



# HYGIENETECH

Hygiene Technologies International, Inc.

3625 Del Amo Boulevard, Suite 180  
Torrance, California 90503-1643  
(310) 370-8370  
(310) 370-7026 FAX  
www.hygienetech.com

June 10, 2009

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

Document No. 20902001.2

Attention: David Gau

Regarding: Limited Fungal Growth Exposure Assessment Survey  
Elevator Lobby Areas

Dear Mr. Gau:

On February 18, 2009, industrial hygienists with Hygiene Technologies International, Inc. (HygieneTech) conducted a limited fungal growth exposure assessment survey involving ten randomly selected elevator lobby areas located within the California State Board of Equalization (BOE) building. This survey is one in a series of routine air quality assessments to monitor the indoor air quality of the building elevator lobby areas in regards to airborne fungal spores. The survey findings, along with the analytical data, conclusions, and recommendations appear below.

On the survey date, air samples were collected for total (viable and nonviable) fungi analyses using a Zefon brand Bio-Pump™ equipped with Allergenco-D™ 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. The airborne fungi assessment analytical data with supporting and background information appear in the enclosed table.

As presented in Table 20902001-4, the airborne spore count data recorded showed common spore types outdoors such as ascospores, basidiospores, *Cladosporium*, colorless spores typical of *Penicillium* and *Aspergillus* species, and unidentified mitosporic fungi, with basidiospores predominating in both samples collected. In the indoor areas tested, the data showed low airborne concentrations of common fungal spores that included one or more of the following: ascospores, basidiospores, *Cladosporium*, colorless spores typical of *Penicillium* and *Aspergillus* species, rusts, smuts, and/or unidentified mitosporic fungi. The distribution of fungal spore types detected in the surveyed areas was consistent with those found outdoors, and the overall data within the tested areas were well below the overall data 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 and exposure potentials that existed at the time the survey was performed and at the precise sample locations

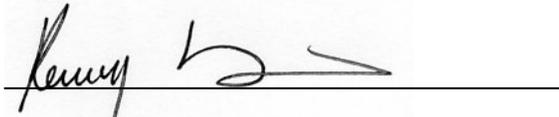


indicated, the latter of which were selected based on the available background information provided. Note that fungal growth and exposure potentials may change due to changes in environmental conditions (such as those caused by water intrusion), use of mechanical systems, or other factors. Also be advised that additional fungal growth may exist at one or more locations in the structure that were not specifically assessed during the survey.

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.**

A handwritten signature in black ink, appearing to read "Kenny K. Hsi", is written over a horizontal line.

Kenny K. Hsi, CIH  
Technical Director

# HYGIENE TECHNOLOGIES INTERNATIONAL, INC.

# APPENDIX A



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

**TABLE 20902001-4  
AIRBORNE TOTAL FUNGI RESULTS  
ELEVATOR LOBBY AREAS  
SACRAMENTO, CALIFORNIA  
FEBRUARY 18, 2009**

Page 1

**Results reported in spores per cubic meter of air (spores/M<sup>3</sup>)**

SAMPLE NUMBER	20902001-TM301OUTLS	20902001-TM302LS	20902001-TM303LS	20902001-TM304LS
<b>SAMPLING LOCATION/ACTIVITIES</b>	Outdoors about 20 feet east of building; approximately five feet above ground/Normal outdoor activities	1 <sup>st</sup> Floor; low rise elevator lobby; about center; approximately five feet above floor/Normal office activities	3 <sup>rd</sup> Floor; elevator lobby; about center; approximately five feet above floor/Normal office activities	5 <sup>th</sup> Floor; elevator lobby; about center; approximately five feet above floor/Normal office activities
<b>START/STOP</b>	8:50:00/8:55:00	9:00:00/9:05:00	9:06:00/9:11:00	9:19:00/9:24:00
<b>SAMPLE TIME</b>	5 minutes	5 minutes	5 minutes	5 minutes
Alternaria				
Ascospores	830	P		
Aureobasidium				
Basidiospores	8,000	2600	100	210
Bipolaris/Drechslera group				
Botrytis				
Chaetomium				
Cladosporium	52	52	100	P
Curvularia				
Epicoccum				
Microsporum				
Nigrospora				
Penicillium/Aspergillus types	210	52	730	52
Pithomyces				
Rusts				
Scopulariopsis				
Smuts (Periconia, Myxomycetes)		52	P	52
Stachybotrys				
Stemphylium				
Torula				
Ulocladium				
Unidentified mitosporic fungi	260	310	P	P
Unidentified zygomycetes				
Background particulates*	Moderate	Moderate	Moderate	Moderate
<b>TOTAL**</b>	9,400	3,100	930	310

P = Spores present

\* Background particulates is an indication of the amount of non-biological particulate matter present on the media and is graded (from least to greatest) as very light, light, moderate, heavy and very heavy.

\*\* 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.

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**TABLE 20902001-4  
AIRBORNE TOTAL FUNGI RESULTS  
ELEVATOR LOBBY AREAS  
SACRAMENTO, CALIFORNIA  
FEBRUARY 18, 2009**

Page 2

**Results reported in spores per cubic meter of air (spores/M<sup>3</sup>)**

SAMPLE NUMBER	20902001-TM305LS	20902001-TM306LS	20902001-TM307LS	20902001-TM308LS
<b>SAMPLING LOCATION/ACTIVITIES</b>	7 <sup>th</sup> Floor; elevator lobby; about center; approximately five feet above floor/Normal office activities	10 <sup>th</sup> Floor; elevator lobby; about center; approximately five feet above floor/Normal office activities	14 <sup>th</sup> Floor; elevator lobby; about center; approximately five feet above floor/Normal office activities	16 <sup>th</sup> Floor; elevator lobby; about center; approximately five feet above floor/Normal office activities
<b>START/STOP</b>	9:33:00/9:38:00	9:48:00/9:53:00	10:04:00/10:09:00	10:16:00/10:21:00
<b>SAMPLE TIME</b>	5 minutes	5 minutes	5 minutes	5 minutes
Alternaria				
Ascospores	P	52	P	P
Aureobasidium				
Basidiospores	160	310	260	620
Bipolaris/Drechslera group				
Botrytis				
Chaetomium				
Cladosporium	P	P	P	P
Epicoccum				
Fusarium				
Microsporium				
Nigrospora				
Penicillium/Aspergillus types	100	P	100	
Pithomyces				
Rusts	P		52	
Scopulariopsis				
Smuts (Periconia, Myxomycetes)	P	P	52	
Stachybotrys				
Stemphylium				
Torula				
Ulocladium				
Unidentified mitosporic fungi	52	100	52	P
Unidentified zygomycetes				
Background particulates*	Moderate	Moderate	Moderate	Light
<b>TOTAL**</b>	310	460	520	620

P = Spores present

\* Background particulates is an indication of the amount of non-biological particulate matter present on the media and is graded (from least to greatest) as very light, light, moderate, heavy and very heavy.

\*\* 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.

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# APPENDIX A



CLIENT: State of California  
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**TABLE 20902001-4  
AIRBORNE TOTAL FUNGI RESULTS  
ELEVATOR LOBBY AREAS  
SACRAMENTO, CALIFORNIA  
FEBRUARY 18, 2009**

Page 3

**Results reported in spores per cubic meter of air (spores/M<sup>3</sup>)**

SAMPLE NUMBER	20902001- TM309LS	20902001- TM310LS	20902001- TM311LS	20902001- TM312OUTLS
<b>SAMPLING LOCATION/ACTIVITIES</b>	17 <sup>th</sup> Floor; elevator lobby; about center; approximately five feet above floor/Normal office activities	20 <sup>th</sup> Floor; elevator lobby; about center; approximately five feet above floor/Normal office activities	21 <sup>st</sup> Floor; elevator lobby; about center; approximately five feet above/ Normal office activities	Outdoors; about 10 feet west of building; approximately five feet above ground/Normal outdoor activities
<b>START/STOP</b>	10:24:00/10:29:00	10:32:00/10:37:00	10:41:00/10:46:00	10:54:00/10:59:00
<b>SAMPLE TIME</b>	5 minutes	5 minutes	5 minutes	5 minutes
Alternaria				
Ascospores			P	570
Aureobasidium				
Basidiospores	210	260	100	11,000
Bipolaris/Drechslera group				
Botrytis				
Chaetomium				
Cladosporium	52	P	P	160
Epicoccum				
Oidium				
Microsporium				
Nigrospora				
Penicillium/Aspergillus types	100	52	100	620
Pithomyces				
Rusts				
Scopulariopsis				
Smuts (Periconia, Myxomycetes)	P		P	
Stachybotrys				
Stemphylium				
Torula				
Ulocladium				
Unidentified mitosporic fungi	100		P	210
Unidentified zygomycetes				
Background particulates*	Moderate	Light	Light	Very light
<b>TOTAL**</b>	460	310	200	13,000

P = Spores present

\* Background particulates is an indication of the amount of non-biological particulate matter present on the media and is graded (from least to greatest) as very light, light, moderate, heavy and very heavy.

\*\* 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.

**FINAL REPORT: Total Fungal Spore Trap Count**
**PROJECT NUMBER: 20902001**
**LABORATORY ID NUMBER: 0902029**
**Hygiene Technologies International, Inc.**
**Received Date: February 19, 2009**

Attention: Wes Frey

**Report Date: February 19, 2009**

3127 Bowen Island St.

West Sacramento, CA 95691

**Customer Sample Number: -  
TM301OUTLS**
**Method: M101.1**
**Date Of Analysis: 19-Feb-09**
**Detection Limit: 52 Spores/M<sup>3</sup>**
**Background: Moderate particulates**
**Sample Intact: Yes**

Genus (species)	Raw Count	Total Spores / M <sup>3</sup>	Comment
<i>Ascospores</i>	16	830	
<i>Basidiospores</i>	154	8000	
<i>Cladosporium</i>	1	52	
<i>Penicillium/Aspergillus types</i>	4	210	
<i>Unidentified mitosporic fungi</i>	5	260	
<b>TOTAL</b>	<b>180</b>	<b>9400</b>	

**Customer Sample Number: -TM302LS  
Background: Moderate particulates**
**Method: M101.1  
Sample Intact: Yes**
**Date Of Analysis: 19-Feb-09**
**Detection Limit: 52 Spores/M<sup>3</sup>**

Genus (species)	Raw Count	Total Spores / M <sup>3</sup>	Comment
<i>Ascospores</i>		P	
<i>Basidiospores</i>	50	2600	
<i>Cladosporium</i>	1	52	
<i>Penicillium/Aspergillus types</i>	1	52	
<i>Smuts/Myxomycetes</i>	1	52	
<i>Unidentified mitosporic fungi</i>	6	310	
<b>TOTAL</b>	<b>59</b>	<b>3100</b>	

Sample results have not been corrected based on a blank sample

P = Spores Present

&lt; (less than) = measurement below the reporting limit

Rounding: Note that all reported counts have been rounded to two significant figures based on the sampling and analytical methods used. BioHygiene Labs rounds such that if the last significant digit is an even number, then the result is rounded down to that digit; if the last significant digit is an odd number, then it is rounded up to the nearest even number. Thus the TOTAL may not equal the sum of the individual counts per column. TOTAL rows do not include pollen.

Background is graded as Very Light (0 - 10%), Light (&gt;10 - 30%), Moderate (&gt;30 - 70%), Heavy (&gt;70 - 90%), and Very Heavy (&gt;90%) Particulates as a percentage of the trace area.

**APPROVED:**

**DATE:**

02-19-09

**Name**

Lucas Walker

**Title:**

Quality Manager

Results reported relate only to the sample items tested. This test report shall not be reproduced (except in full), corrected or added to without written approval from BioHygiene Laboratories, Inc.

**FINAL REPORT: Total Fungal Spore Trap Count**
**PROJECT NUMBER: 20902001**
**LABORATORY ID NUMBER: 0902029**
**Hygiene Technologies International, Inc.**
**Received Date: February 19, 2009**

Attention: Wes Frey

**Report Date: February 19, 2009**

3127 Bowen Island St.

West Sacramento, CA 95691

**Customer Sample Number: -TM303LS**
**Method: M101.1**
**Date Of Analysis: 19-Feb-09**
**Detection Limit: 52 Spores/M<sup>3</sup>**
**Background: Moderate particulates**
**Sample Intact: Yes**

Genus (species)	Raw Count	Total Spores / M <sup>3</sup>	Comment
<i>Basidiospores</i>	2	100	
<i>Cladosporium</i>	2	100	
<i>Penicillium/Aspergillus types</i>	14	730	
<i>Pollen</i>		P	
<i>Smuts/Myxomycetes</i>		P	
<i>Unidentified mitosporic fungi</i>		P	
<b>TOTAL</b>	<b>18</b>	<b>930</b>	

**Customer Sample Number: -TM304LS**
**Method: M101.1**
**Date Of Analysis: 19-Feb-09**
**Detection Limit: 52 Spores/M<sup>3</sup>**
**Background: Moderate particulates**
**Sample Intact: Yes**

Genus (species)	Raw Count	Total Spores / M <sup>3</sup>	Comment
<i>Basidiospores</i>	4	210	
<i>Cladosporium</i>		P	
<i>Penicillium/Aspergillus types</i>	1	52	
<i>Smuts/Myxomycetes</i>	1	52	
<i>Unidentified mitosporic fungi</i>		P	
<b>TOTAL</b>	<b>6</b>	<b>310</b>	

Sample results have not been corrected based on a blank sample

P = Spores Present

&lt; (less than) = measurement below the reporting limit

Rounding: Note that all reported counts have been rounded to two significant figures based on the sampling and analytical methods used. BioHygiene Labs rounds such that if the last significant digit is an even number, then the result is rounded down to that digit; if the last significant digit is an odd number, then it is rounded up to the nearest even number. Thus the TOTAL may not equal the sum of the individual counts per column. TOTAL rows do not include pollen.

Background is graded as Very Light (0 - 10%), Light (&gt;10 - 30%), Moderate (&gt;30 - 70%), Heavy (&gt;70 - 90%), and Very Heavy (&gt;90%) Particulates as a percentage of the trace area.

**APPROVED:** 
**DATE:** 02-19-09

**Name:** Lucas Walker **Title:** Quality Manager

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**FINAL REPORT: Total Fungal Spore Trap Count**
**PROJECT NUMBER: 20902001**
**LABORATORY ID NUMBER: 0902029**
**Hygiene Technologies International, Inc.**
**Received Date: February 19, 2009**

Attention: Wes Frey

**Report Date: February 19, 2009**

3127 Bowen Island St.

West Sacramento, CA 95691

**Customer Sample Number: -TM307LS**
**Method: M101.1**
**Date Of Analysis: 19-Feb-09**
**Detection Limit: 52 Spores/M<sup>3</sup>**
**Background: Moderate particulates**
**Sample Intact: Yes**

Genus (species)	Raw Count	Total Spores / M <sup>3</sup>	Comment
<i>Ascospores</i>		P	
<i>Basidiospores</i>	5	260	
<i>Cladosporium</i>		P	
<i>Penicillium/Aspergillus types</i>	2	100	
<i>Rusts</i>	1	52	
<i>Smuts/Myxomycetes</i>	1	52	
<i>Unidentified mitosporic fungi</i>	1	52	
<b>TOTAL</b>	<b>10</b>	<b>520</b>	

**Customer Sample Number: -TM308LS**
**Method: M101.1**
**Date Of Analysis: 19-Feb-09**
**Detection Limit: 52 Spores/M<sup>3</sup>**
**Background: Light particulates**
**Sample Intact: Yes**

Genus (species)	Raw Count	Total Spores / M <sup>3</sup>	Comment
<i>Ascospores</i>		P	
<i>Basidiospores</i>	12	620	
<i>Cladosporium</i>		P	
<i>Unidentified mitosporic fungi</i>		P	
<b>TOTAL</b>	<b>12</b>	<b>620</b>	

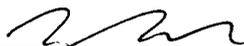
Sample results have not been corrected based on a blank sample

P = Spores Present

&lt; (less than) = measurement below the reporting limit

Rounding: Note that all reported counts have been rounded to two significant figures based on the sampling and analytical methods used. BioHygiene Labs rounds such that if the last significant digit is an even number, then the result is rounded down to that digit; if the last significant digit is an odd number, then it is rounded up to the nearest even number. Thus the TOTAL may not equal the sum of the individual counts per column. TOTAL rows do not include pollen.

Background is graded as Very Light (0 - 10%), Light (&gt;10 - 30%), Moderate (&gt;30 - 70%), Heavy (&gt;70 - 90%), and Very Heavy (&gt;90%) Particulates as a percentage of the trace area.

**APPROVED:**

**DATE:**

02-19-09

Name

Lucas Walker

Title:

Quality Manager

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**FINAL REPORT: Total Fungal Spore Trap Count**

PROJECT NUMBER: 20902001

LABORATORY ID NUMBER: 0902029

Hygiene Technologies International, Inc.

Received Date: February 19, 2009

Attention: Wes Frey

Report Date: February 19, 2009

3127 Bowen Island St.

West Sacramento, CA 95691

Customer Sample Number: -TM309LS

Method: M101.1

Date Of Analysis: 19-Feb-09

Detection Limit: 52 Spores/M<sup>3</sup>

Background: Moderate particulates

Sample Intact: Yes

Genus (species)	Raw Count	Total Spores / M <sup>3</sup>	Comment
<i>Basidiospores</i>	4	210	
<i>Cladosporium</i>	1	52	
<i>Penicillium/Aspergillus types</i>	2	100	
<i>Smuts/Myxomycetes</i>		P	
<i>Unidentified mitosporic fungi</i>	2	100	
<b>TOTAL</b>	<b>9</b>	<b>460</b>	

Customer Sample Number: -TM310LS

Method: M101.1

Date Of Analysis: 19-Feb-09

Detection Limit: 52 Spores/M<sup>3</sup>

Background: Light particulates

Sample Intact: Yes

Genus (species)	Raw Count	Total Spores / M <sup>3</sup>	Comment
<i>Basidiospores</i>	5	260	
<i>Cladosporium</i>		P	
<i>Penicillium/Aspergillus types</i>	1	52	
<b>TOTAL</b>	<b>6</b>	<b>310</b>	

Sample results have not been corrected based on a blank sample

P = Spores Present

< (less than) = measurement below the reporting limit

Rounding: Note that all reported counts have been rounded to two significant figures based on the sampling and analytical methods used. BioHygiene Labs rounds such that if the last significant digit is an even number, then the result is rounded down to that digit; if the last significant digit is an odd number, then it is rounded up to the nearest even number. Thus the TOTAL may not equal the sum of the individual counts per column. TOTAL rows do not include pollen.

Background is graded as Very Light (0 - 10%), Light (>10 - 30%), Moderate (>30 - 70%), Heavy (>70 - 90%), and Very Heavy (>90%) Particulates as a percentage of the trace area.

APPROVED: \_\_\_\_\_

DATE: \_\_\_\_\_

Name \_\_\_\_\_

Title: \_\_\_\_\_

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## Request For Analysis

Project Number/Purchase Order: 20902001 Date Submitted: 2/18/19

Project Contact: W. Frey Turnaround Required: Normal

Lab Destination: Biohygiene Labs Lab Contact: Rupa Aryal

SAMPLE ID	VOLUME	MEDIA	ANALYSIS REQUESTED
20902001 TM301VLS	75L	Allergenco-D	M 101.1
TM302LS			
TM303LS			
TM304LS			
TM305LS			
TM306LS			
TM307LS			
TM308LS			
TM309LS			
TM310LS			
TM311LS			
TM3120VLS			

LAB USE ONLY

Special Instructions: \_\_\_\_\_

1. Sampled by: Handhu on 2/18/19 Received by: \_\_\_\_\_

2. Relinquished by: Handhu on 2/18/19 @ 8:50 Received by: [Signature] 02-19-09 9:52AM

3. Relinquished by: [Signature] 02-19-09 9:58AM Received by: [Signature] 02-19-09 10:04AM (-TM301VLS to -TM302LS)

Please include signature, date, and time [Signature] 02-19-09 10:16AM (-TM303LS to -TM304LS)

Received by: [Signature] 02-19-09 11:25AM (-TM306LS to -TM308LS)

Lab Use Only:  
Completed on 02-19-09 Book 3241 p.6 (-TM304LS, -TM310LS), p.7 (-TM311LS, -TM3120VLS) LR  
Completed on 02-19-09 Book 3237 p.27 (-TM301VLS, -TM302LS) p.28 (-TM303LS, -TM304LS) p.29 (-TM305LS) p.30 (-TM306LS, -TM307LS) p.31 (-TM308LS) LR  
Completed on 02-19-09 Book 3240 p.23 (-TM309LS, -TM309LS) p.24 (-TM309LS) LR