January 9, 2017

Clemson University
310 Klugh Avenue
Clemson, South Carolina 29634

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

Re: Limited Mold and Allergen Investigation Report
Biosystem Research Complex
Room 120
Clemson University
Terracon Project No. 86127158 – Task 77

Dear Mr. Newberry:

Terracon Consultants, Inc. (Terracon) conducted a limited mold and allergen investigation in the office of Dr. Nishanth Tharayil in Biosystem Research Complex (BRC) Room 120 on the main campus at Clemson University, Clemson, South Carolina. Reportedly, Dr. Tharayil has experienced severe allergies of late, when spending time in this office. This service was conducted in general accordance with our Master Service Agreement with Clemson University.

PROJECT DESCRIPTION

Scope of Services

At the request of Clemson University, Terracon representative Mr. Benjamin Hestir conducted a limited mold and allergen investigation in BRC, Room 120, on Wednesday, December 14, 2016.

On our December 14th visit, Terracon made measurements of temperature and relative humidity and conducted airborne mold sampling which consisted of collecting spore trap air samples in two locations inside the office and the collection of two additional samples outside for comparison. We also collected two microvac dust samples, one from each side of the room, for allergen analysis.

Standard of Care

This limited mold and allergen 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 sampling. Many factors, such as weather conditions, building occupancy, ventilation patterns and seasonal variations in fungal concentrations, 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.

SAMPLING CRITERIA AND METHODS

Mold and Allergen Sampling

Total mold spore trap samples were collected using Air-O-Cell™ spore trap cassettes specifically designed for the collection of airborne mold spores. Air samples were collected using a calibrated Zefon Bio-Pump™ at a flow rate of 15 liters per minute (LPM) for 5 minutes at each location.

After collection, the spore trap samples were delivered 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. Air samples were analyzed by direct microscopic examination and results are reported in spores per cubic meter of air (spores/m^3).

To help interpret the mold sampling results, we compared indoor air and outdoor air measurements. 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. As a general rule, indoor air fungal spore concentrations in a heating, ventilation and air-conditioning (HVAC)-supplied building are typically less than, but qualitatively similar to, fungal spore concentrations found in the outside environment.

No state or federal exposure limits have been established for fungal aerosols. Regulatory standards, medically based threshold limit or dose-response relationships have not been established for exposure to airborne or surface concentrations of mold spores. 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.

An allergen dust sample was collected from carpet, chair fabrics and furniture surfaces in the office of Dr. Tharayil using a high volume air sampling pump in conjunction with a 3-piece 37 millimeter dust sampling cassette preloaded with a 5.0 micrometer polyvinyl chloride (PVC) filter.

After dust sample collection, the allergen 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. Allergen samples were analyzed by direct microscopic examination for allergens from dust mites, mouse, rat, cat, dog, and cockroach. Allergen results are reported in micrograms per gram of dust (µg/g).

Temperature and Relative Humidity

Indoor air temperature and relative humidity 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 55-2013, 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 in a conditioned setting 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 20% and 60%, with preferred conditions falling between 30% and 50% for both winter and summer temperatures.

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

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

FINDINGS

General Observations

- The office was sparsely furnished and appeared clean with no signs of water intrusion or mold growth.
- The office is located on the east side of the building and includes a window.
- Dr. Tharayil reported that as a result of his allergy issues in Room 120 that he spends the large majority of his time in his lab space in Room 111, where he does not seem to have the same allergy symptoms.
- Photographs from the assessment are attached.

Mold Air Sampling

On the afternoon of December 14, 2016, Terracon collected two mold spore trap samples inside Room 120 in the BRC building and two samples in outdoor locations for comparison. The results of the total spore count samples analyses are summarized in Table 1 below:

Table 1: Summary of Total Spore Count Analyses – December 14, 2016

Sample #	BRC120-1	BRC120-2	BRC120-3	BRC120-4
Location Description	**Main Desk**	**Bookshelf right of door**	**Outside entrance**	**Outside loading dock**
Spore Type	**Spores/m^3**	**Spores/m^3**	**Spores/m^3**	**Spores/m^3**
Ascospores	---	---	90	600
Basidiospores	200	---	7,000	---
Cladosporium	40	40	820	690
Epicoccum	---	---	10	10
Penicillium/ Aspergillus	40	100	---	300
Smuts/*Periconia*/ Myxomycetes	---	---	90	---
Pithomyces	---	---	40	---
Rust	---	---	40	---
Spegazzinia	40	---	---	---
Unidentifiable Spores	---	10	---	---
Total	**320**	**160**	**8,090**	**1,600**

There was no visual evidence of water leaks or mold growth in the room. The lowest outdoor total spore count was approximately 10 times higher than the lowest total spore count outside. The dominant molds indoors were *Basidospores* and *Penicillium/Aspergillus* type spores. The dominant mold spore types outdoors were *Cladosporium* and *Basidiospores*. The weather on the day we sampled was warm (57ºF) and cloudy with a light breeze (winds less than 10 mph).

The laboratory analytical report is attached.

Temperature and Relative Humidity

The indoor temperature was 70ºF and the relative humidity was 39%. The outdoor temperature was 57ºF and the relative humidity was 54%.

Dust Sampling

On the afternoon of December 14, 2016, Terracon collected two (2) dust samples from the carpeting, chair fabric and furniture in Room 120, BRC, the first from entrance side (closest to the office door) and the second from window side (opposite the door). They were designated as BRC120-3 and BRC120-4, respectively. The samples were analyzed for allergens from dust mites, mouse, rat, cat, dog, and cockroach.

Allergens were identified in the samples. The quantity of dust collected was not enough for the lab to assign allergen risk levels. Table 2 below summarizes the laboratory results. The laboratory analytical report is attached and references additional information.

Table 2: Summary of Allergen Analyses – December 14, 2016

Sample #	BRC120-3	BRC120-4
Location Description	**Closest to office door**	**Closest to office window**
Allergen Type/Antigen	**Concentrations (ng/filter)**	**Concentrations (ng/filter)**
Dust Mites / Der fl	**0.16**	**0.18**
Dust Mites / Der pl	**0.14**	**0.02**
Mouse / Mus ml	ND	ND
Rat / Rat nl	ND	ND
Cat / Fel dl	**7.68**	**1.57**
Dog / Can fl	**0.57**	**0.12**
Cockroach / Bla G2	ND	ND

Note: ng = nanogram (10^{-9} grams)

CONCLUSIONS

The following conclusions are provided based on our assessment:

- The results of mold air sampling indicated that total airborne mold spore concentrations inside the building were below the total mold spore levels measured in the two outdoor samples and concentrations of mold spore types inside the building were less than the highest corresponding outdoor mold spore levels measured. This is considered to be a favorable condition in the indoor environment.

- Cat allergens were the highest levels of the allergens identified from the dust samples in the office.
- Temperature levels were within ASHRAE guideline ranges and relative humidity levels were within EPA guideline ranges.
- The office appeared to be in good condition with no obvious water leaks or mold growth.

RECOMMENDATIONS

The following recommendations are provided based on our assessment:

- Although the laboratory could not assign a risk level for the allergens, cat allergens were the most prominent allergen in the two samples collected. Please share the results with the occupant of the room and discuss potential cat allergies.
- If any allergens found that may cause allergic symptoms with the occupant(s), cleaning is recommended. Cleaning should be conducted using true HEPA vacuums and wet wiping surfaces to remove dust from the office.

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

Sincerely,
Terracon Consultants, Inc.

Benjamin Hestir, P.E.
Project Industrial Hygienist

Jeffrey A. Gurrie
Senior Industrial Hygienist

Attachments: Photographs
Laboratory Results

Photographs



Photo #1 View of Room 120 from doorway

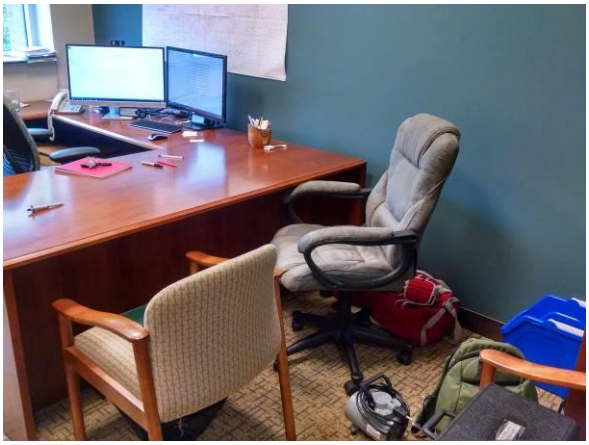


Photo #2 View of guest seating in Room 120



Photo #3 View of main desk – location of sample BRC120-1



Photo #4 View of sample pump and dust cassette used for allergen sampling



Photo #5 View of outside sample BRC120-5 location at northeast entrance to BRC



Photo #6 View of outside sample BRC120-6 location at Newman Hall loading dock just west of BRC

Laboratory Results

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

Order ID:	371624759
Customer ID:	GTER78
Customer PO:	86127158
Project ID:	

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Greenville, SC 29615

Phone:	(864) 292-2901
Fax:	(864) 292-6361
Collected:	12/14/2016
Received:	12/16/2016
Analyzed:	12/21/2016

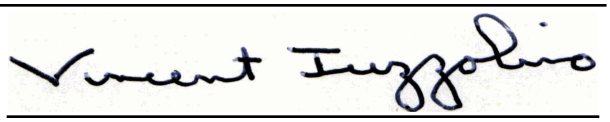
Proj: Clemson IAQ - BRC Room 120

Test Report: Allergenco-D(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	371624759-0001			371624759-0002			371624759-0005		
Client Sample ID:	BRC120-1			BRC120-2			BRC120-5		
Volume (L):	75			75			75		
Sample Location:	Main Desk			Book Shelf by Door			Outside BRC Entrance		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	2	90	1.1
Aspergillus/Penicillium	1	40	12.5	3	100	62.5	-	-	-
Basidiospores	4	200	62.5	-	-	-	163	7000	86.5
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	12.5	1	40	25	19	820	10.1
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	1*	10*	0.1
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	2	90	1.1
Pithomyces	-	-	-	-	-	-	1	40	0.5
Rust	-	-	-	-	-	-	1	40	0.5
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	1*	10*	6.3	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Pestalotia	-	-	-	1*	10*	6.3	-	-	-
Spegazzinia	1	40	12.5	-	-	-	-	-	-
Total Fungi	**7**	**320**	**100**	**6**	**160**	**100**	**189**	**8090**	**100**
Hyphal Fragment	-	-	-	1	40	-	1*	10*	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	43	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	1	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

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



Vincent Iuzzolino, M.S., Laboratory Director
or Other Approved Signatory

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 othewise 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. EMSL maintains liability limited to cost of anaysis. 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 and use of test results are 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 Lab 100194

Initial report from: 12/21/2016 12:49:53

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

EMSL Analytical, Inc.

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Order ID:	371624759
Customer ID:	GTER78
Customer PO:	86127158
Project ID:	

Attn: Ben Hestir
Terracon Consultants, Inc.
72 Pointe Circle
Greenville, SC 29615

Phone:	(864) 292-2901
Fax:	(864) 292-6361
Collected:	12/14/2016
Received:	12/16/2016
Analyzed:	12/21/2016

Proj: Clemson IAQ - BRC Room 120

Test Report: Allergenco-D(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods EMSL 05-TP-003, ASTM D7391)

Lab Sample Number:	**371624759-0006**
Client Sample ID:	**BRC120-6**
Volume (L):	**75**
Sample Location:	**Loading Dock**

Spore Types	Raw Count	Count/m³	% of Total
Alternaria	-	-	-
Ascospores	14	600	37.5
Aspergillus/Penicillium	6	300	18.8
Basidiospores	-	-	-
Bipolaris++	-	-	-
Chaetomium	-	-	-
Cladosporium	16	690	43.1
Curvularia	-	-	-
Epicoccum	1*	10*	0.6
Fusarium	-	-	-
Ganoderma	-	-	-
Myxomycetes++	-	-	-
Pithomyces	-	-	-
Rust	-	-	-
Scopulariopsis	-	-	-
Stachybotrys	-	-	-
Torula	-	-	-
Ulocladium	-	-	-
Unidentifiable Spores	-	-	-
Zygomycetes	-	-	-
Pestalotia	-	-	-
Spegazzinia	-	-	-
Total Fungi	**37**	**1600**	**100**
Hyphal Fragment	1	40	-
Insect Fragment	-	-	-
Pollen	-	-	-
Analyt. Sensitivity 600x	-	43	-
Analyt. Sensitivity 300x	-	13*	-
Skin Fragments (1-4)	-	1	-
Fibrous Particulate (1-4)	-	1	-
Background (1-5)	-	1	-

Bipolaris++ = Bipolaris/Drechslera/Exserohilum
Myxomycetes++ = Myxomycetes/Periconia/Smut

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

Vincent Iuzzolino, M.S., Laboratory Director
or Other Approved Signatory

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 othewise 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. EMSL maintains liability limited to cost of anaysis. 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 and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.

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Initial report from: 12/21/2016 12:49:53

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EMSL Order #:	**371624759**
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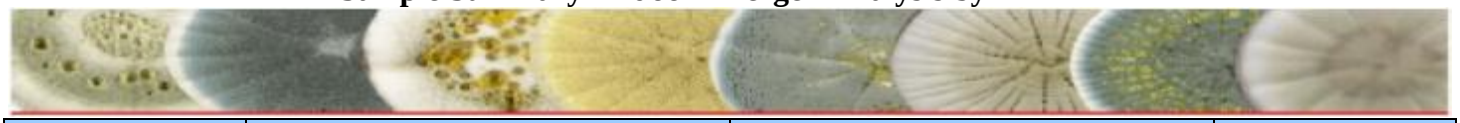
Attn: **Ben Hestir**
Terracon Consultants, Inc.
72 Pointe Circle
Greenville, SC 29615

Phone: **864-292-2901**
Fax: **864-292-6361**

Project: **Clemson IAQ - BRC Room 120**

Date Collected: **12/14/2016**
Date Received: **12/16/2016**
Date Analyzed: **12/19/2017**

Sample Summary -Indoor Allergen Analysis by MARIA®



Lab Sample Number	Client Sample ID	Sample Location	Sample Type
371624759-0003	BRC120-3	Front of Room by Door	Bulk
371624759-0004	BRC120-4	Back of Room by Window	Bulk

Report Date	Report Revision	Revision Comments
1/4/2017	R0	Initial Report

Vincent Iuzzolino, M.S., Laboratory Director
or approved EMSL Analytical, Inc. signatory

About Us

EMSL Analytical, Inc. offers a full line of analytical solutions for over 30 years across North America. For more information about our nationally accredited locations, vast line of testing services, and our food safety solutions please visit www.EMSL.com or call



Disclaimers

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. EMSL Analytical (Cinnaminson, NJ) is accredited by the American Industrial Hygiene Association (AIHA) in the EMLAP accreditation program for specified Field(s) of Testing as documented on the scope of accreditation.

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Fax: **864-292-6361**

Project: **Clemson IAQ - BRC Room 120**

Date Collected: **12/14/2016**
Date Received: **12/16/2016**
Date Analyzed: **12/19/2017**

EMSL Sample #: **371624759-0003**
Client ID: **BRC120-3**
Location: **Front of Room by Door**

Sample Type: **Bulk**
Sample Size: **1 Filter**
Sample Units: **Filter**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.03	ng/filter	**0.16**	ng/filter	†
Dust Mites Allergen	Der p1	0.03	ng/filter	**0.14**	ng/filter	†
Mouse Allergen	Mus m1‡	0.01	ng/filter	**ND**	ng/filter	†
Rat Allergen	Rat n1*	4.0	ng/filter	**ND**	ng/filter	†
Cat Allergen	Fel d1	0.01	ng/filter	**7.68**	ng/filter	†
Dog Allergen	Can f1	0.03	ng/filter	**0.57**	ng/filter	†
Cockroach Allergen	Bla g2	0.03	ng/filter	**ND**	ng/filter	†

‡Analyzed by Indoor Biotechnologies, Inc. * Analyzed by ELISA †Sufficient evidence is not available for risk levels.

Allergen Risk Levels:

High -Risk of acute asthmatic attack.

Moderate -Risk for sensitization and bronchial hyperactivity.

Low -Not sufficient to cause symptoms or ND (None Detected); Indicates that the amount of allergen in the sample is below the detection limits.

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This report has been prepared by EMSL Analytical, Inc. at the request of and for the exclusive use of the client named in this report. Completely read the important terms, conditions, and limitations that apply to this report

Report Date	Report Revision	Revision Comments
1/4/2017	R0	Initial Report

Vincent Iuzzolino, M.S., Laboratory Director
or approved EMSL Analytical, Inc. signatory

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Fax: **864-292-6361**

Project: **Clemson IAQ - BRC Room 120**

Date Collected: **12/14/2016**
Date Received: **12/16/2016**
Date Analyzed: **12/19/2017**

EMSL Sample #: **371624759-0004**
Client ID: **BRC120-4**
Location: **Back of Room by Window**

Sample Type: **Bulk**
Sample Size: **1 Filter**
Sample Units: **Filter**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.03	ng/filter	**0.18**	ng/filter	†
Dust Mites Allergen	Der p1	0.03	ng/filter	**0.02**	ng/filter	†
Mouse Allergen	Mus m1‡	0.01	ng/filter	**ND**	ng/filter	†
Rat Allergen	Rat n1*	4.0	ng/filter	**ND**	ng/filter	†
Cat Allergen	Fel d1	0.01	ng/filter	**1.57**	ng/filter	†
Dog Allergen	Can f1	0.03	ng/filter	**0.12**	ng/filter	†
Cockroach Allergen	Bla g2	0.03	ng/filter	**ND**	ng/filter	†

‡Analyzed by Indoor Biotechnologies, Inc. * Analyzed by ELISA †Sufficient evidence is not available for risk levels.

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Moderate -Risk for sensitization and bronchial hyperactivity.

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Report Date	**Report Revision**	**Revision Comments**
1/4/2017	R0	Initial Report

Vincent Iuzzolino, M.S., Laboratory Director
or approved EMSL Analytical, Inc. signatory

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http://www.EMSL.com cinnmicrolab@emsl.com

EMSL Order #: **371624759**
Customer ID: **GTER78**
Customer PO: **86127158**

Attn: **Ben Hestir**
Terracon Consultants, Inc.
72 Pointe Circle
Greenville, SC 29615

Phone: **864-292-2901**
Fax: **864-292-6361**

Project: **Clemson IAQ - BRC Room 120**

Date Collected: **12/14/2016**
Date Received: **12/16/2016**
Date Analyzed: **12/19/2017**



Guidelines to Interpretation

µg/g

Allergens	<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

µg/g

	<DL	<0.08	0.08	0.09	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
Bla g2 †	ND	Low	Mod	Mod	Mod	Mod	Mod	Mod	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
Pediatric allergy-principles and practice. Mosby Inc 2003: 261-268.

Terminology

ELISA	Enzyme-linked Immunosorbent Assay
MARIA®	Multiplex Array for Indoor Allergens
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 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
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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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
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1/4/2017	R0	Initial Report

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EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Industrial Hygiene Chain of Custody

EMSL Order Number (Lab Use Only): 371624759

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:** Terracon Consultants, Inc.	**Client ID #:** GTER78
Company Name: Terracon Consultants, Inc.		**Attention To:**	
Street: 72 Pointe Circle		**Street:**	
City: Greenville	**State/Province:** SC **Zip/Postal Code:** 29615	**City:**	**State/Province:** **Zip/Postal Code:**
Phone : 864-293-7348	**Fax :**	**Phone:**	**Fax:**
Project Name: Clemson IAQ - BRC Room 120		**Email Results To:** ben.hestir@terracon.com	**U.S. State where Samples Collected:** SC
# Samples in Shipment: 6	**Date of Shipment:** 12/15/16	**Purchase Order:** 86127158 - Task 77	**Sampled By (Signature):** Ben Hestir

Turnaround Time (TAT) – Please Check: If No Selection Made, Standard 2 Week TAT Will Apply

☐ 2 Week ☑ 1 Week ☐ 4 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day ☐ Other (Call Lab)

Media Type:

Manufacturer/Part #: **Lot #:**

Client Sample ID	Location/Description	Analyte / Method	Media	Flow (lpm)	Sample Time On	Sample Time Off	Volume / Area	Sample Type	Sample Date	Comments
BRC120-1	Main Desk	M001	Allergen	15	1521	1526	75	☑ Area ☐ Personal	12/14/16	
BRC120-2	Book shelf by door	M001	Allergen	15	1528	1533	75	☑ Area ☐ Personal	12/14/16	
BRC120-3	Front of room by door	M038, M039, M044	Dust cas	NA	1540	1544	NA	☑ Area ☐ Personal	12/14/16	Rug, chairs, bookshelfs
BRC120-4	Back of room by window	M038, M039, M044	Dust cas	NA	1548	1553	NA	☑ Area ☐ Personal	12/14/16	Rug, chairs, desk, credenza
BRC120-5	Outside BRC entrance	M001	Allergen	15	1604	1609	75	☑ Area ☐ Personal	12/14/16	
BRC120-6	Loading Dock	M001	Allergen	15	1614	1619	75	☑ Area ☐ Personal	12/14/16	
								☐ Area ☐ Personal		
								☐ Area ☐ Personal		

16 DEC 16 AM 10:49 EMSL CINNAMINSON, NJ

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 Ben Hestir	12/15/16 1700	[illegible]	12-16-16 935

Comments:

OrderID: 371624759

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