



Astex Environmental Services, Inc.
123 Catalpa · San Antonio, TX 78209
Phone: (210) 828-9800 · Fax: (210) 829-4927

May 29, 2007

Mr. Lucas Oliva
Design Manager Real Estate Services
San Antonio Housing Authority
818 S. Flores
San Antonio, Texas 78204
Phone: (210) 477-6004
Email: lucas_oliva@saha.org

RE: Limited Mold Inspection, 123 Villa Arboles, San Antonio, Texas
Astex Project #AES-07-C-4214

Dear Mr. Oliva,

Pursuant to your request, on May 16, 2007, Mr. Ron Greenberg of Astex Environmental Services, Inc. (AES), Texas Department of State Health Services (TDSHS) Mold Assessment Consultant MAC 0509 conducted a Limited Mold Inspection within the residence located at 123 Villa Arboles, San Antonio, Texas to investigate the general microbial conditions within the home.

It should be noted that Astex inspected two residences within this two-block area and the two outside comparison/control samples were taken in front of 1503 NW 26th St and in front of 123 Villa Arboles and both samples will be used as control levels for both properties.

Scope of Work

The scope of work for this limited inspection included the collection of the following samples:

- Air samples (Allergenco brand cassettes) were collected in the following locations for the analysis of Total Bioaerosols:
 1. inside – at the return air intake 2nd level - 1 sample

2. inside – in 2nd floor bedroom - 1 sample
 3. inside – in living room/kitchen – 1 sample
 4. outside - comparison/control samples - 1 sample
- Culturable fungi samples
 1. inside – at the return air intake 2nd floor - 1 sample (side-by-side with AOC)
 2. inside – in 2nd floor bedroom - 1 sample (side-by-side with AOC)
 3. outside - comparison/control samples - 1 sample (side-by-side with AOC)

Note: These samples were delivered to the contract lab, Aerotech P&K, 1501 W. Knudsen Drive, Phoenix, AZ 85027, for analyses in accordance with the American Industrial Hygiene Association (AIHA) Environmental Microbiology Laboratory Accreditation Program (EMLAP) as well as following the Food and Drug Administration (FDA) Good Laboratory Practice Guidelines.

Visual and Moisture Inspection Results

No visible mold and/or evidence of water intrusion were observed within the house and no indication of moisture within the wall materials was noted. Windowsills were inspected and no signs of water (condensation) staining were noted. Finally the HVAC unit was observed to be clean and free of visible mold and/or significant deterioration on the visible ducts.

Temperature and Humidity Levels

Temperature readings within the house ranged from 78.3 to 77.1 degrees Fahrenheit and humidity was noted to be between 42.7 to 46.1 percent

Indoor temperatures and relative humidity should be kept at levels that will prevent or retard fungal growth. The American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) Standard 55-1992R, Thermal Environmental Conditions establishes the generally accepted guidelines for indoor temperature and relative humidity *for Human Occupancy*. ASHRAE Standard 55-1992R presents guidelines that are intended to achieve thermal conditions that at least 80% of the occupants would find acceptable or comfortable. ASHRAE Standard 55-1992R recommends a temperature range between 73°F - 79°F for summer and 68°F – 74.5°F for winter, and a relative humidity range between 25% and 60%. An indoor relative humidity level exceeding 60% is conducive for mold growth.

Analytical Results

The Air-O-Cell Samples were collected by Astex personnel on the afternoon of May 16, 2007 and were delivered to the contract lab for analysis of total bioaerosols with the results being made a part of this report. The data generated in this report is based on the samples and accompanying information provided and represents concentrations at a point in time under the conditions sampled. Keep in mind, sample values fluctuate widely and single point-in-time samples can be highly variable.

Currently, there are no regulations, federal or state, establishing action limits for mold spores and mold particulates in the indoor air. Also, there are no species of molds identified to be hazards to public health. Current practice is to compare interior to exterior samples, noting the species present and the contrasting levels of spores and particle.

During this limited investigation, the following observations were noted:

Fungal Spores (Air-O-Cells):

- Outdoor air had typical levels of total fungal spores, dominated by *Cladosporium* and *Basidiospores* and there were no *Aspergillus/Penicillium*-like spores present.
- Indoor air in general had very low levels of total fungal spores (67 to 200 count/M³) compared to outdoor air (5,853 to 5,880 count/M³) and although the distribution of spores was typical of the outdoor air with *Cladosporium* being the dominant type.

Culturable Fungi:

- The indoor air (viable samples) in general had very low levels (224 to 789 CFU/M³) compared to outdoor air (400 to 1,802 CFU/M³) and the distribution of spores was typical of the outdoor air with *Cladosporium* being the dominant type.
- No *Aspergillus* like spores or *Penicillium* or *Stachybotrys* spores were identified within the indoor air.

Conclusions/Recommendations

- Both fungal and culturable spore counts were well below the outside levels on the day of sampling and the distribution of spores was typical of the outdoor air with *Cladosporium* being the dominant type. No further action should be required at this time.

Previous or future changes in mold concentrations cannot be inferred from these sample results. Please contact me at 210-828-9800 with any questions.

Very truly yours,



Ron Greenberg
Texas Department of State Health Services (TDSHS)
Mold Assessment Consultant No. MAC 0509

Attachments: Chain of Custody
 Laboratory Results



An Affiliate of Severn Trent Laboratories, Inc.

Astex Environmental Services, Inc.
 123 Catalpa
 San Antonio, TX 78209
 Attn: Ron Greenberg

Lab Number: 915-705-1586
 AIHA EMLAP No. 102297
 Total Fungal Spore, Mycelia and Pollen Counts-Air
 Aerotech Method: A001.7 Other

Project Name: 123 Arboles
 Project Number: AES-07-C-4213
 Date Received: 05/17/2007
 Date Reported: 05/21/2007

Sample Number	1			2			3			4																														
	Sample Identification	0-1-123 Outside Front	1-1-123 Inside Return Up	1-2-123 Inside Bedroom Up	1-3-123 Inside Living Rm/K	Date Analyzed	5/19/2007	5/19/2007	5/19/2007	5/19/2007	Volumes (M³)	0.0750	0.0750	0.0750	Percent of Trace Analyzed	100% of Trace at 600x Magnification	100% of Trace at 600x Magnification	100% of Trace at 600x Magnification	100% of Trace at 600x Magnification	Debris Rating	3	3	3	3																
Analyte	Count/M³		Total Count	Count/M³		Total Count	Count/M³		Total Count	Count/M³		Total Count	Count/M³		Total Count	Count/M³		Total Count	Count/M³		Total Count	Count/M³		Total Count	Count/M³		Total Count													
	Result	DL		Result	DL		Result	DL		Result	DL		Result	DL		Result	DL		Result	DL		Result	DL		Result	DL		Result	DL	Result	DL	Result	DL	Result	DL					
Mycelial Fragments	16	213	13	n/a	6	80	13	n/a	1	13	13	n/a	5	67	13	n/a	5	67	13	n/a	2	<13	13	n/a	2	27	13	n/a	2	27	13	n/a	2	27	13	n/a	2	27	13	n/a
Pollen	2	27	13	n/a	1	13	13	n/a	<1	<13	13	n/a	<1	<13	13	n/a	<1	<13	13	n/a	<1	<13	13	n/a	<1	<13	13	n/a	<1	<13	13	n/a	<1	<13	13	n/a	<1	<13	13	n/a
Total Fungal Spores	439	5,853	13	100	15	200	13	100	5	67	13	100	12	160	13	100	12	160	13	100	12	160	13	100	12	160	13	100	12	160	13	100	12	160	13	100	12	160	13	100
<i>Alternaria</i>	120	1,600	13	27	1	13	13	7	2	27	13	40	1	13	13	40	1	13	13	40	1	13	13	40	1	13	13	40	1	13	13	40	1	13	13	40	1	13	13	40
<i>Arthrospora</i>																																								
<i>Ascosporium</i>	63	840	13	14																																				
<i>Aspergillus/Penicillium-Like</i>																																								
<i>Basidiospores</i>	36	480	13	8	1	13	13	7	1	13	13	7	6	80	13	50	6	80	13	50	6	80	13	50	6	80	13	50	6	80	13	50	6	80	13	50	6	80		
<i>Bipolaris/Drechslera</i>																																								
<i>Botrytis</i>																																								
<i>Chaetomium</i>																																								
<i>Cladosporium</i>	194	2,587	13	44	7	93	13	47	2	27	13	40	1	13	13	40	1	13	13	40	1	13	13	40	1	13	13	40	1	13	13	40	1	13	13	40	1	13		
<i>Curvularia</i>	7	93	13	2	5	67	13	33	5	67	13	33	2	27	13	17	2	27	13	17	2	27	13	17	2	27	13	17	2	27	13	17	2	27	13	17	2	27		
<i>Epilobium</i>	1	13	13	<1																																				
<i>Fusarium</i>																																								
<i>Merionella</i>																																								
<i>Nigrospora</i>																																								
<i>Oldidium/Peronospora</i>	4	53	13	<1																																				
<i>Plthomyces</i>																																								
<i>Rusis</i>																																								
<i>Smuts/Myxomycetes/Periconia</i>	12	160	13	3	1	13	13	20	1	13	13	20																												
<i>Stachybotrys</i>																																								
<i>Stemphylium</i>																																								
<i>Tortula</i>																																								
<i>Ulocladium</i>																																								
Unclassified Candida	2	27	13	<1	1	13	13	7	1	13	13	7	1	13	13	7	1	13	13	7	1	13	13	7	1	13	13	7	1	13	13	7	1	13	13	7	1	13		
Data Qualifier																																								

Laboratory Manager: *Christina Munn*

Project Manager: *John G. Gaudin*



An Affiliate of Severn Trent Laboratories, Inc.

Astex Environmental Services, Inc.
 123 Catalpa
 San Antonio, TX 78209
 Attn: Ron Greenberg

Lab Number: 915-705-1586
 AIHA EMLAP No. 102297
 Culturable Fungi at 25°C-Air
 Aerotech Method: A003

Project Name: 123 Arboles
 Project Number: AES-07-C-4213
 Date Received: 05/17/2007
 Date Reported: 05/24/2007

Sample Number	5			6			7		
	Sample Identification	0-01-123 Outside Culture	1-01-123 Inside Return	1-02-123 Inside Bedroom	Date Analyzed	5/24/2007	5/24/2007	5/24/2007	
Culture Media	Potato Dextrose (PDA)			Potato Dextrose (PDA)			Potato Dextrose (PDA)		
Volume(M ³)	0.0849			0.0849			0.0849		
Fungi	CFU	DL	%	CFU	DL	%	CFU	DL	%
Total	153	12	100	67	12	100	19	12	100
Acremonium				1	12	1			
Alternaria				2	12	3			
Aspergillus niger									
Aspergillus species Var. 1									
Aspergillus species Var. 2									
Aureobasidium									
Bipolaris				1	12	1	3	12	16
Chaetomium									
Cladosporium	137	12	90	57	12	85	10	118	53
Curvularia	2	12	1						
Epitocum	5	12	3						
Fusarium	6	12	4	2	12	3			
Geotrichum									
Mucor									
Nigrospora									
Paeclomyces									
Penicillium species Var. 1									
Penicillium species Var. 2									
Pithomyces				1	12	1	1	12	5
Rhizopus									
Sporothrix									
Sporotrichum									
Stachybotrys									
Sterile Hyphae	3	12	2	3	12	4	5	59	26
Syncephalastrum									
Trichoderma									
Yeast									
Data Qualifier									

Laboratory Manager: *Quishwa Murray*

Project Manager: *John G. Gaudette*

FORM 441 CURRENT REPORT FORM, P. 1 OF 2, REVISION 05, 2004, LD

Aerotech Laboratories, Inc.
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Phoenix, AZ 85027
800-651-4802

P&K Microbiology Services, Inc.
1936 Olney Avenue
Cherry Hill, NJ 08003
866-871-1984

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813-882-3863

New Orleans
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Kenner, LA 70062
504-469-6612

Billerica
148 Rangeway Road,
N. Billerica, MA
01862
800-653-8011

Account Number 1135		Page <u>1</u> of <u>1</u>		WEATHER																																																	
Client Name Astex Environmental Services, Inc.		R/H		LEVEL		None		Fog		Haze		Snow		Wind		Clear																																					
Address 123 Catalpa		Temp		Light		Moderate																																															
City, State, Zip San Antonio, TX 78209				Heavy																																																	
Contact Ron Greenberg		Sampler RONG		Sample Type Codes																																																	
Phone 210-828-9800		Project Name 123 ARBOLES		A - Air		B - Bulk		D - Dust		S - Swab		T - Tape																																									
FAX 210-829-4927		Project Number AES-07-C-4213		W - Water		WC - WallChek		Other																																													
P.O. Number		Fax Results		Y		N																																															
E-mail rong@astexinc.com		E-mail Results		Y		N																																															
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Sample Information																																																					
#	Sample Identification										Date	Type	Area/Volume																																								
1	0-1-123 OUTSIDE FRONT										5/16	A	0.71 M																																								
2	0-1-123 INSIDE RETURN																																																				
3	I-2-123 (BEDROOM)																																																				
4	I-3-123 (LIVING RM/K)																																																				
5	0-01-123 OUTSIDE CULTURE												84.9 L																																								
6	I-01-123 INSIDE RETURN																																																				
7	I-02-123 (BEDROOM)																																																				
Instructions/Special Requirements:																																																					
<input checked="" type="checkbox"/> On Account (must have preapproved credit) <input type="checkbox"/> Check Enclosed Credit Card Payment - (please circle one) VISA MC AMEX Discover Card Number _____ Expiration Date _____ Signature _____																																																					
Date		Time		Samples Relinquished By						Samples Received By																																											
5/16/07		6:00 PM		RONG						[Signature]																																											
5/17/07		9:30																																																			

Analysis performed is subject to the Terms & Conditions available at www.aerotechpk.com or call 800.651.4802 to request a copy.

Monday, May 21, 2007

Ron Greenberg
Astex Environmental Services, Inc.
123 Catalpa
San Antonio, TX 78209



Re: Laboratory Number: 915-705-1586
Date Sampled: May 16, 2007

Dear Ron Greenberg:

Aerotech Phoenix is pleased to provide the enclosed report of analyses for samples received May 17, 2007. This cover letter and accompanying pages are an integral part of this report. All analyses are performed in our AIHA EMLAP accredited laboratory under the FDA Good Laboratory Practice Guidelines and the parameters outlined in the most current version of the American Conference of Governmental Industrial Hygienists Bioaerosol Guidelines. The data generated in this report are based on the samples and accompanying information provided and represent concentrations at a point in time under the conditions sampled. Results can vary with site conditions. Aerotech Phoenix employees did not collect samples for this project, and may provide limited interpretation of this data as it relates to the overall investigation.

Quality Assurance

Aerotech Laboratories 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 Laboratories, Inc. 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. Aerotech Laboratories' 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, and the American Industrial Hygiene Association (AIHA). As an additional measure to demonstrate its competency to perform the analyses it offers to its clients, Aerotech Laboratories 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 Laboratories 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.aerotechlabs.com. Below you will find additional information regarding the specific analyses requested for this project.

Spore Trap Device

Spore traps are a unique sampling device designed for the rapid collection and analysis of a wide range of airborne particles, including fungal spores. Samples are analyzed via light microscopy at 600X magnification, with the entire slide (100% of the sample) being analyzed. The results are reported as **total**, meaning they include both viable and non-viable fungal spores. This technique does not allow for the differentiation between *Aspergillus* and *Penicillium* spores. Specific genera of greater than 500 spores per slide are difficult to count accurately due to overcrowding and are therefore estimations. Similarly, excessive non-microbial particulates can mask the presence of fungal spores, thereby reducing counting accuracies. All slides are graded with the following debris scale for data qualification.

Debris Rating Scale

Non-Microbial Particulate Debris Rating	Description	Interpretation
0	No particles detected in impaction line area.	No particulates on slide in impaction line area. The absence of particulates could indicate improper sampling or a blank sample, as most air samples typically contain some particulates.
1	Minimal non-microbial debris present.	Reported values are not affected by debris.
2	Up to 25% of the trace occluded with non-microbial particulates.	Non-microbial particulates can mask the presence of fungal spores. As a result, actual values could be higher than the numbers reported. Higher debris ratings increase the probability of this bias.
3	26% to 75% of the trace occluded with non-microbial particulates.	
4	76% to 90% of the trace occluded with non-microbial particulates.	
5	Greater than 90% of the trace occluded with non-microbial particulates.	<p>*Air-O-Cell or LARO Cassettes - Sample could not be read due to excessive debris. Reported concentrations are estimations calculated from the number of spores observed on the perimeter of debris. The sample should be collected at shorter time interval, or other measures taken to reduce the collection of non-microbial debris.</p> <p>*Other Cassettes - Sample could not be read due to excessive debris. The sample should be collected at shorter time interval, or other measures taken to reduce the collection of non-microbial debris.</p>

Culture Analyses for Fungi and Bacteria

Cultureable microorganisms are those that are viable when media is inoculated, and will grow on the selected media and at the selected temperature. This technique has certain limitations when analyzing for certain types of fungi, specifically *Stachybotrys*. Some reports indicate that the recovery efficiency of *Stachybotrys* spores can be as low as 10% when compared to total spore techniques.

The type of media and incubation temperature can vary depending on the scope of the survey. Isolates are identified to the service level requested. Typical analysis includes identification of most fungi to the genus level. *Aspergillus* and *Penicillium* species are differentiated based on morphology with each variant reported separately. Morphological variants are identified by colony color/shape and may or may not be the same throughout the project. Identification to the species level can be performed if requested in advance. General incubation parameters are summarized below. Incubation times can vary depending on specific growth characteristics. Samples submitted for culture analysis using Cornmeal Agar (CMA) or Cellulose Agar are cultured for 14 days.

Test	Incubation Temperature (° C)	Minimum Incubation Time
Environmental Bacteria	28	48 hours
Total Fungi	20-25	7-10 days
Thermophilic fungi	37	7-10 days
Thermophilic Actinomycetes	50	48 hours

Common Culture Media

Acronym	Name
BAP	Tryptic Soy Agar with 5% Sheep Blood
PCA	Plate Count Agar
BCYE	Buffered Charcoal Yeast Extract Agar
PDA	Potato Dextrose Agar
MEA	Malt Extract Agar
DG-18	Dichloran Glycerol Agar
SAB	Sabauroud's Dextrose Agar
RBA	Rose Bengal Agar

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.

This communication is intended only for the individual or entity to which it is directed. It may contain information that is privileged, confidential, or otherwise exempt from disclosure under applicable law. Dissemination, distribution, or copying of this communication by anyone other than the intended recipient, or a duly designated employee or agent of such recipient, is prohibited. If you have received this communication in error, please notify us immediately by telephone at 800.651.4802, and delete this message and all attachments thereto.

For additional information, or if you have any questions regarding this report, please do not hesitate to call.

Sincerely,



Lori Litwiler
Project Manager
Aerotech Phoenix
800-651-4802

Analytical References

1. Medically Important Fungi: A Guide to Identification, 3rd ed., ASM, 1995.
2. Standard Methods for the Examination of Water and Wastewater, 19th ed., APHA, 1995.
3. Sampling and Identifying Allergenic Pollens and Molds, Blewstone, 1990.
4. Identifying Filamentous Fungi: A Clinical Laboratory Handbook, Star, 1996.
5. Manual of Clinical Microbiology, 7th ed., ASM, 1999.
6. A Laboratory Guide to Common *Aspergillus* Species and their Teleomorphs, CSIRO, 1994.
7. Bioaerosols: Assessment and Control, ACGIH, 1999.