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engineering, technology, consulting

Project No. 7A-020
May 28, 2008

Mr. Tim Alcott
San Antonio Housing Authority
1315 N. Elmendorf
San Antonio, Texas 78207

**Re: Water Damage and Mold Contamination Review
Smith Residence and Garage, 514 Precious, San Antonio, Texas**

Dear Mr. Alcott:

You asked me to review the recent report prepared by Aladdin Environmental LLC on their evaluation of the subject residence and Garage. You also asked that I consider information from Mrs. Smith, to whom I spoke today, and that I make specific recommendations about further work at her residence. The purpose of this letter is to transmit my recommendations.

Background

The house itself had been successfully remediated, and we wrote a clearance report dated March 18, 2008.

According to Mrs. Smith, they moved back into the house March 19, 2008.

It was reported to us that the Smiths had experienced health symptoms in the Garage since moving back into the house. We performed an air quality evaluation of the Garage on April 30, 2008. The results of that investigation, reported May 9, 2008, indicated that hidden sources of water damage and mold contamination may be present in the Garage.

We understand John Spalten of Aladdin Environmental performed a limited environmental evaluation of the residence and Garage on May 21, 2008 (report dated May 23, 2008). His report indicated elevated levels of certain types of mold spores in the Garage and the residence. He prepared cleaning recommendations for the Garage and for several rooms/areas of the house.

On May 28, 2008, I spoke to Mrs. Smith, and she provided some history of her problems at the residence, including health problems for her, Mr. Smith, and her grandchildren.

Discussion of Data

Aladdin's report clearly shows elevated levels of *Aspergillus/Penicillium* type spores in the Garage and in the upstairs hall. This is consistent with our findings for the Garage for April 30, 2008. Movement of contents from the Garage to the inside of the residence may have brought contamination from the Garage inside.

Aladdin also found elevated levels of *Bipolaris*, *Chaetomium*, and *Alternaria*, at much lower levels. *Bipolaris* and *Alternaria* were also elevated, at low levels, in the Garage on April 30, 2008. Together with *Aspergillus/Penicillium* type spores, *Bipolaris* and *Alternaria* can thus be considered indicators or tracers of the influence of the Garage on the main part of the residence.

Chaetomium was found at trace levels in the Garage (1 spore) and two indoor air samples (2 spores in the upstairs hall and 1 spore in the Living Room) by Aladdin. One *Stachybotrys* spore, a trace level was found in the Living Room air. No *Stachybotrys* was found in any other sample. It is difficult to draw conclusions from trace levels, but the presence of *Chaetomium* and *Stachybotrys* spores in indoor air is somewhat problematic.

We understand that some contents, including rugs, linens, clothing, and mattresses, were stored in the Garage and that some have been partially moved back into the residence, starting about March 19, 2008. Therefore, the indoor environment in the residence may have been influenced by these contents and by the condition/area they were stored in for a period of months.

Information from Mrs. Smith

Mrs. Smith says they moved back to the residence March 19, 2008. She said she and her husband became sick when they tried to work in the Garage, unpacking boxes, and moving contents back into the house. They experienced red and swollen eyes, and Mrs. Smith said she had to go to the ER on one occasion because of facial swelling. She reported that her grandchildren experienced bloody noses and malaise when they stayed in the house for extended periods. They recovered after returning home.

Mrs. Smith also said she had a very bad taste in her mouth each morning, which she attributed to contamination of her mattress. She believed mattresses were responsible for some of her grandchildren's health problems. She said the mattresses had been stored in the Garage, uncovered, and that she had observed mold on the mattresses. Clothing and linens had been stored similarly.

Discussion and Recommendations

The Garage had demonstrable mold contamination during two sampling events. Based on those events, the contamination included *Penicillium/Aspergillus* type spores, mostly, but also included *Bipolaris/Drechslera*, and *Alternaria*. The exact location of this

contamination has not been determined, but it could be some of the contents that were stored in the Garage. In any event, it is likely that the contents stored in the Garage were contaminated during storage.

When contents were moved into the residence from the Garage, they likely became a source of contamination for the indoor environment, including indoor air. *Penicillium/Aspergillus* type spores, *Bipolaris/Drechslera*, and *Alternaria* were all found at elevated levels in some indoor air samples. The contents were also a potential source of direct exposure to occupants of the residence.

According to Mrs. Smith, occupants of the house have suffered health symptoms since they moved back into the house. Those symptoms are consistent with mold exposure and are apparently related temporally to the residence.

Direct contact with porous contents, capable of harboring significant amounts of mold spores, is a credible source of exposure to mold. Mattresses are especially significant, because of close contact to the face and other bare skin during sleep. Moreover, Mrs. Smith reported seeing mold contamination on her mattress.

I recommend the following be done immediately:

1. The mattresses, pillows, and any upholstered furniture should be removed from the house and not used again until demonstrably clean. This will necessitate the use of new or temporary bedding for the occupants. Alternatively, they can move from the house during this immediate phase.
2. A thorough inspection should be made of all contents, including those in the Garage, to determine if there is visible mold growth
3. Air-scrubbing should be used in the residence to assist in cleaning the indoor air and the indoor environment.

at least
1 up + 1 down

I recommend that some or all of the following be done after the history of the contents is better understood and after the contents have been inspected.

1. Linens and clothing should be thoroughly washed or cleaned.
2. Carpets should be thoroughly HEPA-vacuumed and then cleaned further with hot water extraction followed by rapid drying.
3. Other contents of the house should be cleaned by damp-wiping and/or HEPA-vacuuming in a manner similar to that recommended by Aladdin; however, all rooms should be included.

4. The Garage and its contents should be cleaned in a similar fashion.

During this cleaning phase it will be necessary for the occupants to be out of from the house. The cleaning can likely be finished in one day.

Indoor air quality should be retested, and the occupants may want to wait for those results before returning to the house.

The occupants should seek the advice of their physicians, and those physicians should be encouraged to be involved in the further investigation.

Closure

We will be happy to answer any questions concerning this review. It has been a pleasure working with you on this important assignment. We look forward to being of continuing service to you.

Sincerely,

ETC INFORMATION SERVICES, LLC

Donald J. Schaezler, Ph.D., P.E., CIH
President

Water Damage and Mold Contamination Evaluation – Smith Residence Garage – 514
Precious – May 2008
