Aerobiology Laboratory Associates, Incorporated
Expertise Since 1997

Certificate of Analysis
AIHA-LAP EMLAP# 163063

2400 Herodian Way
Suite 190
Smyrna, Georgia 30080
(770) 947-2828
www.aerobiology.net

Affinity Group
9916 Walden Street
Soddy Daisy, Tennessee 37339
Attn: David Bashor
Project: **TVA-Greenway Knoxoille Office**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 11/25/2019
Date Received: 11/27/2019
Date Analyzed: 11/27/2019
Date Reported: 11/29/2019
Project ID: 19054786

1054 Spore Trap Analysis: SOP 3.8

Client Sample Number	**TVA-02**				**TVA-01**			
Sample Location	**Warehouse Left Front**				**Outside**			
Sample Volume (L)	**25**				**25**			
Lab Sample Number	**19054786-002**				**19054786-001**			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
ascospores	2	80	15	1/2	3	120	2	-
basidiospores	9	360	69	1/9	84	3360	65	-
Cladosporium	-	-	-	-	32	1280	25	-
hyphal elements	-	-	-	-	2	80	2	-
Nigrospora	-	-	-	-	1	40	1	-
Penicillium/Aspergillus group	-	-	-	-	7	280	5	-
Pithomyces	1	40	8	-	-	-	-	-
Smuts,Periconia,Myxomycetes	1	40	8	-	-	-	-	-
	Debris Rating **3**				Debris Rating **3**			
Analytical Sensitivity	Analytical Sensitivity: **40** spr/m³				Analytical Sensitivity: **40** spr/m³			
Comments								
Total *See Footnotes	13	520	~100%	1/10	129	5160	~100%	-

Client Sample Number	**TVA-03**				**TVA-01**			
Sample Location	**Warehouse Back Right**				**Outside**			
Sample Volume (L)	**25**				**25**			
Lab Sample Number	**19054786-003**				**19054786-001**			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
ascospores	1	40	10	1/3	3	120	2	-
basidiospores	5	200	50	1/17	84	3360	65	-
Cladosporium	1	40	10	1/32	32	1280	25	-
hyphal elements	-	-	-	-	2	80	2	-
Nigrospora	-	-	-	-	1	40	1	-
Penicillium/Aspergillus group	3	120	30	1/2	7	280	5	-
	Debris Rating **2**				Debris Rating **3**			
Analytical Sensitivity	Analytical Sensitivity: **40** spr/m³				Analytical Sensitivity: **40** spr/m³			
Comments								
Total *See Footnotes	10	400	~100%	1/13	129	5160	~100%	-

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Client Sample Number	**TVA-04**				**TVA-01**			
Sample Location	**Offices**				**Outside**			
Sample Volume (L)	**25**				**25**			
Lab Sample Number	**19054786-004**				**19054786-001**			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
ascospores	2	80	3	1/2	3	120	2	-
basidiospores	9	360	15	1/9	84	3360	65	-
Cladosporium	18	720	31	1/2	32	1280	25	-
hyphal elements	-	-	-	-	2	80	2	-
Nigrospora	-	-	-	-	1	40	1	-
Penicillium/Aspergillus group	27	1080	46	4/1	7	280	5	-
Pithomyces	1	40	2	-	-	-	-	-
Smuts,Periconia,Myxomycetes	2	80	3	-	-	-	-	-
	Debris Rating **4**				Debris Rating **3**			
Analytical Sensitivity	Analytical Sensitivity: **40** spr/m³				Analytical Sensitivity: **40** spr/m³			
Comments								
Total *See Footnotes	59	2360	~100%	1/2	129	5160	~100%	-

Client Sample #: TVA-S1
Lab Sample #: 19054786-005
Sample Location: Warehouse Left Front Table
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT

Results:	Observation
Occasional ascospores seen	1-5 per cover slip
Occasional basidiospores seen	1-5 per cover slip

Debris Rating: 1

Client Sample #: TVA-S2
Lab Sample #: 19054786-006
Sample Location: Warehouse Left Midway Chair
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT

Results:	Observation
Occasional ascospores seen	1-5 per cover slip
Occasional Exosporium-like spores seen	1-5 per cover slip
Occasional hyphal elements seen	1-5 per cover slip

Debris Rating: 1

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Client Sample #: TVA-S3 Lab Sample #: 19054786-007
Sample Location: Warehouse Right Back File Cabinet
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT

Results:	Observation
Occasional ascospores seen	1-5 per cover slip
Occasional basidiospores seen	1-5 per cover slip
Occasional Cladosporium spores seen	1-5 per cover slip
Occasional Penicillium/Aspergillus group spores seen	1-5 per cover slip
Occasional Pithomyces spores seen	1-5 per cover slip

Debris Rating: 2

Client Sample #: TVA-S4 Lab Sample #: 19054786-008
Sample Location: Office Carpet
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT

Results:	Observation
Occasional ascospores seen	1-5 per cover slip
Occasional basidiospores seen	1-5 per cover slip

Debris Rating: 2

Client Sample #: TVA-S5 Lab Sample #: 19054786-009
Sample Location: Office Chair
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT

Results:	Observation
Occasional basidiospores seen	1-5 per cover slip
Occasional Pithomyces spores seen	1-5 per cover slip

Debris Rating: 2

Client Sample #: TVA-S6 Lab Sample #: 19054786-010
Sample Location: Office Desk Cabinet 1
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT

Debris Rating: 1
Comments: No fungal spores seen

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Date Reported: 11/29/2019
Project ID: 19054786

Client Sample #: TVA-S7
Lab Sample #: 19054786-011
Sample Location: Office Desk Cabinet 2
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT

Debris Rating: 1
Comments: No fungal spores seen

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Footnotes and Additional Report Information

Debris Rating Table

1	Minimal (<5%) particulate present	Reported values are minimally affected by particulate load.
2	5% to 25% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
3	26% to 75% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
4	75% to 90% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
5	Greater than 90% of the trace occluded with particulate	Quantification not possible due to large negative bias. A new sample should be collected at a shorter time interval or other measures taken to reduce particulate load.

1. Penicillium/Aspergillus group spores are characterized by their small size, round to ovoid shape, being unicellular, and usually colorless to lightly pigmented. There are numerous genera of fungi whose spore morphology is similar to that of the Penicillium/Aspergillus type. Two common examples would be Paecilomyces and Acremonium. Although the majority of spores placed in this group are Penicillium, Aspergillus, or a combination of both. Keep in mind that these are not the only two possibilities.

2. Ascospores are sexually produced fungal spores formed within an ascus. An ascus is a sac-like structure designed to discharge the ascospores into the environment, e.g. Ascobolus.

3. Basidiospores are typically blown indoors from outdoors and rarely have an indoor source. However, in certain situations a high basidiospore count indoors may be indicative of a wood decay problem or wet soil.

4. The colorless group contains colorless spores which were unidentifiable to a specific genus. Examples of this group include Acremonium, Aphanocladium, Beauveria, Chrysosporium, Engyodontium microconidia, yeast, some arthrospores, as well as many others.

5. Hyphae are the vegetative mode of fungi. Hyphal elements are fragments of individual Hyphae. They can break apart and become airborne much like spores and are potentially allergenic. A mass of hyphal elements is termed the mycelium. Hyphae in high concentration may be indicative of colonization.

6. Dash (-) in this report, under raw count column means 'not detected (ND)'; otherwise 'not applicable' (NA).

7. The positive-hole correction factor is a statistical tool which calculates a probable count from the raw count, taking into consideration that multiple particles can impact on the same hole; for this reason the sum of the calculated counts may be less than the positive hole corrected total.

8. Due to rounding totals may not equal 100%.

9. Analytical Sensitivity for each spores is different for Non-viable sample when the spores are read at different percentage. Analytical Sensitivity is calculated as spr/m^3 divided by raw count. spr/m^3 = raw counts x (100/ % read) x (1000/Sample volume). If Analytical Sensitivity is 13 spr/m^3 at 100% read, Analytical Sensitivity at 50% read would be 27 spr/m^3, which is 2 times higher. Analytical Sensitivity provided on the report is based on an assumed 100% of the trace being analyzed.

10. Minimum Reporting Limits (MRL) for BULKS, DUSTS, SWABS, and WATER samples are a calculation based on the sample size and the dilution plate on which the organism was counted. Results are a compilation of counts taken from multiple dilutions and multiple medias. This means that every genus of fungi or bacteria recovered can be counted on the plate on which it is best represented.

11. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.

12. The results in this report are related to this project and these samples only.

13. For samples with an air volume of < 100L, the number of significant figures in the result should be considered (2) two. For samples with air volumes between 100-999L, the number of significant figures in the result should considered (3) three. For example, a sample with a result of 55,443 spr/m^3 from a 75L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,400 spr/m^3.

14. If the In/Out ratio is greater than 100 times it is indicated >100/1, rather than showing the real value.

Terminology Used in Direct Exam Reporting

Conidiophores are a type of modified hyphae from which spores are born. When seen on a surface sample in moderate to numerous concentrations they may be indicative of fungal growth.

Suzanne S. Blevins, B.S., SM (ASCP)
Laboratory Director