



## Astex Environmental Services, Inc.

123 Catalpa · San Antonio, TX 78209

Phone: (210) 828-9800 · Fax: (210) 829-4927

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April 24, 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, 142 Villa Grande, San Antonio, Texas  
Astex Project #AES-07-C-4142

Dear Mr. Oliva,

Pursuant to your request, on April 19, 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 unoccupied home at 142 Villa Grande St, San Antonio, Texas to investigate the general microbial conditions in the home prior to sale.

It should be noted that Astex inspected four residences within this two-block development and the two outside comparison/control samples were taken in front of 142 Villa Grande and in front of 1110 SW 27<sup>th</sup> St. and both samples are shown on all four reports since both are used as control levels for all four 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 - 1 sample
  2. inside – in hall by bedrooms - 1 sample
  3. outside comparison/control samples - 2 samples
- Culturable fungi samples
    1. inside – at the return air intake - 1 sample (side-by-side with AOC)
    2. inside – in hall by bedrooms - 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 or garage and no indications of moisture within the wall materials was noted.

#### ***Temperature and Humidity Levels***

Temperature readings within the house were from 72.5 to 73.5 degrees Fahrenheit and humidity was noted to be between 49.0 to 58.5 percent

#### ***Analytical Results***

The Air-O-Cell Samples were collected by Astex personnel on the afternoon of April 19, 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 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*. There were only very low levels of *Aspergillus/Penicillium*-like spores.
- Indoor air in general had very low levels of total fungal spores (307 to 360 count/M<sup>3</sup>) compared to outdoor air (4,533 to 11,867 count/M<sup>3</sup>) and the distribution of spores was typical of the outdoor air with *Cladosporium* and Basidiospores being the dominant types.

Culturable Fungi:

- The culturable fungi in indoor air were dominated by *Cladosporium*, similar to the dominance in outdoor air. There were low levels of other culturable fungi, including *Penicillium* species. The low levels of *Penicillium* were normal for a clean indoor environment.

*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.

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

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

Lab Number: 915-704-1801  
AIHA EMLAP No. 102297  
Total Fungal Spore, Mycelia and Pollen Counts-Air  
Aerotech Method: A001 Air-O-Cell™ Cassette

Project Name: 142 Villa Grande  
Project Number: AES-07-C-4142  
Date Received: 04/20/2007  
Date Reported: 04/23/2007

Sample Number	1			3			5		
	Sample Identification	142-101	142-102	142-102	142-102	Outside-Frt 142 Villa Grande			
Date Analyzed	4/23/2007	4/23/2007	4/23/2007	4/23/2007	4/23/2007	4/23/2007			
Volume(M³)	0.0750	0.0750	0.0750	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	100% of Trace at 600x Magnification	100% of Trace at 600x Magnification			
Debris Rating	4	4	4	4	3	3			
Analyte	Total Count	Count/M³	DL	%	Total Count	Count/M³	DL	%	
	Result	Result	Result	Result	Result	Result	Result	Result	
Mycelial Fragments	<1	<13	13	n/a	1	13	13	n/a	
Pollen	5	67	13	n/a	<1	<13	13	n/a	
Total Fungal Spores	27	360	13	100	23	307	13	100	
Fungal Spore Identification									
Alternaria					21	280	13	2	
Arthrinium									
Ascomycetes	2	27	13	7	3	40	13	13	
Aspergillus/Penicillium- Like	2	27	13	7	6	80	13	26	
Basidiomycetes	8	107	13	30	4	53	13	17	
Bipolaris/Drechslera	1	13	13	4	2	27	13	9	
Bobbyitis									
Chaetomium									
Cladosporium	12	160	13	44	5	80	13	26	
Currularia	2	27	13	7					
Epicoecium									
Fusarium									
Memnoniella									
Mycrospora									
Orizium/Pezizomycetes									
Phanerochaete									
Rusts									
Synchytrium/Peronosporales									
Stachybotrys					2	27	13	9	
Stemphylium									
Torula									
Unclassified Conidia									
Data Qualifier					1	13	13	<1	

Laboratory Manager: *Christina Moran*

Project Manager: *[Signature]*



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

Lab Number: 915-704-1801  
AIFA EMLAP No. 102297  
Total Fungal Spore, Mycelia and Pollen Counts-Air  
Aerotech Method: A001 Air-O-Cell™ Cassette

Project Name: 142 Villa Grande  
Project Number: AES-07-C-4142  
Date Received: 04/20/2007  
Date Reported: 04/23/2007

**Data Qualifiers**

Listed below are the data qualifiers included in the analytical report to explain any analytical or quality control issues.

Data Qualifier Number	Description
D211	An estimation procedure was applied to determine counts for heavily loaded fungal structures.

Laboratory Manager:

*Christina Murray*  
Christina Murray, P. O. Box 21, Ravenna, OH, 44260, US

Project Manager:

*[Signature]*



An Affiliate of Severn Trent Laboratories, Inc.

Astax Environmental Services, Inc.  
 123 Cabalpa  
 San Antonio, TX 78209  
 Attn: Ron Greenberg

Lab Number: 915-704-1801  
 AIHA ENLAP No. 102297  
 Culturable Fungi at 25°C-Air  
 Aerotech Method: A003

Project Name: 142 Villa Grande  
 Project Number: AES-07-C-4142  
 Date Received: 04/20/2007  
 Date Reported: 04/27/2007

Sample Number	2		4					
	142-C01		142-C02					
	4/27/2007		4/27/2007					
Sample Identification	Malt Extract (MEA)							
Date Analyzed	Malt Extract (MEA)							
Culture Media	Malt Extract (MEA)							
Volume (ml)	0.0849							
Fungi	CFU	CFU/MP	DL	%	CFU	CFU/N*	DL	%
Total	20	236	12	100	5	59	12	100
Aspergillus	1	12	12	5				
Aspergillus niger								
Aspergillus species Var. 1								
Aspergillus species Var. 2								
Aureobasidium								
Björkling	1	12	12	5	1	12	12	20
Chaetomium								
Cladosporium	14	165	12	70	1	12	12	20
Curvularia								
Engyodontium					1	12	12	20
Epibaculum								
Fusarium								
Geotrichum								
Mucor								
Nigrospora								
Paecilomyces								
Penicillium species Var. 1	2	24	12	10				
Penicillium species Var. 2								
Rhizoglyphus	1	12	12	5				
Rhizoctonia								
Sporobolus								
Sporotrichum								
Stachybotrys								
Sterilia hyphae	1	12	12	5	2	24	12	40
Syncephalastrum								
Trichoderma								
Yeast								
Data Qualifier								

Laboratory Manager:

RON GREENBERG  
 A003 AIR CULTURE REPORT FORM, Rev. 1 of 2, Revision 05/19/2004, LD

Project Manager:

Monday, April 23, 2007

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

Re: Laboratory Number: 915-704-1801  
Date Sampled: April 19, 2007



TESTING CERT #2004.01



Dear Ron Greenberg:

Aerotech Phoenix is pleased to provide the enclosed report of analyses for samples received April 20, 2007. This cover letter and accompanying pages are an integral part of this report. All analyses are performed in our AIHA EMLAP accredited laboratory. 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 highly trained 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, General Requirements for the Competence of Testing and Calibration Laboratories, 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 ISO 17025 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). 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.aerotechpk.com](http://www.aerotechpk.com). Below you will find additional information regarding the specific analyses requested for this project.

\* Aerotech Laboratories, Inc. is A2LA accredited as documented by the Scope of Accreditation.

\*\* Aerotech Laboratories, Inc. is accredited by the American Industrial Hygiene Association (AIHA) in the EMLAP accreditation program as documented by the Scope of Accreditation certificate.

### 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.	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

### 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

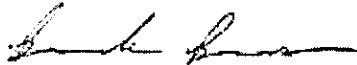
### **Data Qualifiers**

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,



Brenda Barnes  
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.

# AEROTECH P&K

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www.AerotechPK.com

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Kenner, LA 70062  
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Account Number <b>1135</b>		Page <u>1</u> of <u>1</u>		<b>WEATHER</b>																																																														
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3	142-E02		A	X									0.25m <sup>3</sup>																																																					
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Analysis performed is subject to the Terms & Conditions available at www.aerotechpk.com or call 800.651.4802 to request a copy.  
 C0C, P 1 OF 1, REVISION 07, 05/06/05



Control No:  
4924

Department of State Health Services certifies that:

**RON GREENBERG**

is Licensed as an:

**Mold Assessment Consultant**

License Number: **MAC0509**

From: **04/25/2006**

To: **04/25/2008**

