EnviroBiomics, Inc

EnviroBiomics, Inc.
11550 IH 10 W, Suite 105
San Antonio, Texas, 78230
Phone: 210 570 2075
Email: support@envirobiomics.com

ERMI ANALYTICAL REPORT

Client: Lori [redacted]
[redacted]
[redacted] California [redacted]
[redacted]

Sample by: [redacted]
[redacted]

Site Address: [redacted]
[redacted] California [redacted]

Project name: Lori [redacted]

Sample Location:
N/A

Sample Type: Swiffer **Status:** Pre-Remediation

Client Reference:

Client Comments:

Date of Sampling: September 17, 2018
Date Sample/s Received: September 24, 2018
Date of Report: September 28, 2018

Reported and Released By: David Lark, Mycologist.
Our Reference: 182490
P.O. 11543 **EB**

3 RESULTS

3.1 QPCR MOLD ANALYSIS

The results of the mold DNA detected in the sample submitted for analysis were tabulated as follows:

Group 1; Water Damage Molds

Species	SE/mg
Aspergillus flavus/oryzae	16
Aspergillus fumigatus	210
Aspergillus niger	740
Aspergillus ochraceus	1,125
Aspergillus penicillioides	117
Aspergillus restrictus	8
Aspergillus sclerotiorum	4
Aspergillus sydowii	4
Aspergillus unguis	20
Aspergullus versicolor	21
Aureobasidium pullulans	924
Chaetomium globosum	89
Cladosporium sphaerospermum	286
Eurotium (Asp.) amstelodami	360
Paecilomyces variotii	110
Penicillium brevicompactum	1,140
Penicillium corylophilum	203
Penicillium crustosum	29
Penicillium purpurogenum	35
Penicillium Spinulosum	281
Penicillium variabile	40
Scopulariopsis brevicaulis/fusca	13
Scopulariopsis chartarum	19
Stachybotrys chartarum	6
Trichoderma viride	378
Wallemia sebi	139
Sum of Logs	**48.5**

Group 2; Common Indoor Molds

Species	SE/mg
Acremonium strictum	9
Alternaria alternata	13
Aspergillus ustus	47
Cladosporium cladosporioides1	8,292
Cladosporium cladosporioides2	1,395
Cladosporium herbarum	236
Epicoccum nigrum	77
Mucor amphibiorum	69
Penicillium chrysogenum	315
Rhizopus stolonifer	12
Sum of Logs	**20.5**

SE = Spore Equivalents
SE/mg = SE/milligrams of sample
ND = None Detected

Sample Size	**4.9**	**mg**
ERMI Results= (G1-G2)	**28.0**	

4 CONCLUSIONS

4.1 As shown in the table at 3.1, the principal mold DNA detected from the panel of 36 significant environmental molds analyzed, were:

Species	SE/mg of dust
Aspergillus ochraceus	1,125
Penicillium Spinulosum	281
Penicillium brevicompactum	1,140
Trichoderma viride	378
Aspergillus niger	740
Penicillium corylophilum	203
Aspergillus fumigatus	210

The above list highlights the main mold DNAs detected in this report, which were selected based on their individual value being higher than 10 fold of the geometric mean of the corresponding mold on the 2007 USA survey of molds. [9]

Selected species are limited to 7 mold species or less.

Using the full spectra of data obtained by MSQPCR for all molds detected in the panel, the ERMI was found to be:

Environmental Relative Moldiness Index (ERMI)	28.0	Interpretation	Q4

4.2 The interpretation was made with reference to the following table:

Level	ERMI Value	Interpretation	Comment
Q 1	Less than - 4	Low Relative Moldiness Index	Further investigation is not needed to determine the sources of the mold.
Q 2	-4 to < 0	Low - Medium Relative	Further investigation may be needed to determine the sources of the mold if occupants have been reactive, sensitized, genetically predisposed or otherwise immuno-compromised.
Q 3	0 to < 5	Medium- High Relative	
Q 4	5 to < 20	High Relative Moldiness Index	Source and cause of mold should be determined and remediation is undertaken, reducing the ERMI to levels below Q2.
	> 20	Very High Relative	

4.3 According to Vesper [9] ERMI Scores have an Standard Deviation (S.D.) of +/-3 and should be assessed with this in mind.

4.4 Further assessment was performed by calculating the HERTSMI-2 score from this data, which was found to be:

Species	Spore E./mg	Weighting
Aspergillus penicillioides	117	6
Aspergullus versicolor	21	4
Chaetomium globosum	89	6
Stachybotrys chartarum	6	4
Wallemia sebi	139	4
HERTSMI-2 Score =		**24**

4.5 The interpretation was made with reference to the following table:

Color-coded interpretation [9]	
If 10 or below	In only 1.7% of cases, re-occupancy of building following mold remediation has led to relapse of CIRS-WDB symptoms
If between 11 to 15	Borderline. Further remediation and re-assessment is indicated
If greater than 15	Re-occupancy is ill-advised until further remediation and re-assessment are conclusive.

4.6 A spore equivalent may reflect the presence of any other fungal structures (i.e.mycelia) containing the same number of target genes as a spore.

4.7 Genetically close-related species may be detected in the indicator assay.

As reported	Includes
Eurotium (Asp.) amstelodami	E. chevalieri, E. herbariorum, E. rubrum and E. repens.
Penicillium spinulosum	P. glabrum, P. lividum, P. pupurescens, and P. thomii.
Trichoderma viride	T. koningii and T. atroviride.
Aspergillus restrictus	A. caesillus and A. conicus.
Mucor amphibiorum	M. circinelloides, M. hiemalis, M. indicus, M. mucedo, M. racemosus, M. ramosissimus.
Rhizopus zygosporus	R. homothalicus, R. microsporus, R. oligosporus, R. oryzae.
Penicillium crustosum	P. camembertii, P. commune, P. echinulatum, P. solitum.

EnviroBiomics, Inc.

11550 IH 10 W, Suite 105
San Antonio, Texas, 78230

DAVID LARK
Mycologist

EnviroBiomics, Inc

EnviroBiomics, Inc.
11550 IH 10 W, Suite 105
San Antonio, Texas, 78230
Phone: 210 570 2095
Email: support@envirobiomics.com

ERMI ANALYTICAL REPORT

Client: Lori [redacted]
[redacted]
[redacted] California [redacted]
[redacted]

Sample by: [redacted]
[redacted]

Site Address: [redacted]
[redacted] California [redacted]

Project name: N/A

Sample Location:
N/A

Sample Type: Swiffer **Status:** Progress

Client Reference:

Client Comments:

Date of Sampling: November 19, 2018
Date Sample/s Received: December 03, 2018
Date of Report: December 12, 2018

Reported and Released By: David Lark, Mycologist.
Our Reference: 183744
P.O. 12459 **EB**

3 RESULTS

3.1 QPCR MOLD ANALYSIS

The results of the mold DNA detected in the sample submitted for analysis were tabulated as follows:

Group 1; Water Damage Molds

Species	SE/mg
Aspergillus flavus/oryzae	2
Aspergillus fumigatus	20
Aspergillus niger	140
Aspergillus ochraceus	187
Aspergillus penicillioides	14
Aspergillus restrictus	N.D.
Aspergillus sclerotiorum	N.D.
Aspergillus sydowii	N.D.
Aspergillus unguis	3
Aspergullus versicolor	N.D.
Aureobasidium pullulans	469
Chaetomium globosum	48
Cladosporium sphaerospermum	45
Eurotium (Asp.) amstelodami	70
Paecilomyces variotii	42
Penicillium brevicompactum	114
Penicillium corylophilum	11
Penicillium crustosum	7
Penicillium purpurogenum	3
Penicillium Spinulosum	33
Penicillium variabile	N.D.
Scopulariopsis brevicaulis/fusca	2
Scopulariopsis chartarum	N.D.
Stachybotrys chartarum	N.D.
Trichoderma viride	34
Wallemia sebi	18
Sum of Logs	**26.1**

Group 2; Common Indoor Molds

Species	SE/mg
Acremonium strictum	N.D.
Alternaria alternata	9
Aspergillus ustus	6
Cladosporium cladosporioides1	1,141
Cladosporium cladosporioides2	173
Cladosporium herbarum	64
Epicoccum nigrum	248
Mucor amphibiorum	25
Penicillium chrysogenum	46
Rhizopus stolonifer	5
Sum of Logs	**15.0**

SE = Spore Equivalents
SE/mg = SE/milligrams of sample
ND = None Detected

Sample Size	**5.0**	**mg**
ERMI Results= (G1-G2)	**11.2**	

4 CONCLUSIONS

4.1 The table at 3.1, shows the Spore Equivalent per milligram detected for each of the 36 environmental molds analyzed.

Mold species listed under Group 1 are known as Water Damage Mold.

The gray background on Group 1 table highlights the main mold (DNAs) detected in this report, which was selected based on their value being higher than tenfold of the geometric mean of the corresponding mold on the 2007 USA survey of molds. [9]

Using the full spectra of data obtained by MSQPCR for all molds detected in the panel, the ERMI was found to be:

Environmental Relative Moldiness Index (ERMI)	11.2	Interpretation	Q4

ERMI score was developed by the US government for environmental mold safety (mold related asthma) and the score table is a general recommendation.

For patients with CIRS condition, in general, an ERMI score of 2 or less is considered safe. For more information please consult with your doctor for the best advice on how to interpret the results.

4.2 The interpretation was made with reference to the following table:

Level	ERMI Value	Interpretation	Comment
Q 1	Less than - 4	Low Relative Moldiness Index	Further investigation is not needed to determine the sources of the mold.
Q 2	-4 to < 0	Low - Medium Relative	Further investigation may be needed to determine the sources of the mold if occupants have been reactive, sensitized, genetically predisposed or otherwise immuno-compromised.
Q 3	0 to < 5	Medium- High Relative	
Q 4	5 to < 20	High Relative Moldiness Index	Source and cause of mold should be determined and remediation is undertaken, reducing the ERMI to levels below Q2.
	> 20	Very High Relative	

4.3 According to Vesper [9] ERMI Scores have an Standard Deviation (S.D.) of +/-3 and should be assessed with this in mind.

4.4 Further assessment was performed by calculating the HERTSMI-2 score from this data, which was found to be:

Species	Spore E./mg	Weighting
Aspergillus penicillioides	14	4
Aspergullus versicolor	N.D.	0
Chaetomium globosum	48	6
Stachybotrys chartarum	N.D.	0
Wallemia sebi	18	0
HERTSMI-2 Score =		**10**

4.5 The interpretation was made with reference to the following table:

Color-coded interpretation [9]	
If 10 or below	In only 1.7% of cases, re-occupancy of building following mold remediation has led to relapse of CIRS-WDB symptoms
If between 11 to 15	Borderline. Further remediation and re-assessment is indicated
If greater than 15	Re-occupancy is ill-advised until further remediation and re-assessment are conclusive.

4.6 A spore equivalent may reflect the presence of any other fungal structures (i.e.mycelia) containing the same number of target genes as a spore.

4.7 Genetically close-related species may be detected in the indicator assay.

As reported	Includes
Eurotium (Asp.) amstelodami	E. chevalieri, E. herbariorum, E. rubrum and E. repens.
Penicillium spinulosum	P. glabrum, P. lividum, P. pupurescens, and P. thomii.
Trichoderma viride	T. koningii and T. atroviride.
Aspergillus restrictus	A. caesillus and A. conicus.
Mucor amphibiorum	M. circinelloides, M. hiemalis, M. indicus, M. mucedo, M. racemosus, M. ramosissimus.
Rhizopus zygosporus	R. homothalicus, R. microsporus, R. oligosporus, R. oryzae.
Penicillium crustosum	P. camembertii, P. commune, P. echinulatum, P. solitum.

EnviroBiomics, Inc.

11550 IH 10 W, Suite 105
San Antonio, Texas, 78230

DAVID LARK
Mycologist