts where mold growth less than 10,000 colony forming units per square inch (cfu/in^2) may be interpreted as background level growth and results greater than 10,000 cfu/in^2 may be interpreted as probable contamination.

EMSL has provided guidelines for allergens based on research published in the following journals: *Journal of Allergy and Clinical Immunology, The American Review of Respiratory Disease, Environmental Health Perspectives, and Clinical and Experimental Allergy.*

Swab Samples

The primary purpose is to determine whether or not mold is growing on the surface sampled, and if so, what kinds of molds are present. This type of analysis may identify a skewing of the normal distribution of spore types. It may also identify "marker" genera which may be indicative of indoor mold growth. The presence of biological materials on a particular surface is not a direct indication of what may be in the air, but may assist in determining airborne mold sources.

In areas of the AC drain pans where potential fungal growth was observed, swab samples were collected on sterile transport swabs for viable mold analysis. Results are reported in colony forming units (CFUs) per swab.

Particulate Counts

In accordance with ISO 14644-1, an international standard for particulates in clean rooms for medical and manufacturing applications. ISO Class 9 is considered normal room air and comprises of maximum levels at a particle size. Terracon measured the distribution of particulates in the air in five locations on the 8th floor of the Student Union building with a TSI Model 9306 AeroTrak Particle Counter. Particle sizes from 0.5 micrometers (µm) to 10 µm were measured at three locations within Room 806 and also in the hallway outside the offices and in the nearby conference room for comparison.

Temperature and Relative Humidity

Indoor air temperature and RH are physical conditions important to the perception of comfort. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) has published recommendations regarding thermal comfort. ASHRAE Standard 55-2004, Thermal

Environmental Conditions for Human Occupancy, identifies six primary factors that affect comfort: metabolic rate (affected by the activity being performed); clothing insulation; air temperature; radiant temperature; air speed; and humidity.

Although the relationships are complex, a temperature range between 73 and 79 degrees Fahrenheit (°F) with relative humidity between roughly 20 and 60 percent (%) are recommended for persons performing "office" work and wearing light summer clothing. Higher temperatures require lower humidity for comfort. For persons in winter clothing, temperatures can range between 68 and 75 °F, with relative humidity between 30 and 60%.

EPA recommends maintaining low indoor humidity, below 60% relative humidity, ideally 30-50%, if possible.

Readings of temperature and relative humidity were made with an Extech Model 445580 instrument which was calibrated by the manufacturer.

FINDINGS

Physical Assessment

The Student Affairs office is in Room 806 on the 8th floor, southwest corner of the Edgar Brown University Union and contains four interconnected offices. This was our second visit to the space in order to collect additional samples using different means and methods from our first visit. Heating and cooling in each room is supplied by a two-pipe style fan coil unit with no fresh air controls. Makeup air for these units is provided through building leakage or manually by opening windows. The HVAC coils were visible through the outlets at the top of the HVAC units and were universally clean in appearance; however, the interior coils and drain pans had apparent biological growth. Each of the four HVAC units had thick filter media installed beneath the air intake at the floor level. The drain pan in the outer office in Room 806 was observed to have some possible fungal growth.

Mold and Allergen Analytical Results

Carpet dust samples were collected for mold and allergens in three locations, in room 806C (office of Todd Chamberlain), room 806A (office of Sarah Reeves) and in the hallway just outside the entrance door to Suite 806. Samples from each location were analyzed for viable mold and allergens. Allergen testing included: dust mites, mouse, rat, cat, dog, and cockroach. The laboratory analytical reports for carpet dust sample analyses (allergens and viable mold) and swab sample analyses (viable mold) are attached.

The following allergens were detected in the analyses of carpet dust samples:

Table 1: Summary of Allergen Carpet Dust Results – September 30, 2015

Sample #		CS-1	CS-2	CS-5
Location		**Room 806C Office**	**Room 806A Office**	**Outside Hall**
Test Parameter/Antigens	**Detection Limit**	**µg/filter**	**µg/filter**	**µg/filter**
Dust Mites/Der f1	0.01	ND	0.01	ND
Dust Mites/Der p1	0.01	ND	ND	ND
Mouse/Mus m1	0.001	ND	ND	ND
Rat/Rat n1	0.004	0.01	ND	0.02
Cat/Fel d1	0.003	ND	ND	ND
Dog/Can f1	0.01	ND	ND	ND
Cockroach/Bla g1	0.02	ND	ND	ND

Notes: µg = microgram (1 X 10^{-6} grams)

The following species were identified in the carpet dust samples analyzed for viable mold:

Table 2: Summary of Viable Mold Carpet Dust Results – September 30, 2015

Sample #	CS-3	CS-4	CS-6
Location	**Room 806C Office**	**Room 806A Office**	**Outside Hall**
Species	**CFUs/in²**	**CFUs/in²**	**CFUs/in²**
Arthrographis sp.	6	---	---
Penicillium sp.	19	---	---
Aspergillus sp.	---	6	---
Paecilomyces sp.	---	6	---
Rhodotorula sp.	---	---	6
Yeast	---	---	13
Total	**25**	**12**	**18**

Notes: CFU = colony forming unit, Bulk = bulk dust sample

The following mold species were identified from the swab samples collected from the HVAC drains in the outer office in Suite 806:

Table 3: Summary of Viable Mold Swab Sample Results – September 30, 2015

Sample #	Swab 1	Swab 2
Location	**Outer Office HVAC Drain 1**	**Outer Office HVAC Drain 2**
Species	**CFUs/Swab**	**CFUs/Swab**
Acremonium sp.	310,000	100
Cladosporium sp.	800	---
Penicillium sp.	100	---
Rhodotorula sp.	10,000	---
Yeast	460,000	160,000
Total	**781,000**	**160,000**

Notes: CFU = colony forming unit, Swab = sterile swab sample media

The following particulate count, temperature and relative humidity measurements were made:

Table 4: Particulate Counts, Temperature and Relative Humidity – September 30, 2015

Location	0.5 µm	1.0 µm	5 µm	10 µm	Temperature	Relative Humidity
Area/Location	Particles/m^3	Particles/m^3	Particles/m^3	Particles/m^3	(°F)	(%)
Room 806C	1,685,512	595,053	69,611	13,428	75.9	67
Room 806 (outer office)	1,495,760	520,848	77,032	22,615	75.1	66
Room 806A	1,901,413	1,127,915	184,186	43,110	75.1	67
Hallway outside Room 804	1,274,558	563,604	93,286	25,795	75.1	63
Conference Room 800	684,099	210,247	29,329	12,367	73.1	63
ISO Class 9 Maximum	35,200,000	8,320,000	293,000	NA		
ISO Class 8 Maximum	3,520,000	832,000	29,300	NA		

Notes: NA = not applicable, µm = micrometer (1 X 10^{-6} meters), m^3 = cubic meter of air

The bottom two rows of Table 4 contain clean room standards according to ISO 14644-1, an international standard for particulates in clean rooms for medical and manufacturing applications. ISO Class 9 is considered normal room air and ISO Class 8 is one level higher than that within the clean room standards. Particulate counts measured by Terracon in Suite 806 are below the recommended maximums for the normal room air standard (ISO Class 9) and are below the majority of the ISO Class 8 recommended maximums.

Conclusions and Recommendations

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

- Information on the viable molds detected in both carpet dust samples and swabs can be used by occupants of the space to determine if they have allergies to the specific species detected. Surface sampling of the carpet does not appear to be above guidelines from NYCOSH. Swab sampling of the fan coil units detected various levels of viable molds. Terracon recommends the fain coil units be cleaned. Furthermore, the office furniture in Room 806C is blocking access for cleaning and investigation.

- While there were low level detections of dust mite and rat allergens, the low amounts detected prevented the lab from assigning an allergen risk level.

- Periodic cleaning of the air handlers servicing the four rooms that make up Suite 806, including the disinfection of the drain pans, should help with symptoms that may be related to mold allergies.

- Particulate counts are below ISO standards for normal room air. In comparison to other areas tested, Suite 806A had higher particulate counts. This may be a function of the

carpet age in the respective rooms, air bypassing the filter on the fan coil unit, or increased breakdown of cellulose ceiling tile.

- Indoor relative humidity at the time of our assessment was in excess of 60%, well above the 30% – 50% recommended for comfort in an office setting. Maintenance should verify the fan coil unit can control humidity below 60%.

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

Sincerely,
Terracon Consultants, Inc.



Benjamin Hestir, P.E.
Project Industrial Hygienist



Jeffrey Gurrie
Senior Project Industrial Hygienist

Attachments: Photographs
Laboratory Results

Photographs



Photo #1 Location of Carpet Dust Samples CS-1 and CS-3 in Room 806C. Desk blocking fan coil unit access.



Photo #2 Location of Carpet Dust Samples CS-2 and CS-4 in Room 806A

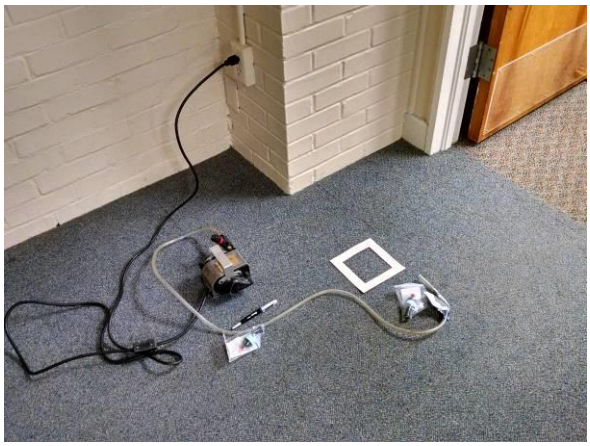


Photo #3 Location of Carpet Dust Samples CS-5 and CS-6 outside of Suite 806 in the hallway

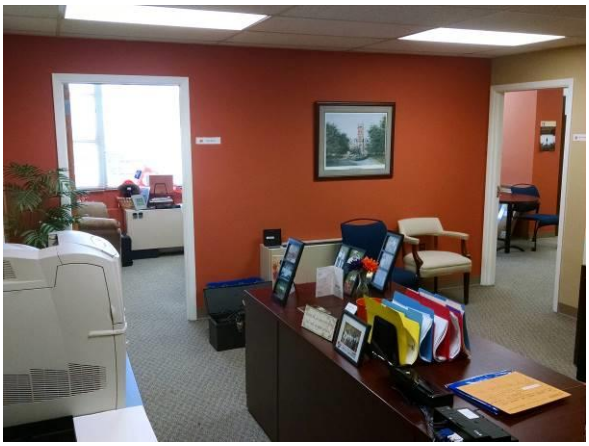


Photo #4 View of Suite 806 outer office with Room 806C to the right and Room 806A to the left



Photo #5 View of outer office HVAC unit in Suite 806



Photo #6 View of air filtration media installed at base of each HVAC unit in Suite 806



Photo #7 View of coils inside HVAC unit from top



Photo #8 View of particulate meter while collected sample in Room 806C



Photo #9 View of particulate meter while collecting sample in Suite 806 outer office

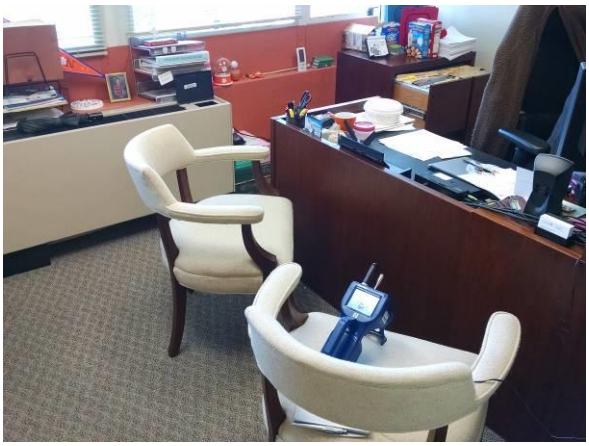


Photo #10 View of particulate meter while collecting sample in Room 806A



Photo #11 View of HVAC drain pan in outer office – location of Swab Sample 1



Photo #12 View of HVAC drain in outer office – location of Swab Sample 2

Laboratory Results



EMSL Analytical, Inc.

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Cinnaminson, NJ 08077

Tel: (856) 858-4800
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Indoor Allergen Analysis by ELISA

Prepared Exclusively For

Ben Hestir
Terracon Consultants, Inc,
3534 Rutherford Road
Taylors, SC 29687

Date Received:	**10/2/2015**
Date Reported:	**10/9/2015**
Project:	**CU Task 40-Student Union**
EMSL Order:	**371517829**
Client ID	**GTER78**

If you have any questions, please do not hesitate to contact us at (856)858-4800.

All samples were collected by and all sampling data was provided by the client. The results are valid only for those samples analyzed, and only for those samples collected in accordance with the appropriate methodology as determined by the client.
The results herein do not denote or represent a medical or clinical diagnosis or conclusion. In the event that sample(s) were submitted in opened, used non-sterile or otherwise adulterated condition, EMSL shall not be responsible or liable.

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Please visit our website at http://www.emsl.com for more information about our certifications and accreditations.

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EMSL Reference: **371517829**
Date Collected: 9/30/2015
Date Received: 10/2/2015
Date Reported: 10/9/2015

Indoor Allergen Report

Lab Sample ID	**371517829-1**
Client Sample ID	**CS-1**
Sample Location	**RM 806C**

Test Parameter	*Antigens*	*Detection Limits*	*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.01	**ND**	**µg/filter**	ND
Dust Mites Allergen	Der p1	0.01	**ND**	**µg/filter**	ND
Mouse Allergen	Mus m1	0.001	**ND**	**µg/filter**	ND
Rat Allergen	Rat n1	0.004	**0.01**	**µg/filter**	†
Cat Allergen	Fel d1	0.003	**ND**	**µg/filter**	ND
Dog Allergen	Can f1	0.01	**ND**	**µg/filter**	ND
Cockroach Allergen	Bla g1	0.02	**ND**	**U/filter**	ND

Farbod Nekouei M.S., Lab Manager
Or Other Approved Signatory

Low: Not Sufficient to cause symptoms. Moderate: Risk for sensitization and bronchial hyperactivity. High: Risk for acute allergic asthma attack. µg/g: Micrograms per gram, U/g: Units per gram, ng/g: Nanogram per gram. N/A: Not Applicable. ND (None Detected): Indicates that the amount of allergen in the sample is below the detection limits.
†: Sufficient evidence is not available for risk levels
This report and guidelines furnish information only. Whether an individual suffers allergic symptoms or not depends on his/her medical history and previous exposure.

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EMSL Reference: **371517829**
Date Collected: 9/30/2015
Date Received: 10/2/2015
Date Reported: 10/9/2015

Indoor Allergen Report

Lab Sample ID	**371517829-2**
Client Sample ID	**CS-2**
Sample Location	**RM 806A**

Test Parameter	*Antigens*	*Detection Limits*	*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.01	**0.01**	**µg/filter**	†
Dust Mites Allergen	Der p1	0.01	**ND**	**µg/filter**	ND
Mouse Allergen	Mus m1	0.001	**ND**	**µg/filter**	ND
Rat Allergen	Rat n1	0.004	**ND**	**µg/filter**	ND
Cat Allergen	Fel d1	0.003	**ND**	**µg/filter**	ND
Dog Allergen	Can f1	0.01	**ND**	**µg/filter**	ND
Cockroach Allergen	Bla g1	0.02	**ND**	**U/filter**	ND

Farbod Nekouei M.S., Lab Manager
Or Other Approved Signatory

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EMSL Reference: **371517829**
Date Collected: 9/30/2015
Date Received: 10/2/2015
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Indoor Allergen Report

Lab Sample ID	**371517829-3**
Client Sample ID	**CS-5**
Sample Location	**Hall Outside 806**

Test Parameter	*Antigens*	*Detection Limits*	*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.01	**ND**	**µg/filter**	ND
Dust Mites Allergen	Der p1	0.01	**ND**	**µg/filter**	ND
Mouse Allergen	Mus m1	0.001	**ND**	**µg/filter**	ND
Rat Allergen	Rat n1	0.004	**0.02**	**µg/filter**	†
Cat Allergen	Fel d1	0.003	**ND**	**µg/filter**	ND
Dog Allergen	Can f1	0.01	**ND**	**µg/filter**	ND
Cockroach Allergen	Bla g1	0.02	**ND**	**U/filter**	ND

Farbod Nekouei M.S., Lab Manager
Or Other Approved Signatory

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†: Sufficient evidence is not available for risk levels
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EMSL Order: 371517829

Guidelines to Interpretation

Allergens

	µg/g											
	<DL	<1	1	2	3	4	5	6	7	8	9	>10
Fel d1	ND	Low	Mod	Mod	Mod	Mod	Mod	Mod	Mod	High	High	High
Can f1	ND	Low	Low	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod	High
Der p1	ND	Low	Low	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod	High
Der f1	ND	Low	Low	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod	High
Mus m1	ND	Low	Mod	Mod	Mod	High	High	High	High	High	High	High
µg/m3												
Rat n1	ND	<0.7 µg /m3 = Not associated with increased risk of asthma										
Hev b5	ND	<0.6 ng/m3 = Not associated with increased risk of asthma										
Hev b6.02	ND	<0.6 ng/m3 = Not associated with increased risk of asthma										
U/g												
Bla g1 †	ND	Low	Mod	Mod	Mod	High	High	High	High	High	High	High
Bla g2 †	ND	Low	Mod	Mod	Mod	High	High	High	High	High	High	High

† *Suggested levels. Not officially established.*

Note: This report and guidelines furnish information only.

Whether an individual suffers allergic symptoms or not depends on his/her medical history and previous exposure.

References

Journal of Allergy and Clinical Immunology 1989; 83:416-427

Journal of Allergy and Clinical Immunology 1995; 96:449-456

The American review of respiratory disease 1990; 141:361-367

The American review of respiratory disease 1993; 147:573-578

Environmental Health Perspectives 2002; 110:419-425

Clinical and Experimental Allergy 1998; 28(5):537-44

Terminology

Allergen	A substance which reacts with the body's immune system to produce an allergic reaction.
Antigen	A substance, foreign to the body, which stimulates the production of antibodies by the immune system.
Bla g1	*Blattella germanica* (Cockroach) allergen 1
Bla g2	*Blattella germanica* (Cockroach) allergen 2
Can f1	*Canis familiaris* (Dog) allergen 1
Der f1	*Dermatophagoides farinae* (Dust Mites) allergen 1
Der p1	*Dermatophagoides pteronyssinus* (Dust Mites) allergen 1
Detection Limits	DL is the smallest amount of a substance, in this case antigens, which can be measured.
Fel d1	*Felis domesticus* (Cat) allergen 1
Hev b5	*Hevea brasiliensis* (Latex) allergen 5
Hev b6.02	*Hevea brasiliensis* (Latex) allergen 6.02
Mus m1	*Mus musculus* (Mouse) allergen 1
ND	None detected, if any allergens are present they are below the detection limits.
Rat n1	*Rattus norvegicus* (Rat) allergen 1

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EMSL Order: 371517829

Important Terms, Conditions, and Limitations

A. Sample Retention

Samples analyzed by EMSL will be retained for 60 days after analysis date. Storage beyond this period is available for a fee with written request prior to the initial 30 day period. Samples containing hazardous/toxic substances which require special handling will be returned to the client immediately. EMSL reserves the right to charge a sample disposal fee or return samples to the client.

B. Change Orders and Cancellation

All changes in the scope of work or turnaround time requested by the client after sample acceptance must be made in writing and confirmed in writing by EMSL. If requested changes result in a change in cost the client must accept payment responsibility. In the event work is cancelled by a client, EMSL will complete work in progress and invoice for work completed to the point of cancellation notice. EMSL is not responsible for holding times that are exceeded due to such changes.

C. Warranty

EMSL warrants to its clients that all services provided hereunder shall be performed in accordance with established and recognized analytical testing procedures and with reasonable care in accordance with applicable federal, state and local laws. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied. EMSL disclaims any other warranties, express or implied, including a warranty of fitness for particular purpose and warranty of merchantability.

D. Limits of Liability

In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. EMSL will not be held responsible for the improper selection of sampling devices even if we supply the device to the user. The user of the sampling device has the sole responsibility to select the proper sampler and sampling conditions to insure that a valid sample is taken for analysis. Any resampling performed will be at the sole discretion of EMSL, the cost of which shall be limited to the reasonable value of the original sample delivery group (SDG) samples. In no event shall EMSL be liable to a client or any third party, whether based upon theories of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder.

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E. Indemnification

Client shall indemnify EMSL and its officers, directors and employees and hold each of them harmless for any liability, expense or cost, including reasonable attorney's fees, incurred by reason of any third party claim in connection with EMSL's services, the test result data or its use by client.

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EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-0262
http://www.EMSL.com cinnmicrolab@emsl.com

EMSL Order:	371517829
CustomerID:	GTER78
CustomerPO:	
ProjectID:	

Attn: **Ben Hestir**
Terracon Consultants, Inc.
3534 Rutherford Road
Taylors, SC 29687

Phone:	(864) 292-2901
Fax:	(864) 292-6361
Received:	10/02/15 9:10 AM
Analysis Date:	10/13/2015
Collected:	9/30/2015

Project: **CU Task 40 - Student Union**

Test Report: Identification and Enumeration of Culturable Fungi by Bulk (Genus Level ID (EMSL Method M005))

Sample Description	Sample Location	Temp (C)	Sample Measure (in^2)	Analytical Sensitivity (CFU/in^2)	Dilution	Fungal Identification	Colony Count	CFUs (CFU/in^2)	Percent of Total
CS-3	RM 806C	25	16	6	100	*Arthrographis sp.*	1	6	24.9
371517829-0003	*Media:* MEA,CELL			6	100	*Penicillium sp.*	3	19	74.9
						Total	**4**	**25**	
Customer Sample									
CS-4	RM 806A	25	16	6	100	*Aspergillus sp.*	1	6	50.0
371517829-0004	*Media:* MEA,CELL			6	100	*Paecilomyces sp.*	1	6	50.0
						Total	**2**	**12**	
Customer Sample									
CS-6	Hall Outside 806	25	16	6	100	*Rhodotorula sp.*	1	6	33.2
371517829-0006	*Media:* MEA,CELL			6	100	*Yeast*	2	13	66.5
						Total	**3**	**18**	
Customer Sample									

Analyst(s)

Zeljko Jurjevic (3)

or other approved signatory

The level of detection is equal to 1 CFU per plate of sample analyzed. CFU = colony forming unit. 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 of the data contained in this report is the responsibility of the client. "-" denotes not detected. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC--EMLAP Accredited #100194

Report Amended: 11/06/2015 10:31:34 Replaces the Inital Report 10/16/2015 11:41:11. Reason Code: Client-Change to Sample Volume

For information on the fungi lisited in this report please visit the Resources section at www.emsl.com

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Phone:	(864) 292-2901
Fax:	(864) 292-6361
Received:	10/02/15 9:10 AM
Analysis Date:	10/13/2015
Collected:	9/30/2015

Project: **CU Task 40 - Student Union**

Test Report: Identification and Enumeration of Culturable Fungi by Swab (Genus Level ID (EMSL Method M005))

Sample Description	*Sample Location*	*Temp (C)*	*Sample Measure (Swab)*	*Analytical Sensitivity (CFU/Swab)*	*Dilution*	*Fungal Identification*	*Colony Count*	*CFUs (CFU/Swab)*	*Percent of Total*
Swab 1		25	1	10,000	10000	*Acremonium sp.*	31	310,000	39.7
371517829-0007	*Media:* MEA,CELL			100	100	*Cladosporium sp.*	8	800	<1
				100	100	*Penicillium sp.*	1	100	<1
				10,000	10000	*Rhodotorula sp.*	1	10,000	1.3
				10,000	10000	*Yeast*	46	460,000	58.9
						Total	**87**	**781,000**	
Customer Sample									
Swab 2		25	1	100	100	*Acremonium sp.*	1	100	<1
371517829-0008	*Media:* MEA,CELL			10,000	10000	*Yeast*	16	160,000	100.0
						Total	**17**	**160,000**	
Customer Sample									

No discernable blank was submitted with this group of samples

Analyst(s)

Zeljko Jurjevic (2)

Farbod Nekouei, M.S., Laboratory Director
or other approved signatory

The level of detection is equal to 1 CFU per plate of sample analyzed. CFU = colony forming unit. 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 of the data contained in this report is the responsibility of the client. Samples received in good condition unless otherwise noted.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC--EMLAP Accredited #100194

Initial report from 10/16/2015 11:41:11

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Industrial Hygiene Chain of Custody

EMSL Order Number (Lab Use Only): 371517829

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 858-3502

Report To Contact Name: Ben Hestir			Bill To Company: ← Same		
Company Name: Terracon			Attention To:		
Street: 3534 Rutherford Road			Street:		
City: Taylors	State/Province: SC	Zip/Postal Code: 29687	City:	State/Province:	Zip/Postal Code:
Phone : 864-293-7348 Fax :			Phone :	Fax :	
Project Name: CU Task 40 - Student Union			U.S. State where Samples Collected: SC		
Number of Samples in Shipment: 8	Date of Shipment: 10/1/15	Purchase Order:	Sampled By (Signature): Ben Hestir		
Please Provide results: ☐ Fax ☑ Email ☐ Mail			Email Results To: ben.hestir@terracon.com		

Turnaround Time – Please Check: Please Note Standard TAT is 2 Week.							Media Type:
2 Week	1 Week	4 Day	3 Day	2 Day	1 Day	Other (Call Lab)	Manufacturer/Part #:
☐	☑	☐	☐	☐	☐	☐ _____	Lot #:

Sample ID	Media	Analyte / Method	Volume	Sample Date/Time	Location	Comments
CS-1	Zefon Carpet/Dust	Total Allergens		9/30/15 1440	RM 806C	M044 M038 on each M039 allergen
CS-2	"	Total Allergens		" 1456	Rm. 806A	
CS-3	"	Viable Mold	M007	" 1500	RM 806C	
CS-4	"	Viable Mold	M007	" 1510	RM 806A	
CS-5	"	Total Allergens		" 1520	Hall Outside 806	
CS-6	"	Viable Mold	M007	" 1530	" "	
Swab 1	Sterile Swab	Viable Mold	M007	" 1540		
Swab 2	" "	Viable Mold	M007	" 1550		

Note: Most NIOSH and OSHA methods require field blanks. It is the IH field sampler's responsibility to submit the proper number of field blanks and duplicates.

Released By	Date	Received By	Date
Ben Hestir	10-1-15	ASM 2015 OCT -2 A 9:52 CINNAMINSON, N.J. EMSL RECEIVED	10-2-15 910

Comments:

Tests confirmed with Ben via phone call DH 10/2/15 DH

OrderID: 371517829