May 12, 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
University Union – 7th and 8th floors
Clemson, South Carolina 29631
Terracon Project No. 86127158 – Task 84

Dear Mr. Newberry:

Terracon Consultants, Inc. (Terracon) conducted a limited mold and allergen investigation in multiple offices on the 7th and 8th floors of the University Union at Clemson University in Clemson, South Carolina. Multiple concerns regarding indoor air quality have been expressed in the recent past. 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 multiple offices on the 7th and 8th floors of the University Union, on April 6th, 7th and 12th, 2017. These two floors contain multiple offices and conference rooms which are occupied by various university organizations including Central Spirit, Campus Activities and Events, University Housing and Dining, and Student Affairs Business Operations.

The investigation included measurements of temperature and relative humidity, the collection of spore trap samples, the collection of viable mold samples and the collection of carpet dust samples for both allergen and mold 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 Allergenco-D™ 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.

Total viable (cultured) fungal samples were collected by drawing a measured volume of air over culture media in petri dishes using an Anderson N-6 type impactor in series with a high-volume sample collection pump calibrated to a flow rate of 28.3 LPM. The culture media (malt extract agar or MEA) was exposed to the airflow for three (3) minutes at both the indoor and outdoor locations.

Carpet dust samples for mold and allergens analysis were collected from carpet in multiple locations on each floor 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. The mold dust samples were primarily collected from the carpet adjacent to the air handlers in each room. The allergen dust samples were composite samples from a variety of carpet locations in each space sampled.

After collection, the spore trap and viable 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.

Spore trap samples were analyzed by direct microscopic examination and results are reported in spores per cubic meter of air (spores/m^3).

The viable dust samples and air sample plates were incubated in a warm environment for seven (7) days before being analyzed by direct microscopic examination and are reported in colony forming units per cubic meter of air (CFUs/m^3).

Carpet dust samples were analyzed for viable mold and allergens (dust mites, mouse, rat, cat, dog, and cockroach). Viable mold results are reported in colony forming units per gram of dust (CFUs/g) and allergen results are reported in micrograms per gram (µg/g).

To help interpret the mold air 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.

To help interpret the allergen results, EMSL provides risk levels associated with the amount of each allergen found in each sample. Those risk levels are shown in the allergen results tables and also in the attached analytical reports.

To help interpret the viable mold results from the carpet dust, the results were reported in CFUs/g and compared to levels established in the "Methods for Evaluation of Indoor Mold Growth" (2013) from the New York Committee for Occupational Safety and Health (NYCOSH). Categories established for dust samples are:

- <50,000 CFUs/gram of dust – low/normal indoor growth
- 50,000 – 500,000 CFUs/gram of dust – moderate indoor growth
- 500,000 – 1,000,000 CFUs/gram of dust – moderate to heavy growth/active growth
- >1,000,000 CFUs/grams of dust – very active growth

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.

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

- Spore Trap air samples collected on the 7th floor – eight (8)
- Viable mold air samples collected on the 7th floor – eight (8)
- Mold Dust samples collected on the 7th floor – to be resampled
- Allergen Dust samples collected on the 7th floor – seven (7)

- Spore Trap air samples collected on the 8th floor – ten (10)
- Viable mold air samples collected on the 8th floor – ten (10)
- Mold Dust samples collected on the 8th floor – ten (10)
- Allergen Dust samples collected on the 8th floor – nine (9)

- Spore Trap air samples collected outside – one (1)
- Viable mold air samples collected outside – one (1)
- No evidence of mold growth was observed or reported.
- Photographs from the assessment are attached.

7th Floor Sample Results

The results of the total spore count samples analyses are presented in Table 1.
The results of the viable mold air sample are presented in Table 2.
The results of mold dust samples will be provided as an addendum to this report in the near future.
The results of the allergen dust samples are presented in Table 3.
The laboratory analytical reports are attached.

Total Spore Counts – 7th floor

The highest indoor total spore count from the 7th floor samples was approximately 36% of the outdoor count. The dominant mold genera indoors were *Basidiospores, Ascospores, and Aspergillus/Penicillium.* The dominant mold spore types outdoors were *Basidiospores, Ascospores and Cladosporium*. The weather on the day we collected samples on the 7th floor was cloudy, cool (59ºF) and windy with scattered showers.

Viable Mold Results – 7th floor

The highest indoor viable concentration (CFUs/m^3) from the 7th floor samples was 43% of the outdoor concentration. The dominant species inside were *Cladosporium sphaerospermum* and *Sterile (dark).* The dominant species outside were *Cladosporium sphaerospermum, sterile (dark)* and *Cladosporium cladosporiodes.*

Allergen Results – 7th floor

The highest allergen results on the 7th floor were dust mites with five of the seven (5 of 7) samples exhibiting a level that was ranked by the lab as "moderate" risk of sensitization and bronchial hyperactivity. Three of the seven (3 of 7) samples were also labeled as "moderate" risk for cat allergens and one of seven (1 of 7) for dog allergens. All other types of allergens (mouse, rat and cockroach) were found at levels labeled as "low" risk or not detected.

Carpet Dust Mold – 7th floor

Dust samples from the carpet on the 7th floor will be reported as an addendum to this report in the near future.

8th Floor Sample Results

The results of the total spore count samples analyses are presented in Table 4.
The results of the viable mold air samples are presented in Table 5.
The results of the viable mold carpet dust samples are presented in Table 6.
The results of the allergen dust samples are presented in Table 7.
The laboratory analytical reports are attached.

Table 1 - 7th Floor Spore Counts

Sample #	700-1	702-1	704-1	706-1	706-3	Conf 7-1	707-1	707-3	UU Outside-1
Location Description	Rm 700	Rm 702	Rm 704	Rm 706	Rm 706	Conference Rm	Rm 707	Rm 707	Outside E entrance
Spore Type	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3
Alternaria	---	---	10	---	40	40	40	---	40
Ascospores	300	200	90	100	1,200	1,500	200	300	5,280
Basidiospores	200	300	90	400	1,200	770	560	560	2,100
Cladosporium	---	90	90	200	---	90	100	40	300
Epicoccum	---	---	---	---	---	10	---	---	---
Penicillium/ Aspergillus	520	300	100	90	300	300	100	430	40
Smuts/*Periconia*/ Myxomycetes	---	40	40	---	---	---	---	10	90
Rust	---	---	---	---	---	10	---	---	---
Total	1020	930	420	790	2,840	2,730	1,000	1,340	7,850
Hyphal fragment	40	90				90	40	10	90
Pollen	90	10			40	10			730

Notes: m^3 = cubic meters of air

Table 2 - 7th Floor Air Viables

Sample #	700-2	702-2	704-2	706-2	706-4	Conf 7-2	707-2	707-4	UU Outside-1
Location Description	Rm 700	Rm 702	Rm 704	Rm 706	Rm 706	Conf Rm	Rm 707	Rm 707	Outside E entrance
Mold species	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3
Cladosporium sphaerospermum	36	12	36	48	72	144	24	48	252
Sterile (dark)	48	---	12	108	---	72	48	84	108
Sterile (white)	36	---	36	48	192	48	---	12	72
Chrysosporium sp.	---	12	---	---	---	---	---	12	---
Cladosporium cladosporiodes	---	108	---	---	---	---	---	---	108
Exophiala sp.	---	12	---	---	---	---	---	---	---
Yeast	---	12	12	---	---	---	---	---	---
Penicillium chysogenum	---	---	36	---	---	---	---	---	---
Penicillium decumbens	---	---	12	---	---	12	---	---	36
Aspergillus terreus	---	---	---	---	---	12	---	---	---
Alternaria sp.	---	---	---	---	---	---	12	---	---
Geotrichum sp.	---	---	---	---	---	---	---	---	96
Total	120	156	144	204	264	288	84	156	672

Notes: CFU = colony forming units, m^3 = cubic meter of air

Table 3 - 7th Floor Allergens

Sample #	700-3	704-3	706-5	706-6	Conf 7-3	707-5	707-6
Location Description	Rm 700	Rm 704	Rm 706	Rm 706	Conference Rm	Rm 707	Rm 707
Allergen type / antigen	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level
Dust Mites / Der fl	1.18 / low	2.35 / moderate	4.30 / moderate	3.93 / moderate	3.26 / moderate	2.34 / moderate	1.87 / low
Dust Mites / Der pl	0.014 / low	0.04 / low	0.05 / low	0.03 / low	0.04 / low	ND / low	0.02 / low
Mouse / Mus ml	ND / low	ND / low	ND / low	ND / low	ND / low	0.11 / low	0.02 / low
Rat / Rat nl	0.005 / low	0.14 / NA	0.03 / NA	0.04 / NA	0.01 / NA	0.03 / NA	0.02 / NA
Cat / Fel dl	1.26 / moderate	6.98 / moderate	0.53 / low	0.43 / low	0.77 / low	2.33 / moderate	0.46 / low
Dog / Can fl	0.12 / low	2.52 / moderate	0.57 / low	0.68 / low	0.22 / low	0.51 / low	0.28 / low
Cockroach / Bla G2	ND / low	ND / low	ND / low	ND / low	ND / low	ND / low	ND / low

Notes: ug/g = microgram per gram, red type indicates "moderate" or "high" allergen risk levels

Table 4 - 8th Floor Spore Counts

Sample #	800-1	800-3	801-1	802-1	Rm 803-1	804-1	805-1	806-1	806-3	809-1	UU Outside-1
Location Description	Rm 800	Rm 800	Rm 801	Rm 802	Rm 803	Rm 804	Rm 805	Rm 806	Rm 806	Rm 809	Outside E entrance
Spore Type	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3	Spores/m^3
Alternaria	---	---	---	---	---	---	---	---	---	---	40
Ascospores	---	90	40	40	---	90	---	---	---	---	5,280
Basidiospores	40	200	40	100	200	40	200	200	---	40	2,100
Cladosporium	40	90	40	40	---	40	40	100	---	---	300
Curvalaria	---	---	10	---	---	---	---	10	40	---	---
Penicillium/ Aspergillus	100	200	80	300	90	200	100	---	---	90	40
Smuts/*Periconia*/ Myxomycetes	---	---	---	---	---	---	---	10	---	---	90
Pithomyces	---	---	10	---	10	---	---	---	---	---	---
Total	180	580	220	480	300	370	340	320	40	130	7,850
Hyphal fragment	---	---	40	---	10	30	40	40	90	100	90
Pollen	---	---	---	---	80	40	40	90	10	40	730

Notes: m^3 = cubic meters of air

Table 5 - 8th Floor Air Viables

Sample #	800-2	800-4	801-2	802-2	803-2	804-2	805-2	806-2	806-4	809-2	UU Outside-2
Location Description	Rm 800	Rm 800	Rm 801	Rm 802	Rm 803	Rm 804	Rm 805	Rm 806	Rm 806	Rm 809	Outside E entrance
Mold species	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3	CFU/m^3
Cladosporium sphaerospermum	---	---	---	---	---	---	---	---	---	12	252
Paecilomyces sp.	---	12	---	---	---	---	---	---	---	---	---
Sterile (dark)	---	---	---	---	---	---	12	---	---	---	108
Sterile (white)	12	48	---	60	24	36	---	36	12	---	72
Cladosporium cladosporiodes	---	---	12	12	36	---	---	24	24	---	108
Exophiala sp.	---	---	---	---	---	---	---	---	---	12	---
Yeast	---	---	---	12	---	---	---	---	---	---	---
Penicillium decumbens	12	---	84	---	---	---	12	12	12	---	36
Aspergillus candidus	---	---	12	---	---	---	---	---	---	---	---
Aspergillus penicilliodes	---	---	---	---	---	---	12	---	---	---	---
Rhodotorula sp.	---	---	---	---	---	---	12	---	---	---	---
Acremonium sp.	---	---	---	---	---	---	---	---	24	12	---
Geotrichum sp.	---	---	---	---	---	---	---	---	---	---	96
Total	24	60	108	84	60	36	48	72	72	36	672

Notes: CFU = colony forming units, m^3 = cubic meter of air

Terracon

Sample #	800-M-1	800-M-2	801-M-1	802-M-1	803-M-1	804-M-1	805-M-1	806-M-1	806-M-2	809-M-1
Location Description	Rm 800	Rm 800-IT	Rm 801	Rm 802	Rm 803	Rm 804	Rm 805	Rm 806	Rm 806	Rm 809
Mold species	CFU/g	CFU/g	CFU/g	CFU/g	CFU/g	CFU/g	CFU/g	CFU/g	CFU/g	CFU/g
Acremonium sp.	---	---	---	---	---	---	---	---	---	148,000
Alternaria sp.	1,580	9,120	---	---	---	13,200	904	---	---	---
Aspergillis creber	---	---	---	---	---	6,590	---	---	---	---
Aspergillis flavis	---	---	---	---	875	---	---	---	---	---
Aspergillis fumigatis	791	9,120	---	---	---	---	904	400,000	---	---
Aspergillus japonicus	791	9,120	---	---	875	---	904	---	---	---
Aspergillus jenenii	---	---	---	---	---	---	---	---	938,000	74,100
Aspergillis niger	1,580	9,120	---	---	2,620	1,980	904	8,000	15,600	---
Aspergillis sydowi	---	---	17,500	---	---	---	---	---	---	148,000
Aspergillis unguis	---	---	---	---	875	---	---	---	---	
Aspergillis ustus	---	---	1,660,000	---	26,200	6,590	9,040	---	---	148,000
Aureobasidium sp.	---	---	---	---	8,750	---	---	8,000	---	---
Bipolaris sp.	791	---	---	---	17,500	---	904	---	---	---
Chaetomium sp.	---	---	437,000	1,880	8,750	13,200	9,040	8,000	782	---
Cladosporium sp.	---	91,200	---	---	175,000	---	---	---	---	---
Cladosporium cladosporiodes	15,800	---	---	---	---	---	---	---	---	---
Cladosporium sphaerospermum	79,100	1,000,000	175,000	---	175,000	33,000	---	80,000	39,100	148,000
Curvalaria sp.	791	912	---	938	---	13,200	904	8,000	---	---
Epicoccum sp.	2,370	9,120	---	---	2,620	6,590	9,040	8,000	782	---
Lichtheimia sp.	791	---	---	---	---	---	---	---	---	---
Mucor sp.	---	912	---	---	8,750	659	---	---	---	---
Nigrospora sp.	---	---	---	---	---	---	904	8,000	---	---
Penicillium brevicompactum	---	---	---	---	---	---	9,040	---	---	---
Penicillium chrysosgenum	15,800	---	87,300	---	---	---	---	---	---	222,000
Penicillium citrinum	7,910	912	---	---	---	---	9,040	---	---	---
Penicillium corylophilum	79,100	182,000	87,300	1,780,000	350,000	264,000	27,100	---	---	296,000
Penicillium crustosum	---	---	---	---	---	---	9,040	---	---	---
Penicillium glabrum	---	---	---	---	---	---	904	---	---	---
Penicillium oxalicum	---	---	---	9,380	---	---	---	---	---	---
Penicillium sphaerospermum	---	---	---	65,700	---	---	---	---	---	---
Penicillium sp.	23,700	45,600	---	188,000	87,500	19,800	90,400	72,000	860,000	---
Phoma sp.	15,800	---	---	---	---	---	---	---	---	---
Rhizopus sp.	---	---	---	938	---	659	---	800	---	7,410
Rhodotorula sp.	---	18,200	---	---	---	19,800	---	---	---	---
Sterile (dark)	---	9,120	---	---	17,500	---	118,000	---	---	---
Sterile (white)	15,800	18,200	---	---	35,000	1,320	18,100	8,000	1,560	---
Talaromyces funiculosum	---	---	---	---	---	---	---	8,000	---	---
Talaromyces sp.	---	---	---	---	17,500	---	---	---	---	---
Yeast	---	9,120	---	---	---	6,590	---	16,000	---	---
Total	262,000	1,420,000	2,460,000	2,050,000	944,000	407,000	315,000	633,000	1,860,000	1,190,000

Notes: CFU = colony forming unit, g = gram

Table 7 - 8th Floor Allergens

Sample #	800-5	800-6	801A-1	802-3	803-3	804-3	805-3	806-5	806-6	809-3
Location Description	Rm 800	Rm 800	Rm 801	Rm 802	Rm 803	Rm 804	Rm 805	Rm 806	Rm 806	Rm 809
Allergen type / antigen	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level	ug/g / Risk level
Dust Mites / Der fl	0.51 / low	1.99 / low	1.22 / low	0.92 / low	7.90 / moderate	2.63 / moderate	2.78 / moderate	0.37 / low	3.39 / moderate	1.25 / low
Dust Mites / Der pl	ND / low	ND / low	0.12 / low	ND / low	ND / low	ND / low	0.04 / low	ND / low	ND / low	0.60 / low
Mouse / Mus ml	0.06 / low	0.005 / low	0.002 / low	ND / low	ND / low	0.01 / low	ND / low	ND / low	0.01 / low	0.02 / low
Rat / Rat nl	0.05 / NA	0.08 / low	0.05 / NA	0.01 / NA	0.11 / NA	0.02 / NA	0.05 / NA	0.02 / NA	0.04 / NA	0.01 / NA
Cat / Fel dl	0.42 / low	0.55 / low	0.52 / low	0.40 / low	0.34 / low	2.49 / moderate	1.23 / moderate	0.40 / low	0.35 / low	0.63 / low
Dog / Can fl	0.66 / low	1.07 / low	0.69 / low	0.20 / low	1.72 / low	0.38 / low	0.74 / low	0.26 / low	0.40 / low	0.22 / low
Cockroach / Bla G2	ND / low	ND / low	ND / low	ND / low	ND / low	ND / low	ND / low	ND / low	ND / low	ND / low

Notes: ug/g = microgram per gram, red type indicates "moderate" or "high" allergen risk levels

Total Spore Counts – 8th floor

The highest indoor total spore count from the 8th floor samples was approximately 7% of the outdoor count. The dominant mold genera indoors were *Basidospores and Aspergillis/Penicillium.* The dominant mold spore types outdoors were *Ascospores* and *Basidiospores*. The weather on the day we collected samples on the 8th floor was cloudy, warm (64ºF) and windy.

Viable Mold Air Sample Results – 8th floor

The highest indoor viable concentration (CFUs/m^3) from the 8th floor samples was 16% of the outdoor concentration. The dominant species inside were *Cladosporium cladosporiodes* and *Sterile (white).* The dominant species outside were *Cladosporium sphaerospermum, sterile (dark)* and *Cladosporium cladosporiodes.*

Allergen Results – 8th floor

The highest allergen results on the 8th floor were dust mites with four of the nine (4 of 9) samples exhibiting a level that was ranked by the lab as "moderate" risk of sensitization and bronchial hyperactivity. Two of the nine (2 of 9) samples were also labeled as "moderate" risk for cat allergens. All other types of allergens (dog, mouse, rat and cockroach) were found at levels labeled as "low" risk or not detected.

Viable Mold Carpet Dust Results – 8th floor

Analytical results from the 8th floor carpet dust samples included:

- 5 of the 10 samples containing >1,000,000 CFUs/gram - very active growth*
- 2 of the 10 samples containing 500,000 – 1,000,000 CFUs/gram – moderate to heavy growth/active growth*
- 3 of the 10 samples containing 50,000 to 500,000 CFUs/gram – moderate growth*

(* - according to NYCOSH evaluation guidelines)

Temperature and Relative Humidity

The indoor temperature was 73ºF and the relative humidity was 38%. The outdoor temperature was 71ºF and the relative humidity was 48%.

CONCLUSIONS

The following conclusions are provided based on our assessment:

- The results of air samples analyzed for total spore counts indicated that total airborne mold spore concentrations inside the building were below the total mold spore levels measured in the outdoor sample and concentrations of mold spore genera 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.

- Common allergens identified from the dust samples collected on both the 7th and 8th floors and assigned a "moderate" risk level by the lab included dust mites, cat and dog.

- Temperature levels were within ASHRAE guideline ranges and relative humidity levels were within EPA guideline ranges.

- Viable mold levels identified in the carpet on 8th floor indicates colonization of the areas adjacent to the air handling units.

- Viable mold species identified in the air samples on both the 7th and 8th floors were consistent with and generally lower in concentration than the outdoor air sample.

RECOMMENDATIONS

The following recommendations are provided based on our assessment:

- Information regarding allergen levels interpreted by EMSL should be provided to the facility manager in the event of indoor air quality complaints with employees expressing allergy-like symptoms.

- Specialized cleaning in areas with "moderate" allergen results should be considered. This cleaning should include HEPA vacuuming and damp wiping of horizontal surfaces in the areas identified in these risk categories.

- Proactive removal of a small area of carpet with replacement with vinyl flooring in a perimeter around the air handlers is a possible method for reducing mold colonization of the carpet.

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

Scott D. Rohlf CIH
Authorized Project Reviewer

Attachments: Photographs
Laboratory Results

Photographs

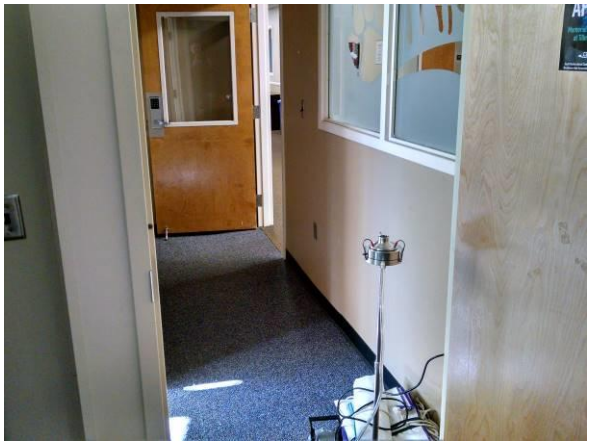


Photo #1 Location of viable air sample 700-2 in the Central Spirit offices hallway

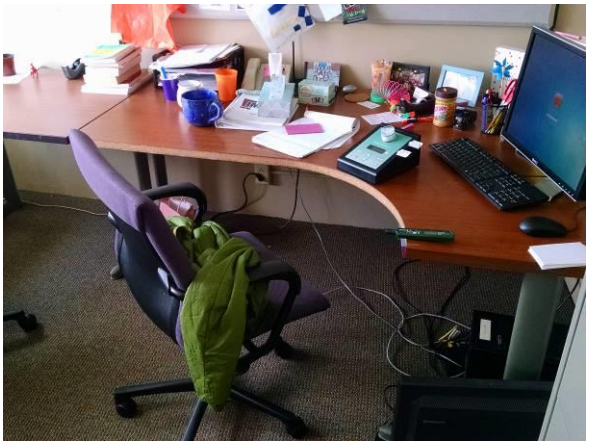


Photo #2 Location of spore trap air sample 706-3 in room 706C of Clemson Campus Activities and Events



Photo #3 Location of viable air sample UU-Outside-2 at entrance to University Union



Photo #4 Location of spore trap air sample UU-Outside-1 at entrance to University Union



Photo #5 Location of air samples 809-1 (spore trap) and 809-2 (viable)



Photo #6 Location of allergen sample 700-3.

Laboratory Results

EMSL Analytical, Inc.
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http://www.EMSL.com / cinnmicrolab@emsl.com

Order ID:	371706926
Customer ID:	GTER78
Customer PO:	86127158-Task84
Project ID:	

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

Phone: (864) 292-2901
Fax: (864) 292-6361
Collected: 04/06/2017
Received: 04/07/2017
Analyzed: 04/12/2017

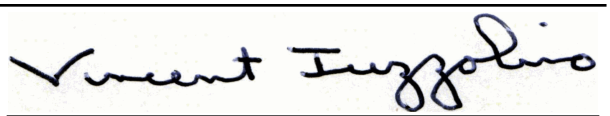
Proj: 86127158-Task 84

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

Lab Sample Number:	371706926-0001			371706926-0002			371706926-0003		
Client Sample ID:	700-1			702-1			704-1		
Volume (L):	75			75			75		
Sample Location:	Room 700			Room 702			Room 704		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	1*	10*	2.4
Ascospores	7	300	29.4	4	200	21.5	2	90	21.4
Aspergillus/Penicillium	12	520	51	8	300	32.3	3	100	23.8
Basidiospores	5	200	19.6	6	300	32.3	2	90	21.4
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	2	90	9.7	2	90	21.4
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	1	40	4.3	1	40	9.5
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**24**	**1020**	**100**	**21**	**930**	**100**	**11**	**420**	**100**
Hyphal Fragment	1	40	-	2	90	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	2	90	-	1*	10*	-	-	-	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	43	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	3	-	-	3	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	2	-

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 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. 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 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: 04/13/2017 12:54:56

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: 371706926
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Phone: (864) 292-2901
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Collected: 04/06/2017
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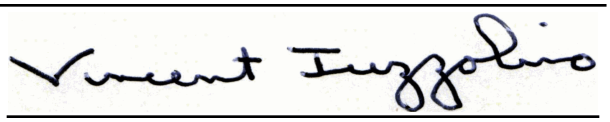
Proj: 86127158-Task 84

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

Lab Sample Number:	371706926-0004			371706926-0005			371706926-0006		
Client Sample ID:	706-1			706-3			Conf 7-1		
Volume (L):	75			75			75		
Sample Location:	Room 706			Room 706			Conference Room		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	1	40	1.4	1	40	1.5
Ascospores	3	100	12.7	29	1200	42.3	36	1500	54.9
Aspergillus/Penicillium	2	90	11.4	6	300	10.6	6	300	11
Basidiospores	9	400	50.6	28	1200	42.3	18	770	28.2
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	5	200	25.3	3	100	3.5	2	90	3.3
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	1*	10*	0.4
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	1*	10*	0.4
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	1*	10*	0.4
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**19**	**790**	**100**	**67**	**2840**	**100**	**66**	**2730**	**100**
Hyphal Fragment	-	-	-	-	-	-	2	90	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	1	40	-	1*	10*	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	43	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	3	-	-	2	-	-	3	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	1	-	-	2	-

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 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. 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 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: 04/13/2017 12:54:56

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

Order ID: 371706926
Customer ID: GTER78
Customer PO: 86127158-Task84
Project ID:

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

Phone: (864) 292-2901
Fax: (864) 292-6361
Collected: 04/06/2017
Received: 04/07/2017
Analyzed: 04/12/2017

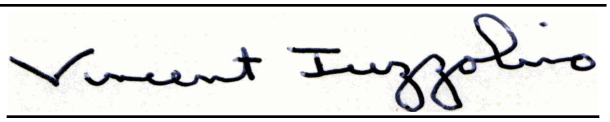
Proj: 86127158-Task 84

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

Lab Sample Number:	371706926-0007			371706926-0008			371706926-0009		
Client Sample ID:	707-1			707-3			UU Outside - 1		
Volume (L):	75			75			75		
Sample Location:	Room 707			Room 707			Outside 1		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	1	40	4	-	-	-	1	40	0.5
Ascospores	5	200	20	8	300	22.4	123	5280	67.3
Aspergillus/Penicillium	3	100	10	10	430	32.1	1	40	0.5
Basidiospores	13	560	56	13	560	41.8	50	2100	26.8
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	3	100	10	1	40	3	6	300	3.8
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	1*	10*	0.7	2	90	1.1
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**25**	**1000**	**100**	**33**	**1340**	**100**	**183**	**7850**	**100**
Hyphal Fragment	1	40	-	1*	10*	-	2	90	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	17	730	-
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	-	-	1	-	-	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 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. 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 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: 04/13/2017 12:54:56

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

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EMSL Order:	241701350
CustomerID:	GTER78
CustomerPO:	86127158
ProjectID:	

Attn: **Ben Hestir**
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Greenville, SC 29615

Phone:	(864) 292-2901
Fax:	(864) 292-6361
Received:	04/07/17 9:10 AM
Analysis Date:	4/19/2017
Collected:	4/6/2017

Project: **86127158-TASK**

Test Report: Viable Fungi Identification and Enumeration from Impactors (Including Speciation of Penicillium, Aspergillus, Cladosporium and Stachybotrys (EMSL Method M005)

Sample Description	Location	Volume (L)	Media	Incubation Temp (C)	Sensitivity (CFU/m³)	Fungal Identification	Colony Count	CFU/m³
700-2	RM 700	85	MEA	25	12	*Cladosporium sphaerospermum*	3	36
241701350-0001						*Sterile(dark)*	4	48
						Sterile(white)	3	36
						Total	**10**	**120**
702-2	RM 702	85	MEA	25	12	*Chrysosporium sp.*	1	12
241701350-0002						*Cladosporium cladosporioides*	9	108
						Cladosporium sphaerospermum	1	12
						Exophiala sp.	1	12
						Yeast	1	12
						Total	**13**	**156**
704-2	RM 704	85	MEA	25	12	*Cladosporium sphaerospermum*	3	36
241701350-0003						*Penicillium chrysogenum*	3	36
						Penicillium decumbens	1	12
						Sterile(dark)	1	12
						Sterile(white)	3	36
						Yeast	1	12
						Total	**12**	**144**
706-2	RM 706	85	MEA	25	12	*Cladosporium sphaerospermum*	4	48
241701350-0004						*Sterile(dark)*	9	108
						Sterile(white)	4	48
						Total	**17**	**204**
706-4	RM 706	85	MEA	25	12	*Cladosporium sphaerospermum*	6	72
241701350-0005						*Sterile(white)*	16	192
						Total	**22**	**264**

Analyst(s)

Gloria Oriol (9)

Gloria V. Oriol, Laboratory Manager
or other approved signatory

Positive hole correction factors have not been applied to the reported data.
The detection limit is equal to 1 colony forming unit (CFU) per agar plate. 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. Wallingford, CT AIHA-LAP, LLC--EMLAP Accredited #165118

Initial report from 04/21/2017 17:30:16

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Greenville, SC 29615

Phone:	(864) 292-2901
Fax:	(864) 292-6361
Received:	04/07/17 9:10 AM
Analysis Date:	4/19/2017
Collected:	4/6/2017

Project: **86127158-TASK**

Test Report: Viable Fungi Identification and Enumeration from Impactors (Including Speciation of Penicillium, Aspergillus, Cladosporium and Stachybotrys (EMSL Method M005)

Sample Description	Location	Volume (L)	Media	Incubation Temp (C)	Sensitivity (CFU/m³)	Fungal Identification	Colony Count	CFU/m³
CONF7-2	CONFERENCE RM	85	MEA	25	12	*Aspergillus terreus*	1	12
241701350-0006						*Cladosporium sphaerospermum*	12	144
						Penicillium decumbens	1	12
						Sterile(dark)	6	72
						Sterile(white)	4	48
						Total	**24**	**288**
707-2	RM 707	85	MEA	25	12	*Alternaria sp.*	1	12
241701350-0007						*Cladosporium sphaerospermum*	2	24
						Sterile(dark)	4	48
						Total	**7**	**84**
707-4	RM 707	85	MEA	25	12	*Chrysosporium sp.*	1	12
241701350-0008						*Cladosporium sphaerospermum*	4	48
						Sterile(dark)	7	84
						Sterile(white)	1	12
						Total	**13**	**156**
UUOUTSIDE-2	OUTSIDE 2	85	MEA	25	12	*Cladosporium cladosporioides*	9	108
241701350-0009						*Cladosporium sphaerospermum*	21	252
Background						*Geotrichum sp.*	8	96
						Penicillium decumbens	3	36
						Sterile(dark)	9	108
						Sterile(white)	6	72
						Total	**56**	**672**

No discernable blank was submitted with this group of samples.

Analyst(s)

Gloria Oriol (9)

Gloria V. Oriol, Laboratory Manager
or other approved signatory

Positive hole correction factors have not been applied to the reported data.
The detection limit is equal to 1 colony forming unit (CFU) per agar plate. 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.

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Initial report from 04/21/2017 17:30:16

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Customer PO:	**86127158-Task84**

Attn: **Ben Hestir**
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Greenville, SC 29615

Phone: **864-292-2901**
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Project: **86127158-Task 84**

Date Collected: **4/6/2017**
Date Received: **4/7/2017**
Date Analyzed: **4/10/2017**

Sample Summary -Indoor Allergen Analysis by MARIA®



Lab Sample Number	Client Sample ID	Sample Location	Sample Type
371706926-0010	700-3	Room 700	Bulk
371706926-0011	704-3	Room 704	Bulk
371706926-0012	706-5	Room 706	Bulk
371706926-0013	706-6	Room 706	Bulk
371706926-0014	Conf 7-3	Conference Room	Bulk
371706926-0015	707-5	Room 707	Bulk
371706926-0016	707-6	Room 707	Bulk

Report Date	Report Revision	Revision Comments
4/21/2017	R0	Initial Report

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

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

Project: **86127158-Task 84**

Date Collected: **4/6/2017**
Date Received: **4/7/2017**
Date Analyzed: **4/10/2017**

EMSL Sample #: **371706926-0010**
Client ID: **700-3**
Location: **Room 700**

Sample Type: **Bulk**
Sample Size: **86**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**1.18**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**0.014**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.005**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**1.26**	µg/g	⚠
Dog Allergen	Can f1	0.012	µg/g	**0.12**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Report Date	**Report Revision**	**Revision Comments**
4/21/2017	R0	Initial Report

Vincent Iuzzolino, M.S., Laboratory Director
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EMSL Order #: **371706926**
Customer ID: **GTER78**
Customer PO: **86127158-Task84**

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

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

Project: **86127158-Task 84**

Date Collected: **4/6/2017**
Date Received: **4/7/2017**
Date Analyzed: **4/10/2017**

EMSL Sample #: **371706926-0011**
Client ID: **704-3**
Location: **Room 704**

Sample Type: **Bulk**
Sample Size: **59**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**2.35**	µg/g	⚠
Dust Mites Allergen	Der p1	0.012	µg/g	**0.04**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.14**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**6.98**	µg/g	⚠
Dog Allergen	Can f1	0.012	µg/g	**2.52**	µg/g	⚠
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **86127158-Task 84**

Date Collected: **4/6/2017**
Date Received: **4/7/2017**
Date Analyzed: **4/10/2017**

EMSL Sample #: **371706926-0012**
Client ID: **706-5**
Location: **Room 706**

Sample Type: **Bulk**
Sample Size: **44**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**4.30**	µg/g	⚠
Dust Mites Allergen	Der p1	0.012	µg/g	**0.05**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.03**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.53**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.57**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **86127158-Task 84**

Date Collected: **4/6/2017**
Date Received: **4/7/2017**
Date Analyzed: **4/10/2017**

EMSL Sample #: **371706926-0013**
Client ID: **706-6**
Location: **Room 706**

Sample Type: **Bulk**
Sample Size: **60**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**3.93**	µg/g	⚠
Dust Mites Allergen	Der p1	0.012	µg/g	**0.03**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.04**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.43**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.68**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **86127158-Task 84**

Date Collected: **4/6/2017**
Date Received: **4/7/2017**
Date Analyzed: **4/10/2017**

EMSL Sample #: **371706926-0014**
Client ID: **Conf 7-3**
Location: **Conference Room**

Sample Type: **Bulk**
Sample Size: **57**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**3.26**	µg/g	⚠
Dust Mites Allergen	Der p1	0.012	µg/g	**0.04**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.01**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.77**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.22**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **86127158-Task 84**

Date Collected: **4/6/2017**
Date Received: **4/7/2017**
Date Analyzed: **4/10/2017**

EMSL Sample #: **371706926-0015**
Client ID: **707-5**
Location: **Room 707**

Sample Type: **Bulk**
Sample Size: **35**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**2.34**	µg/g	⚠
Dust Mites Allergen	Der p1	0.012	µg/g	**ND**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**0.11**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.03**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**2.33**	µg/g	⚠
Dog Allergen	Can f1	0.012	µg/g	**0.51**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **86127158-Task 84**

Date Collected: **4/6/2017**
Date Received: **4/7/2017**
Date Analyzed: **4/10/2017**

EMSL Sample #: **371706926-0016**
Client ID: **707-6**
Location: **Room 707**

Sample Type: **Bulk**
Sample Size: **44**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**1.87**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**0.02**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**0.02**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.02**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.46**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.28**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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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
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.

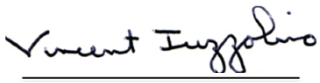
C. Warranty
EMSL warrants to its clients that all services provided hereunder shall be performed in accordance with established and recognized analytical testing procedures and with reasonable care in accordance with applicable federal, state and local laws. The foregoing express warranty is exclusive 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 the original sample delivery group (SDG) samples. In no event shall EMSL be liable to a client orvalue of 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.

E. Indemnification
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Report Date	Report Revision	Revision Comments
4/21/2017	R0	Initial Report



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

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Order ID:	371707029
Customer ID:	GTER78
Customer PO:	86127158
Project ID:	

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Greenville, SC 29615

Phone:	(864) 292-2901
Fax:	(864) 292-6361
Collected:	04/07/2017
Received:	04/10/2017
Analyzed:	04/17/2017

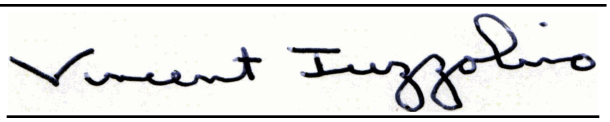
Proj: CU University Union

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

Lab Sample Number:	371707029-0001			371707029-0002			371707029-0003		
Client Sample ID:	800-1			800-3			801-1		
Volume (L):	75			75			75		
Sample Location:	RM 800			RM 800			RM 801		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	2	90	15.5	1	40	18.2
Aspergillus/Penicillium	3	100	55.6	4	200	34.5	6*	80*	36.4
Basidiospores	1	40	22.2	4	200	34.5	1	40	18.2
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	22.2	2	90	15.5	1	40	18.2
Curvularia	-	-	-	-	-	-	1*	10*	4.5
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces	-	-	-	-	-	-	1*	10*	4.5
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**5**	**180**	**100**	**12**	**580**	**100**	**11**	**220**	**100**
Hyphal Fragment	-	-	-	-	-	-	1	40	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	43	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	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 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. 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 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: 04/18/2017 08:41:52

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Order ID: 371707029
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Customer PO: 86127158
Project ID:

Attn: Ben Hestir
Terracon Consultants, Inc.
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Phone: (864) 292-2901
Fax: (864) 292-6361
Collected: 04/07/2017
Received: 04/10/2017
Analyzed: 04/17/2017

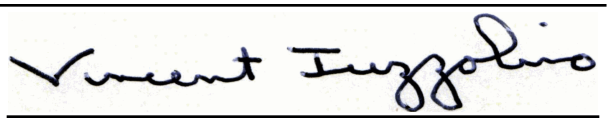
Proj: CU University Union

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

Lab Sample Number:	371707029-0004			371707029-0005			371707029-0006		
Client Sample ID:	802-1			803-1			804-1		
Volume (L):	75			75			75		
Sample Location:	RM 802			RM 803			RM 804		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	1	40	8.3	-	-	-	2	90	24.3
Aspergillus/Penicillium	7	300	62.5	2	90	30	4	200	54.1
Basidiospores	3	100	20.8	4	200	66.7	1	40	10.8
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	8.3	-	-	-	1	40	10.8
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces	-	-	-	1*	10*	3.3	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**12**	**480**	**100**	**7**	**300**	**100**	**8**	**370**	**100**
Hyphal Fragment	-	-	-	1*	10*	-	2*	30*	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	6*	80*	-	1	40	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	43	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	2	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	2	-

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

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

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Greenville, SC 29615

Phone: (864) 292-2901
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Collected: 04/07/2017
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Analyzed: 04/17/2017

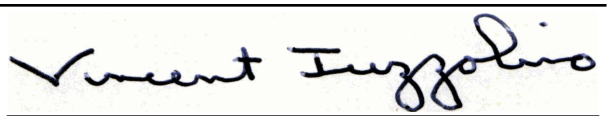
Proj: CU University Union

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

Lab Sample Number:	371707029-0007			371707029-0008			371707029-0009		
Client Sample ID:	805-1			806-1			806-3		
Volume (L):	75			75			75		
Sample Location:	RM 805			RM 806			RM 806		
Spore Types	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**	**Raw Count**	**Count/m³**	**% of Total**
Alternaria	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	3	100	29.4	-	-	-	-	-	-
Basidiospores	5	200	58.8	5	200	62.5	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	11.8	3	100	31.3	-	-	-
Curvularia	-	-	-	1*	10*	3.1	1	40	100
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	1*	10*	3.1	-	-	-
Pithomyces	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis	-	-	-	-	-	-	-	-	-
Stachybotrys	-	-	-	-	-	-	-	-	-
Torula	-	-	-	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Total Fungi	**9**	**340**	**100**	**10**	**320**	**100**	**1**	**40**	**100**
Hyphal Fragment	1	40	-	1	40	-	2	90	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	1	40	-	2	90	-	1*	10*	-
Analyt. Sensitivity 600x	-	43	-	-	43	-	-	43	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	2	-	-	3	-	-	2	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	2	-	-	2	-	-	2	-

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

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Initial report from: 04/18/2017 08:41:52

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Project ID:	

Attn: Ben Hestir
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Greenville, SC 29615

Phone:	(864) 292-2901
Fax:	(864) 292-6361
Collected:	04/07/2017
Received:	04/10/2017
Analyzed:	04/17/2017

Proj: CU University Union

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

Lab Sample Number:	**371707029-0010**
Client Sample ID:	**809-1**
Volume (L):	**75**
Sample Location:	**RM 809**

Spore Types	Raw Count	Count/m³	% of Total
Alternaria	-	-	-
Ascospores	-	-	-
Aspergillus/Penicillium	2	90	69.2
Basidiospores	1	40	30.8
Bipolaris++	-	-	-
Chaetomium	-	-	-
Cladosporium	-	-	-
Curvularia	-	-	-
Epicoccum	-	-	-
Fusarium	-	-	-
Ganoderma	-	-	-
Myxomycetes++	-	-	-
Pithomyces	-	-	-
Rust	-	-	-
Scopulariopsis	-	-	-
Stachybotrys	-	-	-
Torula	-	-	-
Ulocladium	-	-	-
Unidentifiable Spores	-	-	-
Zygomycetes	-	-	-
Total Fungi	**3**	**130**	**100**
Hyphal Fragment	3	100	-
Insect Fragment	-	-	-
Pollen	1	40	-
Analyt. Sensitivity 600x	-	43	-
Analyt. Sensitivity 300x	-	13*	-
Skin Fragments (1-4)	-	2	-
Fibrous Particulate (1-4)	-	1	-
Background (1-5)	-	2	-

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

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EMSL Order:	241701352
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CustomerPO:	86127158
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Phone:	(864) 292-2901
Fax:	(864) 292-6361
Received:	04/08/17 11:10 AM
Analysis Date:	4/20/2017
Collected:	4/7/2017

Project: **CU-UNIVERSITY UNION**

Test Report: Viable Fungi Identification and Enumeration from Impactors (Including Speciation of Penicillium, Aspergillus, Cladosporium and Stachybotrys (EMSL Method M005)

Sample Description	Location	Volume (L)	Media	Incubation Temp (C)	Sensitivity (CFU/m³)	Fungal Identification	Colony Count	CFU/m³
800-2	RM 800	85	MEA	25	12	*Penicillium decumbens*	1	12
241701352-0001						*Sterile(white)*	1	12
						Total	**2**	**24**
800-4	RM 800 CONF.	85	MEA	25	12	*Paecilomyces sp.*	1	12
241701352-0002						*Sterile(white)*	4	48
						Total	**5**	**60**
801-2	RM 801	85	MEA	25	12	*Aspergillus candidus*	1	12
241701352-0003						*Cladosporium cladosporioides*	1	12
						Penicillium decumbens	7	84
						Total	**9**	**108**
802-2	RM 802	85	MEA	25	12	*Cladosporium cladosporioides*	1	12
241701352-0004						*Sterile(white)*	5	60
						Yeast	1	12
						Total	**7**	**84**
803-2	RM 803	85	MEA	25	12	*Cladosporium cladosporioides*	3	36
241701352-0005						*Sterile(white)*	2	24
						Total	**5**	**60**
804-2	RM 804	85	MEA	25	12	*Sterile(white)*	3	36
241701352-0006						**Total**	**3**	**36**
805-2	RM 805	85	MEA	25	12	*Aspergillus penicillioides*	1	12
241701352-0007						*Penicillium decumbens*	1	12
						Rhodotorula sp.	1	12
						Sterile(dark)	1	12
						Total	**4**	**48**

Analyst(s)

Gloria Oriol (10)

Gloria V. Oriol, Laboratory Manager
or other approved signatory

Positive hole correction factors have not been applied to the reported data.
The detection limit is equal to 1 colony forming unit (CFU) per agar plate. 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. Wallingford, CT AIHA-LAP, LLC--EMLAP Accredited #165118

Initial report from 04/24/2017 08:53:40

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Phone:	(864) 292-2901
Fax:	(864) 292-6361
Received:	04/08/17 11:10 AM
Analysis Date:	4/20/2017
Collected:	4/7/2017

Project: **CU-UNIVERSITY UNION**

Test Report: Viable Fungi Identification and Enumeration from Impactors (Including Speciation of Penicillium, Aspergillus, Cladosporium and Stachybotrys (EMSL Method M005)

Sample Description	Location	Volume (L)	Media	Incubation Temp (C)	Sensitivity (CFU/m³)	Fungal Identification	Colony Count	CFU/m³
806-2	RM 806	85	MEA	25	12	*Cladosporium cladosporioides*	2	24
241701352-0008						*Penicillium decumbens*	1	12
						Sterile(white)	3	36
						Total	**6**	**72**
806-4	RM 806	85	MEA	25	12	*Acremonium sp.*	2	24
241701352-0009						*Cladosporium cladosporioides*	2	24
						Penicillium decumbens	1	12
						Sterile(white)	1	12
						Total	**6**	**72**
809-2	RM 809	85	MEA	25	12	*Acremonium sp.*	1	12
241701352-0010						*Cladosporium sphaerospermum*	1	12
						Exophiala sp.	1	12
						Total	**3**	**36**

No discernable blank was submitted with this group of samples.

Analyst(s)

Gloria Oriol (10)

Gloria V. Oriol, Laboratory Manager
or other approved signatory

Positive hole correction factors have not been applied to the reported data.
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CustomerPO:	86127158-Task84
ProjectID:	

Attn: **Ben Hestir**
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Phone:	(864) 292-2901
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Received:	04/18/17 9:10 AM
Analysis Date:	4/28/2017
Collected:	4/12/2017

Project: **University Union - Task 84**

Test Report: Identification and Enumeration of Culturable Fungi by Bulk (Including Speciation of Penicillium, Aspergillus, Cladosporium, and Stachybotrys (EMSL Method M005))

Sample Description	Sample Location	Temp (C)	Sample Measure (g)	Analytical Sensitivity (CFU/g)	Dilution	Fungal Identification	Colony Count	CFUs (CFU/g)	Percent of Total
800M-1	RM 800 Conf.	25	0.1265	791	100	*Alternaria sp.*	2	1,580	<1
371707627-0001	*Media:* MEA,CELL,CYA			791	100	*Aspergillus fumigatus*	1	791	<1
				791	100	*Aspergillus japonicus*	1	791	<1
				791	100	*Aspergillus niger*	2	1,580	<1
				791	100	*Bipolaris sp.*	1	791	<1
				7,910	1000	*Cladosporium cladosporioides*	2	15,800	6.0
				79,100	10000	*Cladosporium sphaerospermum*	1	79,100	30.2
				791	100	*Curvularia sp.*	1	791	<1
				791	100	*Epicoccum sp.*	3	2,370	<1
				791	100	*Lichtheimia sp.*	1	791	<1
				7,910	1000	*Penicillium chrysogenum*	2	15,800	6.0
				7,910	1000	*Penicillium citrinum*	1	7,910	3.0
				79,100	10000	*Penicillium corylophilum*	1	79,100	30.2
				7,910	1000	*Penicillium sp.*	3	23,700	9.0
				7,910	1000	*Phoma sp.*	2	15,800	6.0
				7,910	1000	*Sterile(white)*	2	15,800	6.0
						Total	**26**	**262,000**	
801M-1	RM 801	25	0.1145	8,730	1000	*Aspergillus sydowii*	2	17,500	<1
371707627-0002	*Media:* MEA,CELL,CYA			87,300	10000	*Aspergillus ustus*	19	1,660,000	67.5
				87,300	10000	*Chaetomium sp.*	5	437,000	17.8
				87,300	10000	*Cladosporium sphaerospermum*	2	175,000	7.1
				87,300	10000	*Penicillium chrysogenum*	1	87,300	3.5
				87,300	10000	*Penicillium corylophilum*	1	87,300	3.5
						Total	**30**	**2,460,000**	

Analyst(s)

Zeljko Jurjevic (10)

Vincent Iuzzolino, M.S., Laboratory Director
or other approved signatory

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

Initial report from 05/02/2017 12:01:33

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EMSL Order:	371707627
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Project: **University Union - Task 84**

Test Report: Identification and Enumeration of Culturable Fungi by Bulk (Including Speciation of Penicillium, Aspergillus, Cladosporium, and Stachybotrys (EMSL Method M005))

Sample Description	Sample Location	Temp (C)	Sample Measure (g)	Analytical Sensitivity (CFU/g)	Dilution	Fungal Identification	Colony Count	CFUs (CFU/g)	Percent of Total
802M-1	RM 802	25	0.1066	938	100	*Chaetomium sp.*	2	1,880	<1
371707627-0003	*Media:* MEA,CELL,CYA			938	100	*Curvularia sp.*	1	938	<1
				93,800	10000	*Penicillium corylophilum*	19	1,780,000	86.8
				9,380	1000	*Penicillium oxalicum*	1	9,380	<1
				93,800	10000	*Penicillium sp.*	2	188,000	9.2
				9,380	1000	*Penicillium sphaerospermum*	7	65,700	3.2
				938	100	*Rhizopus sp.*	1	938	<1
						Total	**33**	**2,050,000**	

Analyst(s)

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Project: **University Union - Task 84**

Test Report: Identification and Enumeration of Culturable Fungi by Bulk (Including Speciation of Penicillium, Aspergillus, Cladosporium, and Stachybotrys (EMSL Method M005))

Sample Description	Sample Location	Temp (C)	Sample Measure (g)	Analytical Sensitivity (CFU/g)	Dilution	Fungal Identification	Colony Count	CFUs (CFU/g)	Percent of Total
803M-1	RM 803	25	0.1143	875	100	*Aspergillus flavus*	1	875	<1
371707627-0004	*Media:* MEA,CELL,CYA			875	100	*Aspergillus japonicus*	1	875	<1
				875	100	*Aspergillus niger*	3	2,620	<1
				875	100	*Aspergillus unguis*	1	875	<1
				8,750	1000	*Aspergillus ustus*	3	26,200	2.8
				8,750	1000	*Aureobasidium sp.*	1	8,750	<1
				8,750	1000	*Bipolaris sp.*	2	17,500	1.9
				8,750	1000	*Chaetomium sp.*	1	8,750	<1
				87,500	10000	*Cladosporium sp.*	2	175,000	18.5
				87,500	10000	*Cladosporium sphaerospermum*	2	175,000	18.5
				875	100	*Epicoccum sp.*	3	2,620	<1
				8,750	1000	*Mucor sp.*	1	8,750	<1
				8,750	1000	*Penicillium chrysogenum*	1	8,750	<1
				87,500	10000	*Penicillium corylophilum*	4	350,000	37.1
				87,500	10000	*Penicillium sp.*	1	87,500	9.3
				8,750	1000	*Sterile(dark)*	2	17,500	1.9
				8,750	1000	*Sterile(white)*	4	35,000	3.7
				8,750	1000	*Talaromyces sp.*	2	17,500	1.9
						Total	**35**	**944,000**	

Analyst(s)

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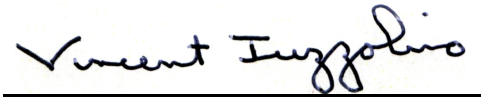
Project: **University Union - Task 84**

Test Report: Identification and Enumeration of Culturable Fungi by Bulk (Including Speciation of Penicillium, Aspergillus, Cladosporium, and Stachybotrys (EMSL Method M005))

Sample Description	Sample Location	Temp (C)	Sample Measure (g)	Analytical Sensitivity (CFU/g)	Dilution	Fungal Identification	Colony Count	CFUs (CFU/g)	Percent of Total
804M-1	RM 804	25	0.1517	6,590	1000	*Alternaria sp.*	2	13,200	3.2
371707627-0005	*Media:* MEA,CELL,CYA			6,590	1000	*Aspergillus creber*	1	6,590	1.6
				659	100	*Aspergillus niger*	3	1,980	<1
				6,590	1000	*Aspergillus ustus*	1	6,590	1.6
				6,590	1000	*Chaetomium sp.*	2	13,200	3.2
				6,590	1000	*Cladosporium sphaerospermum*	5	33,000	8.1
				6,590	1000	*Curvularia sp.*	2	13,200	3.2
				6,590	1000	*Epicoccum sp.*	1	6,590	1.6
				659	100	*Mucor sp.*	1	659	<1
				65,900	10000	*Penicillium corylophilum*	4	264,000	64.9
				6,590	1000	*Penicillium sp.*	3	19,800	4.9
				659	100	*Rhizopus sp.*	1	659	<1
				6,590	1000	*Rhodotorula sp.*	3	19,800	4.9
				659	100	*Sterile(white)*	2	1,320	<1
				6,590	1000	*Yeast*	1	6,590	1.6
						Total	**32**	**407,000**	

Analyst(s)

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Project: **University Union - Task 84**

Test Report: Identification and Enumeration of Culturable Fungi by Bulk (Including Speciation of Penicillium, Aspergillus, Cladosporium, and Stachybotrys (EMSL Method M005))

Sample Description	Sample Location	Temp (C)	Sample Measure (g)	Analytical Sensitivity (CFU/g)	Dilution	Fungal Identification	Colony Count	CFUs (CFU/g)	Percent of Total
800M-2	RM 800 - IT	25	0.1097	9,120	1000	*Alternaria sp.*	1	9,120	<1
371707627-0006	*Media:* MEA,CELL,CYA			9,120	1000	*Aspergillus fumigatus*	1	9,120	<1
				9,120	1000	*Aspergillus japonicus*	1	9,120	<1
				9,120	1000	*Aspergillus niger*	1	9,120	<1
				91,200	10000	*Cladosporium sp.*	1	91,200	6.4
				91,200	10000	*Cladosporium sphaerospermum*	11	1,000,000	70.4
				912	100	*Curvularia sp.*	1	912	<1
				9,120	1000	*Epicoccum sp.*	1	9,120	<1
				912	100	*Mucor sp.*	1	912	<1
				912	100	*Penicillium citrinum*	1	912	<1
				91,200	10000	*Penicillium corylophilum*	2	182,000	12.8
				9,120	1000	*Penicillium sp.*	5	45,600	3.2
				9,120	1000	*Rhodotorula sp.*	2	18,200	1.3
				9,120	1000	*Sterile(dark)*	1	9,120	<1
				9,120	1000	*Sterile(white)*	2	18,200	1.3
				9,120	1000	*Yeast*	1	9,120	<1
						Total	**33**	**1,420,000**	

Analyst(s)

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Project: **University Union - Task 84**

Test Report: Identification and Enumeration of Culturable Fungi by Bulk (Including Speciation of Penicillium, Aspergillus, Cladosporium, and Stachybotrys (EMSL Method M005))

Sample Description	Sample Location	Temp (C)	Sample Measure (g)	Analytical Sensitivity (CFU/g)	Dilution	Fungal Identification	Colony Count	CFUs (CFU/g)	Percent of Total
805M-1	RM 805	25	0.1106	904	100	*Alternaria sp.*	1	904	<1
371707627-0007	*Media:* MEA,CELL,CYA			904	100	*Aspergillus fumigatus*	1	904	<1
				904	100	*Aspergillus japonicus*	1	904	<1
				904	100	*Aspergillus niger*	1	904	<1
				9,040	1000	*Aspergillus ustus*	1	9,040	2.9
				904	100	*Bipolaris sp.*	1	904	<1
				9,040	1000	*Chaetomium sp.*	1	9,040	2.9
				904	100	*Curvularia sp.*	1	904	<1
				9,040	1000	*Epicoccum sp.*	1	9,040	2.9
				904	100	*Nigrospora sp.*	1	904	<1
				9,040	1000	*Penicillium brevicompactum*	1	9,040	2.9
				9,040	1000	*Penicillium citrinum*	1	9,040	2.9
				9,040	1000	*Penicillium corylophilum*	3	27,100	8.6
				9,040	1000	*Penicillium crustosum*	1	9,040	2.9
				904	100	*Penicillium glabrum*	1	904	<1
				90,400	10000	*Penicillium sp.*	1	90,400	28.7
				9,040	1000	*Sterile(dark)*	13	118,000	37.5
				9,040	1000	*Sterile(white)*	2	18,100	5.7
						Total	**33**	**315,000**	

Analyst(s)

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Test Report: Identification and Enumeration of Culturable Fungi by Bulk (Including Speciation of Penicillium, Aspergillus, Cladosporium, and Stachybotrys (EMSL Method M005))

Sample Description	Sample Location	Temp (C)	Sample Measure (g)	Analytical Sensitivity (CFU/g)	Dilution	Fungal Identification	Colony Count	CFUs (CFU/g)	Percent of Total
806M-1	RM 806	25	0.1250	80,000	10000	*Aspergillus fumigatus*	5	400,000	63.2
371707627-0008	*Media:* MEA,CELL,CYA			8,000	1000	*Aspergillus niger*	1	8,000	1.3
				8,000	1000	*Aureobasidium sp.*	1	8,000	1.3
				8,000	1000	*Chaetomium sp.*	1	8,000	1.3
				80,000	10000	*Cladosporium sphaerospermum*	1	80,000	12.6
				8,000	1000	*Curvularia sp.*	1	8,000	1.3
				8,000	1000	*Epicoccum sp.*	1	8,000	1.3
				8,000	1000	*Nigrospora sp.*	1	8,000	1.3
				8,000	1000	*Penicillium sp.*	9	72,000	11.4
				800	100	*Rhizopus sp.*	1	800	<1
				8,000	1000	*Sterile(white)*	1	8,000	1.3
				8,000	1000	*Talaromyces funiculosum*	1	8,000	1.3
				8,000	1000	*Yeast*	2	16,000	2.5
						Total	**26**	**633,000**	
806M-2	RM 806	25	0.1279	78,200	10000	*Aspergillus jensenii*	12	938,000	50.4
371707627-0009	*Media:* MEA,CELL,CYA			7,820	1000	*Aspergillus niger*	2	15,600	<1
				782	100	*Chaetomium sp.*	1	782	<1
				7,820	1000	*Cladosporium sphaerospermum*	5	39,100	2.1
				782	100	*Epicoccum sp.*	1	782	<1
				78,200	10000	*Penicillium sp.*	11	860,000	46.2
				782	100	*Sterile(white)*	2	1,560	<1
						Total	**34**	**1,860,000**	

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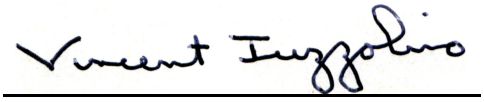
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Sample Description	Sample Location	Temp (C)	Sample Measure (g)	Analytical Sensitivity (CFU/g)	Dilution	Fungal Identification	Colony Count	CFUs (CFU/g)	Percent of Total
809M-1	RM 809	25	0.1350	74,100	10000	*Acremonium sp.*	2	148,000	12.4
371707627-0010	*Media:* MEA,CELL,CYA			74,100	10000	*Aspergillus jensenii*	1	74,100	6.2
				74,100	10000	*Aspergillus sydowii*	2	148,000	12.4
				74,100	10000	*Aspergillus ustus*	2	148,000	12.4
				74,100	10000	*Cladosporium sphaerospermum*	2	148,000	12.4
				74,100	10000	*Penicillium chrysogenum*	3	222,000	18.7
				74,100	10000	*Penicillium corylophilum*	4	296,000	24.9
				7,410	1000	*Rhizopus sp.*	1	7,410	<1
						Total	**17**	**1,190,000**	

No discernable blank was submitted with this group of samples

Analyst(s)

Zeljko Jurjevic (10)



Vincent Iuzzolino, M.S., Laboratory Director
or other approved signatory

"<" means less than the stated value. 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 05/02/2017 12:01:33

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EMSL Order #:	**371707029**
Customer ID:	**GTER78**
Customer PO:	**86127158**

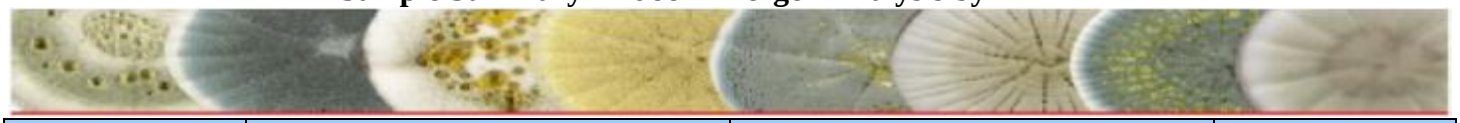
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Fax: **864-292-6361**

Project: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

Sample Summary -Indoor Allergen Analysis by MARIA®



Lab Sample Number	Client Sample ID	Sample Location	Sample Type
371707029-0011	800-5	RM 800	Bulk
371707029-0012	800-6	RM 800	Bulk
371707029-0013	802-3	RM 802	Bulk
371707029-0014	803-3	RM 803	Bulk
371707029-0015	804-3	RM 804	Bulk
371707029-0016	805-3	RM 805	Bulk
371707029-0017	806-5	RM 806	Bulk
371707029-0018	806-6	RM 806	Bulk
371707029-0019	809-3	RM 809	Bulk

Report Date	Report Revision	Revision Comments
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Project: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

EMSL Sample #: **371707029-0011**
Client ID: **800-5**
Location: **RM 800**

Sample Type: **Bulk**
Sample Size: **50**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**0.51**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**ND**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**0.06**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.05**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.42**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.66**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

EMSL Sample #: **371707029-0012**
Client ID: **800-6**
Location: **RM 800**

Sample Type: **Bulk**
Sample Size: **64**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**1.99**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**ND**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**0.005**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.08**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.55**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**1.07**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

EMSL Sample #: **371707029-0013**
Client ID: **802-3**
Location: **RM 802**

Sample Type: **Bulk**
Sample Size: **31**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**0.92**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**ND**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.01**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.40**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.20**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

EMSL Sample #: **371707029-0014**
Client ID: **803-3**
Location: **RM 803**

Sample Type: **Bulk**
Sample Size: **49**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**7.90**	µg/g	⚠
Dust Mites Allergen	Der p1	0.012	µg/g	**ND**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.11**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.34**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**1.72**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

EMSL Sample #: **371707029-0015**
Client ID: **804-3**
Location: **RM 804**

Sample Type: **Bulk**
Sample Size: **74**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**2.63**	µg/g	⚠
Dust Mites Allergen	Der p1	0.012	µg/g	**ND**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**0.01**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.02**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**2.49**	µg/g	⚠
Dog Allergen	Can f1	0.012	µg/g	**0.38**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

EMSL Sample #: **371707029-0016**
Client ID: **805-3**
Location: **RM 805**

Sample Type: **Bulk**
Sample Size: **36**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**2.78**	µg/g	⚠
Dust Mites Allergen	Der p1	0.012	µg/g	**0.04**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.05**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**1.23**	µg/g	⚠
Dog Allergen	Can f1	0.012	µg/g	**0.74**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†Sufficient evidence is not available for risk levels.

Allergen Risk Levels:

High -Risk of acute asthmatic attack.

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Project: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

EMSL Sample #: **371707029-0017**
Client ID: **806-5**
Location: **RM 806**

Sample Type: **Bulk**
Sample Size: **95**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**0.37**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**ND**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.02**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.40**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.26**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

EMSL Sample #: **371707029-0018**
Client ID: **806-6**
Location: **RM 806**

Sample Type: **Bulk**
Sample Size: **63**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**3.39**	µg/g	⚠
Dust Mites Allergen	Der p1	0.012	µg/g	**ND**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**0.01**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.04**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.35**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.40**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†Sufficient evidence is not available for risk levels.

Allergen Risk Levels:

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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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Report Date	**Report Revision**	**Revision Comments**
4/24/2017	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 #: **371707029**
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: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

EMSL Sample #: **371707029-0019**
Client ID: **809-3**
Location: **RM 809**

Sample Type: **Bulk**
Sample Size: **74**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**1.25**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**0.60**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**0.02**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.01**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.63**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.22**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Fax: **864-292-6361**

Project: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**



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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Project: **CU University Union**

Date Collected: **4/7/2017**
Date Received: **4/10/2017**
Date Analyzed: **4/21/2017**

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 the original sample delivery group (SDG) samples. In no event shall EMSL be liable to a client orvalue of 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.

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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Report Date	Report Revision	Revision Comments
4/24/2017	R0	Initial Report

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

EMSL Order #:	**371707627**
Customer ID:	**GTER78**
Customer PO:	**86127158-Task84**

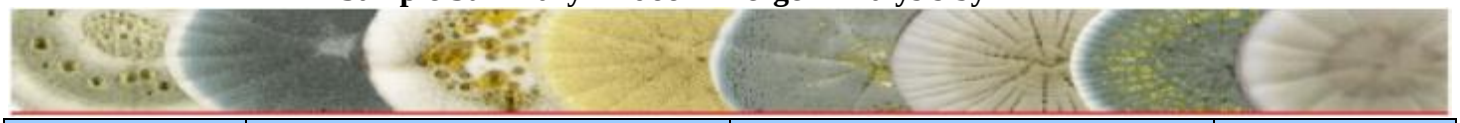
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Phone: **864-292-2901**
Fax: **864-292-6361**

Project: **University Union - Task 84**

Date Collected: **4/12/2017**
Date Received: **4/18/2017**
Date Analyzed: **4/24/2017**

Sample Summary -Indoor Allergen Analysis by MARIA®



Lab Sample Number	Client Sample ID	Sample Location	Sample Type
371707627-0011	801A-1	RM 801	Bulk

Report Date	Report Revision	Revision Comments
5/2/2017	R0	Initial Report

Vincent Iuzzolino, M.S., Laboratory Director
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Project: **University Union - Task 84**

Date Collected: **4/12/2017**
Date Received: **4/18/2017**
Date Analyzed: **4/24/2017**

EMSL Sample #: **371707627-0011**
Client ID: **801A-1**
Location: **RM 801**

Sample Type: **Bulk**
Sample Size: **59**
Sample Units: **mg**

Analytical Results -Indoor Allergen Analysis by MARIA®

Test Parameter	*Antigens*	*Detection Limits*		*Concentrations*		*Allergen Risk Levels*
Dust Mites Allergen	Der f1	0.012	µg/g	**1.22**	µg/g	☑
Dust Mites Allergen	Der p1	0.012	µg/g	**0.12**	µg/g	☑
Mouse Allergen	Mus m1	0.002	µg/g	**ND**	µg/g	☑
Rat Allergen	Rat n1	0.004	µg/g	**0.05**	µg/g	†
Cat Allergen	Fel d1	0.004	µg/g	**0.52**	µg/g	☑
Dog Allergen	Can f1	0.012	µg/g	**0.69**	µg/g	☑
Cockroach Allergen	Bla g2	0.012	µg/g	**ND**	µg/g	☑

†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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Project: **University Union - Task 84**

Date Collected: **4/12/2017**
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Date Analyzed: **4/24/2017**



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.*

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Terminology

ELISA	Enzyme-linked Immunosorbent Assay
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Allergen	A substance which reacts with the body's immune system to produce an allergic reaction.
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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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