

ERMI PLUS+ ANALYTICAL REPORT

Client: Your name here

Sample by: Your name here

Site Address: Your address here

Project Name: Your name

Sample Location: Home/Office/School/etc.

Sample Type: Swiffer **Status:** Non Available

Client References:

Client Comments:

Date of Sampling: Date

Date Sample/s Received: Date

Date of Report: Date

Reported and Released By:

Reference N°	P.O.	EB Code	Class N°	Check N°
#		01	1	

PURPOSE OF THIS REPORT:

- 1) To detect mold present by Quantitative Polymerase Chain Reaction (QPCR) analysis of fungal DNA and determine relative mold species in the sample/s taken from within the premises.
- 2) Provide an Environmental Relative Moldiness Index PLUS+ with additional testing (ERMI PLUS+ and HERTSMI-2) calculated on the basis of the mold species detected and evaluate the ERMI PLUS+ as an index of the severity of the mold present within the premises where sampling was conducted.

1 INSTRUCTIONS

- 1) The sample/s collected at the property was submitted by the client.
- 2) The purpose of the sample/s submitted for analysis was to detect and report on mold DNA present using QPCR detection methods as set out in the attached report and interpret these findings.

Commentary

- 1) The sample/s collected was referred under the chain of custody to our laboratory for analysis and reporting.
- 2) The sample/s received was labeled and in an intact condition.
- 3) This is an Analytical Report only and may not be in a format acceptable for litigation purposes because different Jurisdictions have differing requirements.
Please contact EnviroBiomics for further assistance.
- 4) Unless EnviroBiomics has either performed the assessment from which this sample/s originated or has been provided with the requisite certification from the sample/s as per Reference [8], the results contained in this report should not be relied upon as the sole criteria for granting "clearance" or post-remediation verification by any party.
- 5) In accordance with our Terms & Conditions, this document and its contents are intended for the Addressee only and contains opinions held by the Author who prepared this report based on material available at the time of preparation and expressed for the purposes of consideration by the Addressee and is not for general publication without written consent.
- 6) Copyright of this report is retained by the Author and the Addressee is granted an exclusive license to its contents and uses only when payment for this report is received in full. The sample/s collected was referred under the chain of custody to our laboratory for analysis and reporting.
- 7) Extraction or copying of this document, except in full, without the written consent of EnviroBiomics is unauthorized.

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	N D
Aspergillus fumigatus	N D
Aspergillus niger	N D
Aspergillus ochraceus	42 *
Aspergillus penicillioides	136
Aspergillus restrictus	4
Aspergillus sclerotiorum	N D
Aspergillus sydowii	N D
Aspergillus unguis	N D
Aspergillus versicolor	136 *
Aureobasidium pullulans	146
Chaetomium globosum	N D
Cladosporium sphaerospermum	N D
Eurotium (Asp.) amstelodami	306
Paecilomyces variotii	N D
Penicillium brevicompactum	9
Penicillium corylophilum	N D
Penicillium crustosum	51 *
Penicillium purpurogenum	N D
Penicillium Spinulosum	N D
Penicillium variabile	N D
Scopulariopsis brevicaulis/fusca	N D
Scopulariopsis chartarum	N D
Stachybotrys chartarum	N D
Trichoderma viride	14
Wallemia sebi	7
Aspergillus Parasiticus	N D
Fusarium spp	125
Candida albicans	28

Sum of Logs	15.6
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Group 2; Common Indoor Molds

Species	SE/mg
Alternaria alternata	23
Acremonium strictum	4
Aspergillus ustus	N D
Cladosporium cladosporioides1	287
Cladosporium cladosporioides2	5
Cladosporium herbarum	50
Epicoccum nigrum	1,524 *
Mucor amphibiorum	N D
Penicillium chrysogenum	43
Rhizopus stolonifer	N D

Sum of Logs	11.7
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SE = Spore Equivalents
 SE/mg = SE/milligrams of sample
 Logs = Logarithms
 N D = None Detected

Sample Size	5.0	mg
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ERMI Results= (G1-G2)	3.9
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- (*) 10 fold higher than normal.
- (**) 100 fold higher than normal.
- (***) 1,000 fold higher than normal.

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 stars symbols on table above highlights the main molds (DNAs) detected in this report, which were selected based on their value being higher than ten fold (*), 100 fold (**) and 1,000 folds (***) of the geometric mean of the corresponding mold on the 2007 USA survey of molds. [8]

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)	3.9	Interpretation	Q3
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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 Values	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 a 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	136	6
Aspergillus versicolor	136 *	6
Chaetomium globosum	N D	0
Stachybotrys chartarum	N D	0
Wallemia sebi	7	0
HERTSMI-2 Score =		12

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

Color-coded interpretation ¹⁰	
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.
Aspergillus niger	Know called Aspergillus brasiliensis
Scopulariopsis brevicaulis/fusca	Has been renamed as species of Microascus ¹⁰
Wallemia sebi	W. mellicola, W. canadensis ¹¹

For and on behalf of

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