

# STC

Environmental Services Inc.  
Environmental Scientists and Engineers

---

4754 RESEARCH DRIVE

SAN ANTONIO, TEXAS 78240

Office (210) 696-6286 / FAX (210) 696-8761

May 28, 2007

Mr. Henry A. Alvarez III  
SAHA  
818 S. Flores Street  
San Antonio, Texas 78204

RE: Report of Limited Indoor Air Quality Investigation of 731 Matthews, San Antonio,  
Texas, 78237  
STC Project 27314R2

Mr. Alvarez:

In accordance with your request, we have conducted a limited mold indoor air quality investigation at the above reference location. This air sampling consisted of bioaerosols air sampling of selected areas. The sampling was completed on May 17, 2007.

## PROJECT INFORMATION

STC was asked to assess the air quality present in this residence as a result of concerns expressed by the homeowner. The indoor air quality assessment was completed by Mr. David O. Scheiding P.E. of STC Environmental Services on May 17, 2007. Mr. Scheiding is a Texas Licensed Mold Consultant (MAC0174). The following comments document the results of the limited assessment completed on May 17, 2007.

This residence is a single story wooden frame structure constructed on a slab on grade foundation (See Photo 1). The indoor air quality investigation consisted of a visual inspection of the HVAC system and ducts and a visual inspection of the areas where water pipes are located. Samples were collected based on the visual inspection. The results of this assessment depict the indoor air quality conditions on the day of the assessment. Previous mold level conditions or future conditions may vary from the conditions identified on May 17, 2007 as a result of water leaks or other conditions that could result in water intrusion.

In addition, the assessment requested may be for a second opinion on the current conditions. STC understands that previous assessments may have been completed by others and their findings may differ from the results obtained by STC on this day. STC understands that some cleaning or corrective efforts may have been completed on some of the residences prior to STC's assessment. These types of activities can cause variances between assessments, since each assessment measures conditions on the day of the assessment only.

## RESULTS OF THE INDOOR AIR QUALITY INVESTIGATION

### Visual Inspection and Interviews

Upon arrival, STC inspected the HVAC system and ducts. There was some minor buildup on the return air vent grill (See Photo 2) and some HVAC outlet vents (See Photos 3 and 4). Inspection of the water heater closet which is also the return air vent noted excessive dust buildup to be present (See Photo 5). There also was some dirt buildup present on the floor in the laundry room (See Photo 6).

Based on the above inspection, the following air samples were collected.

- A-1 Breathing environment from HVAC outlet closest to HVAC
- A-2 Breathing environment by HVAC return
- A-3 Breathing environment in Master bathroom
- A-4 Breathing environment in Kitchen
- A-5 Outside

In addition to the above sampling, relative humidity, temperature and dew point information was also collected from inside and outside the facility. The following table depicts the information collected on May 17, 2007.

LOCATION	TEMP	RELATIVE HUMIDITY RANGE (HI/LOW)	DEW POINT
Inside	75.5°F	38.6% 23.5% to 42.2%	49.7°F
Outside	88.1°F	33.4% 29.1% to 45.1%	54.2°F

The steady state indoor relative humidity was 38.6%. This level is within the desired indoor comfort zone for relative humidity. It was above the outside level of 33.4%.

The five (5) air samples collected on May 17, 2007 were submitted to EMSL Analytical, Inc. in Houston, Texas for analysis for mold and fungi levels and identification. EMSL is a Texas licensed mold laboratory (LAB0105).

### Air Sample Results

Five (5) air samples were collected for this investigation. The following tables depict the results of the air sampling.

**TABLE I**  
**AIR SAMPLING RESULTS FOR**  
**MOLD AND POLLEN SPORES**

Sample ID and Location	Particle ID	Concentration Particles/Cubic Meter	Adjusted for Outside
A-1 – Breathing environment by HVAC outlet closest to HVAC system	Agrocybe/Coprinus	ND	N/A
	Alternaria	44	Less than outside
	Arthrospores	ND	N/A
	Ascospores	ND	N/A
	Aspergillus/Penicillium	ND	N/A
	Arthrinium	ND	N/A
	Basidiospores	ND	N/A
	Bipolaris	ND	N/A
	Chaetomium	ND	N/A
	Cladosporium	ND	N/A
	Curvularia	ND	N/A
	Epicoccum	ND	N/A
	Fusarium	ND	N/A
	Myxomycete	ND	N/A
	Nigrospora	ND	N/A
	Peronospora	ND	N/A
	Pithomyces/Ulocladium	ND	N/A
	Stachybotrys	ND	N/A
	Scopulariopsis	ND	N/A
	Smut	ND	N/A
	Tetraploa	ND	N/A
	Spegazzinia	ND	N/A
	Unidentifiable spores	44	Less than outside
<b>Total Mold</b>	<b>88</b>	<b>Less than outside</b>	
<b>Total Pollen</b>	<b>ND</b>	<b>N/A</b>	
Hyphal Fragment	ND	N/A	
Fibrous Particulate	ND	N/A	
Insect Fragments	ND	N/A	

Sample ID and Location	Particle ID	Concentration Particles/Cubic Meter	Adjusted for Outside
A-2 – Breathing environment by HVAC return vent	Agrocybe/Coprinus	ND	N/A
	Alternaria	44	Less than outside
	Arthrospores	ND	N/A
	Ascospores	ND	N/A
	Aspergillus/Penicillium	ND	N/A
	Arthrinium	ND	N/A
	Basidiospores	ND	N/A
	Bipolaris	ND	N/A
	Chaetomium	ND	N/A
	Cladosporium	352	Less than outside
	Curvularia	ND	N/A
	Epicoccum	ND	N/A
	Fusarium	ND	N/A
	Ganoderma	ND	N/A
	Nigrospora	ND	N/A
	Myxomycete	ND	N/A
	Pithomyces	ND	N/A
	Torula	176	Less than outside
	Stachybotrys	ND	N/A
	Unidentifiable spores	44	Less than outside
<b>Total Mold</b>	<b>616</b>	<b>Less than outside</b>	
<b>Total Pollen</b>	<b>ND</b>	<b>N/A</b>	
Hyphal Fragment	ND	N/A	
Fibrous Particulate	ND	N/A	
Insect Fragments	ND	N/A	
A-3 – Breathing environment in Master bathroom	Agrocybe/Coprinus	ND	N/A
	Alternaria	ND	N/A
	Arthrospores	ND	N/A
	Ascospores	ND	N/A
	Aspergillus/Penicillium	ND	N/A
	Arthrinium	ND	N/A
	Basidiospores	ND	N/A
	Bipolaris	44	Equal to outside
	Cercospora	ND	N/A
	Chaetomium	ND	N/A
	Cladosporium	132	Less than outside
	Curvularia	ND	N/A
	Epicoccum	ND	N/A
	Fusarium	ND	N/A
	Ganoderma	ND	N/A
	Nigrospora	ND	N/A
	Myxomycete	ND	N/A
	Pithomyces	ND	N/A
	Stachybotrys	ND	N/A
	Unidentifiable spores	ND	N/A
<b>Total Mold</b>	<b>176</b>	<b>Less than outside</b>	
<b>Total Pollen</b>	<b>ND</b>	<b>N/A</b>	
Hyphal Fragment	ND	N/A	
Fibrous Particulate	ND	N/A	
Insect Fragments	ND	N/A	

Sample ID and Location	Particle ID	Concentration Particles/Cubic Meter	Adjusted for Outside
A-4 – Breathing environment in Kitchen	Agrocybe/Coprinus	ND	N/A
	Alternaria	88	Less than outside
	Arthrospores	ND	N/A
	Ascospores	ND	N/A
	Aspergillus/Penicillium	ND	N/A
	Arthrinium	ND	N/A
	Basidiospores	ND	N/A
	Bipolaris	44	Equal outside
	Chaetomium	ND	N/A
	Cladosporium	132	Less than outside
	Curvularia	ND	N/A
	Epicoccum	ND	N/A
	Fusarium	ND	N/A
	Ganoderma	ND	N/A
	Nigrospora	ND	N/A
	Myxomycete	ND	N/A
	Torula	176	Less than outside
	Stachybotrys	ND	N/A
	Unidentifiable spores	44	Less than outside
	<b>Total Mold</b>	<b>484</b>	<b>Less than outside</b>
<b>Total Pollen</b>	<b>ND</b>	<b>N/A</b>	
Hyphal Fragment	ND	N/A	
Fibrous Particulate	ND	N/A	
Insect Fragments	ND	N/A	
A-5 – Outside	Agrocybe/Coprinus	ND	N/A
	Alternaria	176	N/A
	Arthrospores	ND	N/A
	Ascospores	44	N/A
	Aspergillus/Penicillium	ND	N/A
	Arthrinium	ND	N/A
	Basidiospores	176	N/A
	Bipolaris	44	N/A
	Cercospora	ND	N/A
	Chaetomium	ND	N/A
	Cladosporium	1940	N/A
	Curvularia	ND	N/A
	Epicoccum	ND	N/A
	Fusarium	ND	N/A
	Ganoderma	ND	N/A
	Nigrospora	ND	N/A
	Myxomycete	ND	N/A
	Pithomyces	ND	N/A
	Torula	1360	N/A
	Stachybotrys	ND	N/A
Unidentifiable spores	2730	N/A	
<b>Total Mold</b>	<b>6470</b>	<b>N/A</b>	
<b>Total Pollen</b>	<b>ND</b>	<b>N/A</b>	
Hyphal Fragment	ND	N/A	
Fibrous Particulate	ND	N/A	
Insect Fragments	ND	N/A	

### Air Sample Discussion (General)

The results of air sampling should always include a comparison to outside levels at the time of indoor sampling. This is required since make-up air for the HVAC unit comes from outside as well as outside air entering with normal door opening during entry and departure events. It also should be noted that there are **NO** specified levels of mold/fungi that are considered harmful to humans. Each individual has a different tolerance level for molds/fungi species. In addition, different geographical locations also have a wide variance of air quality levels. Therefore what is considered normal outside in one (1) geographical area may never occur in other geographical areas.

It is generally accepted that “normal” outside levels are 1,200 or 12,000 counts/m<sup>3</sup> depending on Laboratory Protocol, with the majority of the particles made up of the common species of Aspergillus/Penicillium and Cladosporium. Based on this outside “normal” level, the inside level that is accepted as “normal” is 300 or 3,000 counts/m<sup>3</sup>. Essentially acceptable indoor air quality is normally considered to be 50% of the outside level when the HVAC unit is running. It may be as high as 80% if the HVAC unit is not running. This is why a comparison is always required to establish acceptable indoor levels. With the HVAC system running then the indoor air quality should be less than 2,000 or 20,000 counts/m<sup>3</sup>. The HVAC system was operating during this investigation.

### Air Sample Results Discussion (Specific)

The air samples collected outside (A-5) produced a level of 6470 counts/m<sup>3</sup>. The species identified included Alternaria, Ascospores, Basidiospores, Bipolaris, Cladosporium, Torula and Unidentifiable spores. This level is significantly above the level normally accepted as “normal” for outside.

The four (4) air samples collected from the breathing environment inside the residence produced levels that ranged from 176 to 616 counts/m<sup>3</sup>. The species identified were Alternaria, Cladosporium, Torula, Bipolaris and Unidentifiable spores. These levels are 1.4% to 9.5% of the outside level. The above species are found normally in both the outdoor and indoor environments. There currently are **NO** established levels that these species are considered harmful to humans. Each individual respond to mold spores based on their individual immune systems.

It should be noted that **NO** Stachybotrys was identified in the breathing environment. Based on levels and type of species, the breathing environment is considered very acceptable for mold.

Copies of the analytical laboratory reports are attached.

## **CONCLUSIONS**

Based on the above investigation, the following conclusions are supported:

- There is some very minor build-up on the HVAC outlet and return air vents.

- The indoor relative humidity is considered to be within the desired comfort range for indoor relative humidity.
- The breathing environment in the residence is considered very acceptable for mold.
- There is no evidence to suggest that a mold condition exists in this residence on the day of the investigation.

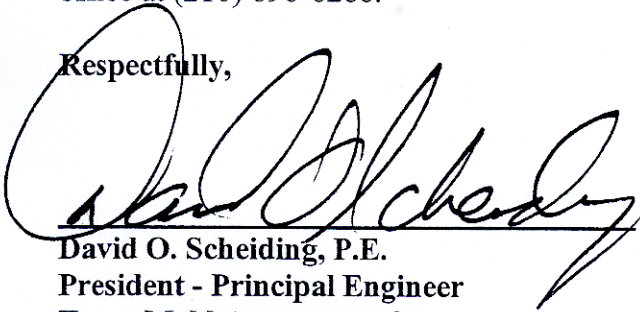
## RECOMMENDATIONS

Based on the above results, the following recommendations are provided.

- The HVAC return air and outlet vents should be cleaned.
- No further environmental investigative actions are recommended nor considered warranted at the current time unless water intrusion conditions change.

If you have any questions concerning the above information, please do not hesitate to contact our office at (210) 696-6286.

Respectfully,



David O. Scheiding, P.E.  
President - Principal Engineer  
Texas Mold Assessment Consultant  
MAC0174

**Attachments: Laboratory Report  
Photographs**



# EMSL Analytical, Inc.

2501 Central Parkway, Suite C-17, Houston, TX 77092

Phone: (713) 686-3635 Fax: 7136863645 Email: [houstonlab@emsl.com](mailto:houstonlab@emsl.com)

Attn: **Dave Scheiding**  
**STC Environmental Services, Inc.**  
**4754 Research Drive**  
**San Antonio, TX 78240**

Customer ID: STCE50  
Customer PO: 358-07  
EMSL Order: 150702649  
EMSL Proj:  
Received: 05/18/2007 8:00 AM  
Analysis Date: 05/18/2007  
Report Date: 05/18/2007

Project: **27314 731 Mathews**

Fax: (210) 696-8761

Phone: (210) 696-6286

## Air-O-Cell™ Cassette Analysis of Fungal Spores & Other Airborne Particulates by Optical Microscopy (EMSL Method M001)

Lab Sample Number:	150702649-0001	150702649-0002	150702649-0003	150702649-0004	150702649-0005
Client Sample ID:	A-1	A-2	A-3	A-4	A-5
Volume:	75	75	75	75	75
Sample Location:	HVAC Outlet	HVAC Return	Master bath	Kitchen	Outside
Spore Types	Count/m <sup>3</sup>	Count/m <sup>3</sup>	Count/m <sup>3</sup>	Count/m <sup>3</sup>	Count/m <sup>3</sup>
Agrocybe/Coprinus	-	-	-	-	-
Alternaria	44	44	-	88	176
Ascospores	-	-	-	-	44
Aspergillus/Penicillium	-	-	-	-	-
Basidiospores	-	-	-	-	176
Bipolaris	-	-	44	44	44
Chaetomium	-	-	-	-	-
Cladosporium	-	352	132	132	1940
Curvularia	-	-	-	-	-
Epicoccum	-	-	-	-	-
Fusarium	-	-	-	-	-
Ganoderma	-	-	-	-	-
Myxomycete	-	-	-	-	-
Paecilomyces	-	-	-	-	-
Rust	-	-	-	-	-
Scopulariopsis	-	-	-	-	-
Stachybotrys	-	-	-	-	-
Torula	-	176	-	176	1360
Ulocladium	-	-	-	-	-
Unidentifiable Spores	44	44	-	44	2730
Zygomycetes	-	-	-	-	-
<b>Total Fungi</b>	<b>88</b>	<b>616</b>	<b>176</b>	<b>484</b>	<b>6470</b>
Fibrous Particulate	-	-	-	-	-
Hyphal Fragment	-	-	-	-	-
Insect Fragment	-	-	-	-	-
Pollen	-	-	-	-	-
Analytical Sensitivity	44	44	44	44	44
Skin Fragments (1-4)	1	1	1	1	1
Background (1-5)	1	1	1	2	2

No discernable field blank was submitted with this group of samples

Samples received in good condition unless otherwise noted.

High Levels of background particulate can obscure spores and other particulates leading to underestimation.

Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification.

The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment.

Present= Spores found during additional scan at lower mag. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. Results have not been adjusted for field or laboratory blank unless otherwise noted.

AIHA EMLAP Accreditation #102575

Mary Sacilowski, Laboratory Manager  
or other approved signatory

150702649



MICROBIOLOGY - CHAIN OF CUSTODY

Date Collected: 5/17/07 Date Sent: 5/17/07

Contact: SCHEIDING Bill To: STC ENVIRONMENTAL Company:

STC ENVIRONMENTAL SERVICES  
 4754 RESEARCH DRIVE

SAN ANTONIO, TEXAS 78240  
 Phone: (210) 696-6286 Fax: (210) 696-8761

Project Name: 27314 731 MATTHEWS

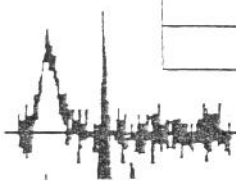
Air Samples	Wipe & Bulk Samples
<input checked="" type="checkbox"/> Mold & Fungi by Air-O-Cell Cassette (Select turn around time)	<input type="checkbox"/> Mold & Fungi - Direct Examination (Select turn-around time) Submit cellophane tape sample or bulk
<input type="checkbox"/> Mold & Fungi by Agar Plate (Count & identification)	<input type="checkbox"/> Mold & Fungi - Direct Examination - Follow up examination by culture if necessary
<input type="checkbox"/> Mold & Fungi by Agar Plate (Count Only)	<input type="checkbox"/> Mold & Fungi - Culture (ID & Count)
<input type="checkbox"/> Bacterial Count & Gram Stain	<input type="checkbox"/> Mold & Fungi - Culture (Count Only)
<input type="checkbox"/> Bacterial Count & Identification (Three most prominent types)	<input type="checkbox"/> Bacterial Count & Gram Stain
	<input type="checkbox"/> Bacterial Count & Identification (Three most prominent types)

STC PO 358-07  
 Karl Scheid

TURN AROUND TIME:  
 Same Day  1 Day  2 Day  3 Day  4 Day  5 Day  6-10 Day

SAMPLE ID	LOCATION	VOLUME	COMMENTS
A-1	HVAC OUTSIDE	75 L	MOLD/FUNGI
A-2	HVAC RETURN	75 L	
A-3	KITCHEN	75 L	
A-4	BATH	75 L	
A-5	OUTSIDE	75 L	

Recd. Y. Murchio 5/18/07 8:00 am

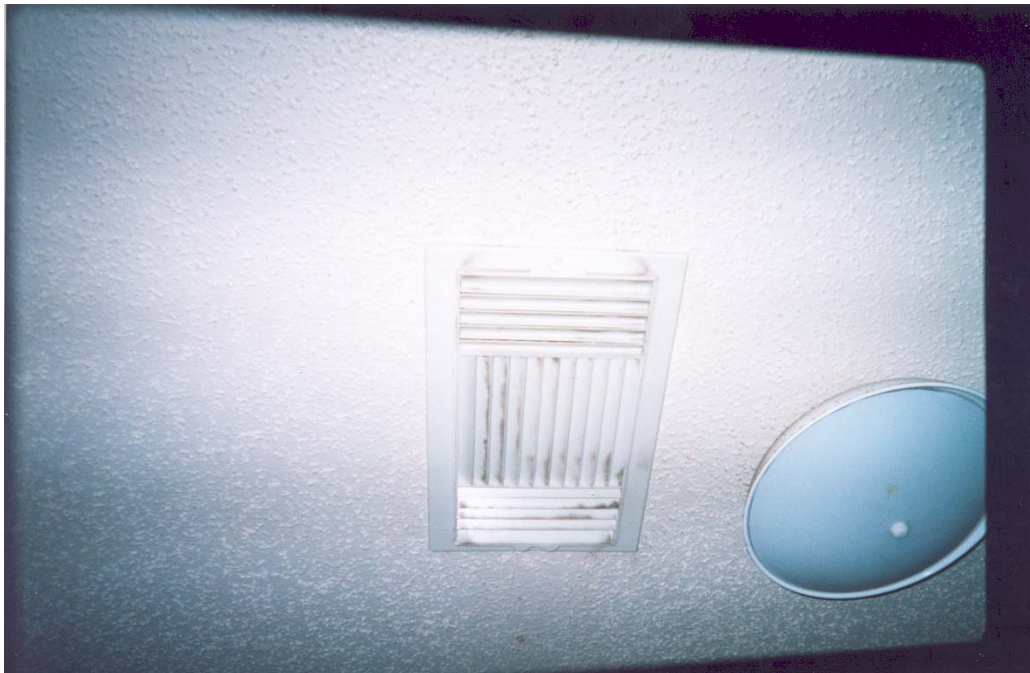




**PHOTO 1:** View of the front of the subject residence.



**PHOTO 2:** View of minor dust buildup on HVAC return air grill.



**PHOTO 3:** View of minor buildup on a HVAC outlet vent.



**PHOTO 4:** Additional view of minor buildup on an HVAC outlet vent.



**PHOTO 5:** View of excessive dust buildup inside the water heater closet which is also the return air duct.



**PHOTO 6:** View of dirt buildup on the floor of the Laundry Room.