



HYGIENETECH

Hygiene Technologies International, Inc.

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March 27, 2012

California State Board of Equalization
450 N Street
Sacramento, California 94279

Document No. 21203001.2

Attention: David Gau

Regarding: Limited Fungal Growth Exposure Assessment Survey
Storage Room 9D - Investigative Opening

Dear Mr. Gau:

On March 23, 2012, industrial hygienists with Hygiene Technologies International, Inc. (HygieneTech) conducted a limited fungal growth exposure assessment survey involving Storage Room 9D located on the 9th Floor of the California State Board of Equalization (BOE) building. Prior to the survey, HygieneTech was informed that building maintenance personnel had reportedly removed a small section of gypsum board material from the ceiling of Storage Room 9D for investigative purpose in order to address the electrical issues that had occurred that evening. The source of the electrical issue had reportedly been identified and was located within the concrete subfloor of Storage Room 10D, which was located immediately above Storage Room 9D. The survey findings, along with the observations, analytical data, and conclusion, appear below.

Upon visual inspection, a small ceiling cavity opening was observed in the southeastern corner of Storage Room 9D. Previously removed small sections of gypsum board material as well as some gypsum board debris were also observed in the area below the ceiling cavity opening. Within the ceiling plenum, suspect fungal growth was observed on the upper portion of gypsum board materials at the southeastern corner. Please note that no sign of water staining or suspect fungal growth was observed on the previously removed sections of gypsum board materials or any other building materials located within close vicinity of the ceiling cavity opening. Odors characteristic of fungal growth were also not evident in Storage Room 9D at the time of the survey. Following such observations, an air sample was collected at that time for fungal growth exposure potential within the room. Additionally, following the air sampling, as a temporary measure, the exposed ceiling cavity opening was immediately isolated with polyethylene sheeting and tape by building maintenance personnel.

Air samples were collected for total (viable and nonviable) fungi analyses using a Zefon brand Bio-Pump™ equipped with Air-O-Cell™ cassettes. All such samples were subsequently analyzed for fungi (including yeasts, molds, rusts, smuts, and mushrooms) by trained and experienced microbiologists at a laboratory accredited by the American Industrial Hygiene Association (AIHA) and that successfully participates in the AIHA Environmental Microbiology Proficiency Analytical Testing (EMPAT) Program.



As presented in Table 21203001-2, the airborne spore count datum recorded on the survey date showed mostly common fungal spore types outdoors, such as ascospores, basidiospores, *Cladosporium*, colorless spores typical of *Penicillium* and *Aspergillus* species, *Epicoccum*, and smuts. In Storage Room 9D, the datum indicated only a low airborne level of colorless spores typical of *Penicillium* and *Aspergillus* species. The distribution of fungal spore type detected in the surveyed area was consistent with those found outdoors and the overall datum within the tested area was well below the overall datum recorded outdoors. These data are considered unremarkable and are not believed to pose a health risk beyond that posed by the outdoor environment where exposures to airborne fungi are expected.

Be advised that the data provided in this report only represent limited fungal growth exposure potentials that existed at the time of the survey and at the precise sample location indicated, the latter of which was selected based on the available background information provided and visual observation recorded during the survey. Note that fungal growth and exposure potentials may change due to changes in environmental conditions (such as those caused by water intrusion), use of mechanical systems, or other factors. Also be advised that suspect fungal growth was observed within the ceiling cavity in Storage Room 9D, therefore, the ceiling opening should remain isolated until such time the suspect fungal growth can be addressed.

If you have any comments or questions regarding the information contained in this correspondence, please feel free to contact our offices directly at (310) 370-8370.

Sincerely,

HYGIENE TECHNOLOGIES INTERNATIONAL, INC.

Kenny K. Hsi, CIH
Technical Director

HYGIENE TECHNOLOGIES INTERNATIONAL, INC.

APPENDIX A



CLIENT: California State Board of Equalization
450 N Street
Sacramento, California 94279

TABLE 21203001-2
AIRBORNE TOTAL FUNGI RESULTS
9TH FLOOR - STORAGE ROOM 9D
450 N STREET
SACRAMENTO, CALIFORNIA
MARCH 23, 2012

Results reported in spores per cubic meter of air (spores/M³)

SAMPLE NUMBER	21203001-2 TM01OUT	21203001-2 TM02		
SAMPLING LOCATION/ACTIVITIES	Outdoors; about 15 feet north of building; approximately five feet above ground/Normal outdoor activities	9 th Floor; Storage Room 9D; about center; approximately five feet above floor/Sampling activities only	This column intentionally left blank	This column intentionally left blank
START/STOP	23:50:00/23:55:00	23:57:00/00:02:00		
SAMPLE TIME	5 minutes	5 minutes		
Alternaria				
Ascospores	530			
Basidiospores	3,100			
Botrytis				
Cercospora				
Chaetomium				
Cladosporium	53			
Curvularia				
Epicoccum	13			
Fusarium				
Myrothecium				
Nigrospora				
Oidium				
Other colorless	27			
Penicillium/Aspergillus types	1,100	110		
Pithomyces				
Rusts				
Smuts (Periconia, Myxomycetes)	13			
Stachybotrys				
Torula				
Ulocladium				
Zygomycetes				
Hyphal fragments	27	40		
Background debris*	3+	3+		
TOTAL**	4,900	110		

*Background debris is an indication of the amount of non-biological particulate matter present on the slide and is graded (from least to greatest) as 1+ to 4+.

**Note that all reported counts have been rounded to no more than two significant figures based on the sampling and analytical methods used, and therefore the total count may not equal the sum of the individual counts in a column.



Report for:

Mr. Kenny Hsi, Mr. Larry Sandhu
Hygiene Technologies International, Inc.: Northern California
3625 Del Amo Boulevard, Suite 180
Torrance, CA 90503-8370

Regarding: Project: 21203001-2
EML ID: 903467

Approved by:

Lab Manager
Malcolm Moody

REVISED REPORT

Dates of Analysis:
Spore trap analysis: 03-26-2012

Service SOPs: Spore trap analysis (1038)
AIHA accredited service

For clarity, we report the number of significant digits as calculated; but, due to the nature of this type of biological data, the number of significant digits that is used for interpretation should generally be one or two. All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the items tested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Document Number: 200091 - Revision Number: 5

Client: Hygiene Technologies International, Inc.:
Northern California
C/O: Mr. Kenny Hsi, Mr. Larry Sandhu
Re: 21203001-2

Date of Sampling: 03-23-2012
Date of Receipt: 03-24-2012
Date of Report: 03-24-2012

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	21203001-2 TM01 Out		21203001-2 TM02	
Comments (see below)	None		None	
Lab ID-Version‡:	4017333-2		4017334-2	
Analysis Date:	03/26/2012		03/26/2012	
	raw ct.	spores/m3	raw ct.	spores/m3
Ascospores*	10	530		
Basidiospores*	59	3,100		
Chaetomium				
Cladosporium	1	53		
Curvularia				
Epicoccum	1	13		
Fusarium				
Myrothecium				
Nigrospora				
Other colorless	2	27		
Penicillium/Aspergillus types†	20	1,100	2	110
Pithomyces				
Rusts*				
Smuts*, Periconia, Myxomycetes*	1	13		
Stachybotrys				
Stemphylium				
Torula				
Ulocladium				
Zygomycetes				
Background debris (1-4+)††	3+		3+	
Hyphal fragments/m3	27		40	
Pollen/m3	710		27	
Skin cells (1-4+)	< 1+		2+	
Sample volume (liters)	75		75	
§ TOTAL SPORES/m3		4,900		110

Comments:

Spore types listed without a count or data entry were not detected during the course of the analysis for the respective sample.

* Most of these spore types are not seen with culturable methods (Andersen sampling), although some may appear as non-sporulating fungi. Most of the basidiospores are "mushroom" spores while the rusts and smuts are plant pathogens.

† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium*, *Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.

†† Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for sample volumes when evaluating dust levels.

The analytical sensitivity is the spores/m3 divided by the raw count. The limit of detection is the analytical sensitivity multiplied by the sample volume divided by 1000.

For more information regarding analytical sensitivity, please contact QA by calling the laboratory.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

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MoldRANGE™: Extended Outdoor Comparison**Outdoor Location: 21203001-2 TM01 Out**

Fungi Identified	Outdoor data	Typical Outdoor Data for: March in California (n‡=17615)†						Typical Outdoor Data for: The entire year in California (n‡=175032)†					
		very low	low	med	high	very high	freq %	very low	low	med	high	very high	freq %
Generally able to grow indoors*													
Alternaria	-	13	13	27	53	87	47	13	13	27	67	110	55
Bipolaris/Drechslera group	-	7	13	13	27	40	8	7	13	13	27	40	12
Chaetomium	-	7	13	13	27	40	11	8	13	13	27	44	19
Cladosporium	53	100	160	430	1,100	1,700	95	110	210	640	1,700	2,800	97
Curvularia	-	7	10	13	27	40	2	7	13	13	27	53	6
Epicoccum	13	7	13	13	27	40	12	8	13	13	33	53	19
Nigrospora	-	7	10	13	13	27	4	7	13	13	27	53	8
Other colorless	27	11	13	13	27	53	8	10	13	13	27	53	6
Penicillium/Aspergillus types	1,100	53	53	160	430	690	81	53	110	210	590	1,000	85
Stachybotrys	-	7	13	13	27	67	3	7	13	13	33	67	4
Torula	-	8	13	13	40	67	8	8	13	13	40	67	12
Seldom found growing indoors**													
Ascospores	530	27	53	160	480	810	80	25	53	110	350	690	72
Basidiospores	3,100	76	140	480	1,500	2,800	97	53	80	270	1,000	2,300	94
Rusts	-	13	13	13	42	80	23	13	13	13	53	80	27
Smuts, Periconia, Myxomycetes	13	13	13	27	67	110	54	13	13	40	110	200	68
§ TOTAL SPORES/m3	4,900												

†The 'Typical Outdoor Data' represents the typical outdoor spore levels for the location and time frame indicated. The last column represents the frequency of occurrence. The very low, low, med, high, and very high values represent the 10, 20, 50, 80, and 90 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 20% of the time it is present in levels above the detection limit and below 53 spores/m3. These values are updated periodically, and if enough data is not available to make a statistically meaningful assessment, it is indicated with a dash.

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

*The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

**These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

‡n = number of samples used to calculate data.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor data" are based on the results of the analysis of samples delivered to and analyzed by EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. In addition, EMLab P&K may not have received and tested a representative number of samples for every region or time period. EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

Client: Hygiene Technologies International, Inc.:
 Northern California
 C/O: Mr. Kenny Hsi, Mr. Larry Sandhu
 Re: 21203001-2

Date of Sampling: 03-23-2012
 Date of Receipt: 03-24-2012
 Date of Report: 03-24-2012

MoldSTAT™: Supplementary Statistical Spore Trap Report

Outdoor Summary: 21203001-2 TM01 Out:

Species detected	Outdoor sample spores/m3				Typical outdoor ranges (North America)	Freq. %
	<100	1K	10K	>100K		
Ascospores					13 - 170 - 5,200	77
Basidiospores					13 - 400 - 21,000	92
Cladosporium					27 - 480 - 10,000	91
Epicoccum					7 - 20 - 340	26
Other colorless					7 - 13 - 420	5
Penicillium/Aspergillus types					13 - 160 - 2,600	71
Smuts, Periconia, Myxomycetes					7 - 44 - 930	65
Total						

The "Typical outdoor ranges" and "Freq. %" columns show the typical low, medium, and high spore counts per cubic meter and the frequency of occurrence for the given spore type. The low, medium, and high values represent the 2.5, 50, and 97.5 percentile values when the spore type is detected. For example, if the low value is 53 and the frequency of occurrence is 63%, it would mean that we typically detect the given spore type on 63 percent of all outdoor samples and, when detected, 2.5% of the time it is present in levels below 53 spores/m3.

Indoor Samples

Location: 21203001-2 TM02

% of outdoor total spores/m3	Friedman chi-square* (indoor variation)	Agreement ratio** (indoor/outdoor)	Spearman rank correlation*** (indoor/outdoor)	MoldSCORE**** (indoor/outdoor)	
Result: 2%	dF: N/A Result: N/A Critical value: N/A Inside Similar: N/A	Result: 0.2500	dF: 7 Result: 0.5714 Critical value: 0.6786 Outside Similar: No	Score: 114 Result: Low	
Species Detected		Spores/m3			
		<100	1K	10K	>100K
	Penicillium/Aspergillus types				
	Total				

* The Friedman chi-square statistic is a non-parametric test that examines variation in a set of data (in this case, all indoor spore counts). The null hypothesis (H0) being tested is that there is no meaningful difference in the data for all indoor locations. The alternative hypothesis (used if the test disproves the null hypothesis) is that there is a difference between the indoor locations. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

** An agreement ratio is a simple method for assessing the similarity of two samples (in this case the indoor sample and the outdoor summary) based on the spore types present. A score of one indicates that the types detected in one location are the same as that in the other. A score of zero indicates that none of the types detected indoors are present outdoors. Typically, an agreement of 0.8 or higher is considered high.

*** The Spearman rank correlation is a non-parametric test that examines correlation between two sets of data (in this case the indoor location and the outdoor summary). The null hypothesis (H0) being tested is that the indoor and outdoor samples are unrelated. The alternative hypothesis (used if the test disproves the null hypothesis) is that the samples are similar. The null hypothesis is rejected when the result of the test is greater than the critical value. The critical value that is displayed is based on the degrees of freedom (dF) of the test and a significance level of 0.05.

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MoldSTAT™: Supplementary Statistical Spore Trap Report

**** MoldSCORE™ is a specialized method for examining air sampling data. It is a score between 100 and 300, with 100 indicating a greater likelihood that the airborne indoor spores originated from the outside, and 300 indicating a greater likelihood that they originated from an inside source. The Result displayed is based on the numeric score given and will be either Low, Medium, or High, indicating a low, medium, or high likelihood that the spores detected originated from an indoor source. EMLab P&K reserves the right to, and may at anytime, modify or change the MoldScore algorithm without notice.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor ranges" are based on the results of the analysis of samples delivered to and analyzed by EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. With the statistical analysis provided, as with all statistical comparisons and analyses, false-positive and false-negative results can and do occur. EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the data contained in, or any actions taken or omitted in reliance upon, this report.

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MoldSCORE™: Spore Trap Report

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**These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

†The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium*, *Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods.

††Most of these spore types are not seen with culturable methods (Anderson sampling), although some may appear as non-sporulating fungi. Most of the basidiospores are "mushroom" spores.

‡Rated on a scale from 100 to 300. A rating less than 150 is low and indicates a low probability of spores originating inside. A rating greater than 250 is high and indicates a high probability that the spores originated from inside, presumably from indoor mold growth. A rating between 150 and 250 indicates a moderate likelihood of indoor fungal growth. MoldSCORE is NOT intended for wall cavity samples. It is intended for ambient air samples in residences. Using the analysis on other samples (like wall cavity samples) will lead to misleading results.

