

# STC

Environmental Services Inc.  
Environmental Scientists and Engineers

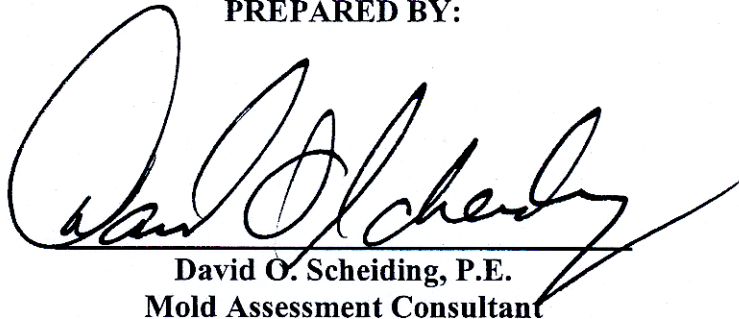
4754 RESEARCH DRIVE

SAN ANTONIO, TEXAS 78240

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

**LIMITED INDOOR AIR QUALITY ASSESSMENT  
AND MOLD REMEDIATION PROTOCOL  
1006 N.W. 27<sup>TH</sup> STREET  
SAN ANTONIO, TEXAS  
STC PROJECT 27418**

**PREPARED BY:**



**David O. Scheiding, P.E.  
Mold Assessment Consultant  
MAC0174 Exp 12/30/07**

**STC ENVIRONMENTAL SERVICES, INC.  
4754 RESEARCH DRIVE  
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**MOLD ASSESSMENT COMPANY  
AC0160 EXP 03/07/09**

**DATE OF ISSUE  
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July 9, 2007

Ms. Rachel Peña  
SAHA  
818 S. Flores Street  
San Antonio, Texas 78204

RE: Report of Limited Indoor Air Quality Investigation of 1006 N.W. 27<sup>th</sup> Street, San Antonio, Texas  
STC Project 27418

Ms. Peña:

In accordance with your request, we have conducted a 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 June 29, 2007.

## **PROJECT INFORMATION**

STC was asked to assess the air quality present in this residence as a result as part of a resale transaction. The indoor air quality assessment was completed by Mr. David O. Scheiding P.E. of STC Environmental Services on June 29, 2007. Mr. Scheiding is a Texas Licensed Mold Consultant (MAC0174). The following comments document the results of the mold assessment completed on June 29, 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 June 29, 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. Since this residence is being prepared for resale, it is assumed that corrective actions, if previously recommended, have been completed.

## RESULTS OF THE INDOOR AIR QUALITY INVESTIGATION

### Visual Inspection and Interviews

Upon arrival, STC inspected the HVAC system and ducts. The HVAC unit was turned on upon arrival. It had been off since the residence is vacant. The HVAC outlets and return air vent grill expressed to be clean (See Photos 2, 3, 4 and 5). The walls of the residence had recently been painted (See Photo 6). Window sills were dusty and had dead insects present (See Photo 4). There was some dust noted in the return air duct around the water heater (See Photo 7). The HVAC closet had debris present (See Photo 8). The area under the kitchen sink was dry.

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

- A-1 Breathing environment from HVAC outlet closest to HVAC unit
- A-2 Breathing environment by HVAC return
- A-3 Breathing environment in Master bathroom
- A-4 Breathing environment in Bedroom
- 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 June 29, 2007.

LOCATION	TEMP	RELATIVE HUMIDITY RANGE (HI/LOW)	DEW POINT
Inside	87.5°F	50.3% 47.6% to 50.8%	66.5°F
Outside	93.5°F	45.2% 42.6% to 51.4%	68.8°F

The steady state indoor relative humidity was 50.3%. This level is slightly above the desired indoor comfort zone for relative humidity. However the HVAC was off since the house is vacant. This level of humidity was also above the outside level of 45.2%.

The five (5) air samples collected on June 29, 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	42	Less than outside
	Arthrospores	ND	N/A
	Ascospores	ND	N/A
	Aspergillus/Penicillium	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
	Ganoderma	ND	N/A
	Myxomycete	ND	N/A
	Paecilomyces	ND	N/A
	Rust	ND	N/A
	Scopulariopsis	ND	N/A
	Stachybotrys	ND	N/A
	Torula	ND	N/A
	Ulocladium	ND	N/A
	Unidentifiable spores	84	Less than outside
	Zygomycetes	ND	N/A
<b>Total Mold</b>	<b>126</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	Agrocybe/Coprinus	ND	N/A
	Alternaria	42	Less than outside
	Ascospores	ND	N/A
	Aspergillus/Penicillium	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
	Ganoderma	ND	N/A
	Myxomycete	ND	N/A
	Paecilomyces	ND	N/A
	Rust	ND	N/A
	Stachybotrys	ND	N/A
	Torula	ND	N/A
	Ulocladium	ND	N/A
	Unidentifiable spores	42	Less than outside
	<b>Total Mold</b>	<b>84</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
	Ascospores	ND	N/A
	Aspergillus/Penicillium	ND	N/A
	Basidiospores	ND	N/A
	Bipolaris	ND	N/A
	Chaetomium	462	Greater than outside
	Cladosporium	ND	N/A
	Curvularia	42	Less than outside
	Epicoccum	ND	N/A
	Fusarium	ND	N/A
	Ganoderma	ND	N/A
	Myxomycete	ND	N/A
	Paecilomyces	ND	N/A
	Rust	ND	N/A
	Scopulariopsis	ND	N/A
	Stachybotrys	42	Greater than outside
	Torula	ND	N/A
	Ulocladium	ND	N/A
	Unidentifiable spores	84	Less than outside
<b>Total Mold</b>	<b>630</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	ND	N/A
	Ascospores	ND	N/A
	Aspergillus/Penicillium	ND	N/A
	Basidiospores	ND	N/A
	Bipolaris	42	Greater than outside
	Chaetomium	ND	N/A
	Cladosporium	ND	N/A
	Curvularia	ND	N/A
	Epicoccum	ND	N/A
	Fusarium	ND	N/A
	Ganoderma	ND	N/A
	Myxomycete	ND	N/A
	Paecilomyces	ND	N/A
	Rust	ND	N/A
	Scopulariopsis	ND	N/A
	Stachybotrys	ND	N/A
	Torula	ND	N/A
	Ulocladium	ND	N/A
	Unidentifiable spores	ND	N/A
	<b>Total Mold</b>	<b>42</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	168	N/A
	Ascospores	ND	N/A
	Aspergillus/Penicillium	ND	N/A
	Basidiospores	126	N/A
	Bipolaris	ND	N/A
	Cercospora	210	N/A
	Chaetomium	ND	N/A
	Cladosporium	1600	N/A
	Curvularia	168	N/A
	Epicoccum	42	N/A
	Fusarium	ND	N/A
	Ganoderma	ND	N/A
	Myxomycete	ND	N/A
	Paecilomyces	ND	N/A
	Rust	ND	N/A
	Scopulariopsis	ND	N/A
	Stachybotrys	ND	N/A
	Torula	ND	N/A
	Ulocladium	ND	N/A
Unidentifiable spores	798	N/A	
	<b>Total Mold</b>	<b>3110</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 not operating prior to arrival for this investigation. Currently the house is vacant. The HVAC was turned on for this investigation.

### Air Sample Results Discussion (Specific)

The air samples collected outside (A-5) produced levels of 3110 counts/m<sup>3</sup>. The species identified included Alternaria, Epicoccum, Basidiospores, Bipolaris, Cladosporium, Curvularia, Cercospora and Unidentifiable spores. This level is significantly above the level normally accepted as “normal” for outside.

The two (2) samples collected from the HVAC outlet and by the return air (A-1 and A-2) produced levels of 125 and 84 counts/m<sup>3</sup>. These levels are 4.1% and 2.7% of the outside level. The species identified included Alternaria, and Unidentifiable spores. Based on the types and levels the HVAC system is not considered to be impacted.

The air sample collected from the Master bathroom (A-3) produced a level of 630 counts/m<sup>3</sup>. This level is 20.3% of the outside level. The species identified included Chaetomium, Curvularia, Stachybotrys and Unidentifiable spores. The presence of Stachybotrys makes this area unacceptable for mold.

One (1) air sample was collected from the Kitchen (A-4) and produced a level of 42 counts/m<sup>3</sup>. The species identified was Bipolaris. This level is 1.3% of the outside and is considered acceptable.

Copies of the analytical laboratory reports are attached.

## CONCLUSIONS

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

- The indoor relative humidity was considered to be slightly elevated.
- There is a low level of airborne *Stachybotrys* present in the Master bathroom. This is a potential concern.

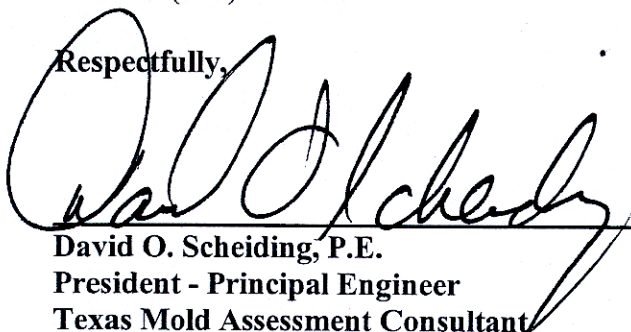
## RECOMMENDATIONS

Based on the above results, the following recommendations and mold remediation protocol are provided.

- The Master bedroom and bath should be sealed off from the rest of the house.
- The walls, ceilings, floors and fixtures in the Master bathroom and bedroom should be wet wiped with a biocide.
- The carpet in the Master bedroom and closet should be HEPA vacuumed as well the floor in the Master bedroom.
- Air scrubbers and dehumidifiers should be ran during the cleaning activities and for at least 24 hours after completion (48 hours preferred).
- Air clearance samples of the Master bathroom and bedroom should be collected with the acceptance criteria of less than or equal to the outside with **NO** *Stachybotrys*.
- The Master bathroom should be tested for any water leaks.

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  
Field Sketch**

