

ERMI[©]

Mold Index Report

Prepared Exclusively For

Customer Name
Customer Address
City, ST 12345

Project Name: Sample Report

Project Number: Sample Report

Laboratory Number: 915-605-1311

Friday, May 12, 2006



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Introduction

The EPA Relative Moldiness Index (ERMI) was developed as a screening tool to evaluate potential risk of indoor mold growth. Mold accumulates in homes over time and can be found in carpet dust and other accumulation sites. Using mold-specific quantitative PCR (MSQPCR), targeted mold species can be quantified biochemically.

Methods

The analysis for species-specific quantification is achieved through the utilization of mold-specific quantitative Polymerase Chain Reaction (MSQPCR) analysis. Nucleic acids are extracted using the bead-beating technique described by the EPA and commercially available kits as predicated by sample matrix. Reference controls are utilized as positive controls, and independent MSQPCR analyses are performed using primers and probes validated specifically for the species of interest.

Molds from the 36 species panel are divided into two groups. The first group (Group 1) of 26 species represents molds associated with water damage and the other group (Group 2) represents common indoor molds. The Index is calculated by log-transforming all mold concentrations, then subtracting the sum of the second group from the sum of the first. The resulting ERMI is a whole number usually between -10 and 20 with a standard deviation of ± 3 .

In order to most effectively use this new tool, the ERMI must be compared to a national database. Indices were determined using this method for 1,096 homes across the U.S. as part of the 2006 HUD American Healthy Home Survey. Individual indices, ranked from lowest to highest were used to create a national Relative Moldiness Index (RMI) Scale. This tool should be used as one element of an overall assessment or an indication that a more complete assessment is needed. As with all laboratory data, there are limitations that should be considered when using the index.

Quality Assurance

Aerotech P&K is staffed with over 200 professionals, including PhD's, chemists, and registered microbiologists with over 40 years of experience. The reliability of test results depends on many factors such as the personnel performing the tests, environmental conditions, selection and validation of test methods, equipment functioning, measurement traceability, as well as the sampling, storage and handling of test items, all of which are a reflection of the laboratories overall quality system.

Aerotech P&K has modeled its quality system after ISO 17025 guidelines, one of the most stringent sets of standards in the industry, to ensure that its customers receive the high standard of accuracy, reliability, and impartiality that they have come to expect from a leader in the environmental industry. Our adherence to the standards set forth in the ISO 17025 guidelines has been validated and formally recognized through accreditations granted by two independent outside agencies, the American Industrial Hygiene Association (AIHA), and the American Association for Laboratory Accreditation (A2LA – Phoenix location). As an additional measure to demonstrate its competency to perform the analyses it offers to its clients, Aerotech P&K also participates in a variety of different proficiency testing programs, including the Environmental Microbiology Proficiency Analytical Testing Program (EMPAT) sponsored by the American Industrial Hygiene Association.

As part of its continuous commitment to excellence, Aerotech P&K is also inspected, licensed and/or accredited by a number of governmental agencies and independent associations in addition to those already mentioned above. The scope document, accreditation certificates, and proficiency results can all be accessed at www.aerotechpk.com.

Data Qualifiers

The *Data Qualifiers* identify issues or events that are relevant to your analytical results. A data qualifier includes information about the validity, the source of the data whether calculated, entered or estimated, and the value of an observation. In each case the data qualifiers provide significant information vital to the interpretation of the laboratory data.

Results

Fungal ID Group 1 Water Damage Organisms	Sample ID Dust Weight	
	SD-B23-C5-I 8.2 mg	
	SE*	SE/mg
<i>Aspergillus flavus/oryzae</i>	85	10
<i>Aspergillus fumigatus</i>	ND	<1
<i>Aspergillus niger</i>	33	4
<i>Aspergillus ochraceus</i>	ND	<10
<i>Aspergillus penicillioides</i>	110	13
<i>Aspergillus restrictus</i>	ND	<39
<i>Aspergillus sclerotiorum</i>	ND	<1
<i>Aspergillus sydowii</i>	270	32
<i>Aspergillus unguis</i>	ND	<4
<i>Aspergillus versicolor</i>	930	110
<i>Aureobasidium pullulans</i>	510	62
<i>Chaetomium globosum</i>	ND	<1
<i>Cladosporium sphaerospermum</i>	24	3
<i>Eurotium (Asp.) amstelodami</i>	60	7
<i>Paecilomyces variotii</i>	2	1
<i>Penicillium brevicompactum</i>	ND	<3
<i>Penicillium corylophilum</i>	ND	<7
<i>Penicillium crustosum (group2)</i>	ND	<5
<i>Penicillium purpurogenum</i>	ND	<1
<i>Penicillium spinulosum</i>	ND	<3
<i>Penicillium variable</i>	ND	<1
<i>Scopulariopsis brevicaulis/fusca</i>	ND	<1
<i>Scopulariopsis chartarum</i>	3	1
<i>Stachybotrys chartarum</i>	120	14
<i>Trichoderma viride/koningii</i>	ND	<2
<i>Wallemia sebi</i>	ND	<2
Sums of the logs	10.58	

*Spore Equivalents

Fungal ID Group 2 Common Indoor Molds	Sample ID Dust Weight	
	SD-B23-C5-I 8.2 mg	
	SE*	SE/mg
<i>Acremonium strictum</i>	30	4
<i>Alternaria alternata</i>	250	31
<i>Aspergillus ustus</i>	260	32
<i>Cladosporium cladosporioides-1</i>	2400	300
<i>Cladosporium cladosporioides-2</i>	13	2
<i>Cladosporium herbarum</i>	390	47
<i>Epicoccum nigrum</i>	710	87
<i>Mucor amphibiorum group</i>	17	2
<i>Penicillium chrysogenum</i>	270	33
<i>Rhizopus stolonifer</i>	2	1
Sums of the logs	11.68	

ERMI© Calculation	ERMI Result	Category
10.58 - 11.68 =	-1	Moderate

Interpretation of ERMI Result

Low (less than -4)

The ERMI result for this sample is in the low category. The low category represents the ERMI results for the lower quarter (25%) of all the homes tested in the HUD survey (Figure 1). The potential risk of significant indoor mold growth for this category is low.

Moderate (-4 to 5)

The ERMI result for this sample is in the moderate category. The moderate category represents the ERMI results for the homes in the HUD survey between 25% and 75% of all the homes tested (Figure 1). There is a moderate risk of indoor mold growth for this category.

High (greater than 5)

The ERMI result for this sample is in the high category. The high category represents the ERMI results for the homes in the HUD survey higher than 75% of all the homes tested (Figure 1). This category represents the highest potential risk of significant indoor mold growth.

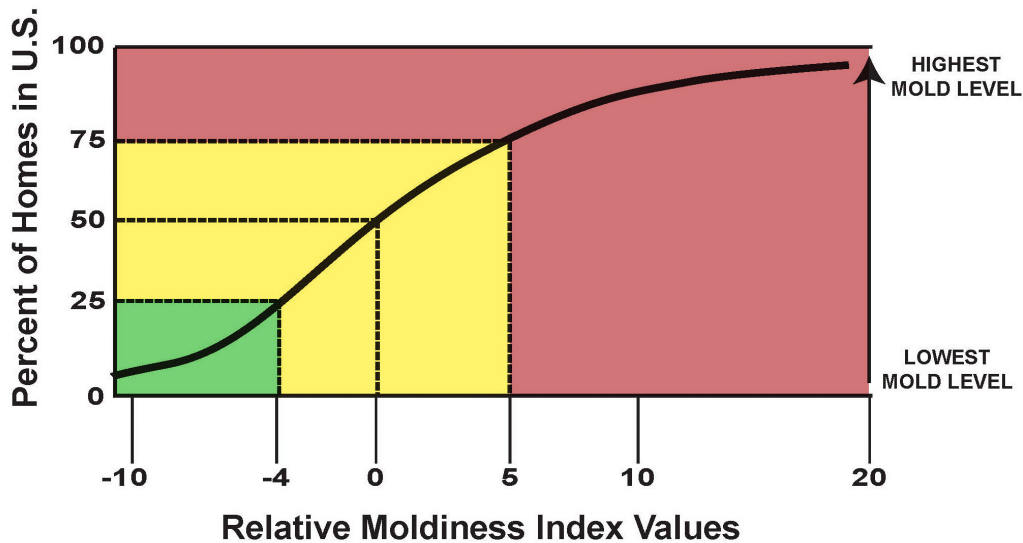


Figure 1.

Sincerely,

Project Manager
Aerotech P&K

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References

1. Haugland, R.A., Vesper, S.J., Wymer, L.J. Quantitative measurement of *Stachybotrys chartarum* conidia using real time detection of PCR products with the TaqMan™ flourogenic probe system. Mol. Cell. Probes, 1999, 13: 329-340
2. Meklin, T.M., Haugland, R.A., Reponen, T., Varma, M., Lummus, Z., Bernstein, D., Wymer L.J., Vesper, S.J. Quantitative PCR analysis of house dust can reveal abnormal mold conditions. Journal of Environmental Monitoring, 2004, 6: 615-620.
3. Vesper, S.J. Developing the EPA Relative Moldiness Index © based on mold-specific quantitative PCR. They Synergist, April 2006:39-43.
4. Vesper, S.J, McKinstry, C., Yang, C., Haugland, R.A., Kercksmar, C.M., Yike, I., Schluchter M.D., Kirchner, H.L., Sobolewski, J., Alltan, T.M., Dearborn, D.G. Specific molds associated with asthma in water-damaged homes. J Occup Environ Med. 2006: 852-858.