ARTHUR V. MARTIN
ASSOCIATES INC
The Air Quality Consultants

5/14/09

Richard Namovich
President/CEO
Rejuvinair
4852 Pimlico Dr.
Tallahassee, FL 32309
Re: IAQ testing: Florida State University. Sandels Building

Mr. Namovich:

Please take note to the following: Laboratory results from an independent, certified microbiological lab show that there is a definite issue with mold growth throughout the majority of the HVAC coils tested. *Cladosporium, Chaetomium,* and *Stachybotrys* were all identified. All of these species can be problematic and detrimental to an individual's health.

Of particular note, the air sample taken on the first floor of the Sandels building detected the presence of the species *Chaetomium* at an airborne concentration level of 600 spores/cubic meter of air. To put that in perspective, the "high" average for **outdoor** levels at this time of year in FSU's zip code begins at 110 spores/cubic meter of year. The World Health Organization states that "pathogenic and toxigenic fungi are not acceptable in indoor air… at levels that are over 100/m^3 above the outdoor air's concentration." *Chaetomium* does have potential toxin production by some of its subspecies.

By no coincidence, this particular species of mold was found to exist on several of the sampled HVAC coils in this building. This is a clear indication that those coils are presenting the conditions for mold to grow, and the HVAC system's ductwork is acting as the transport mechanism. Air samples on the other floors did not show elevated levels, however, the species that were identified do reflect the same ones found on the HVAC coils. If a proper cleaning of these coils is not performed, the conditions we see on the first floor may become common to the other floors. Safe and healthy indoor air quality cannot be maintained without appropriately sanitized HVAC systems.

It is also important to note that the species *Stachybotrys* was found in the air sample taken from the first floor of Sandels, and low levels were detected on 2 of the HVAC coils. This is a serious concern. *Stachybotrys* is the notorious species referred to as "black mold" or "toxic mold" (although several species of mold have toxicity and all species are black at some point in their growth process). It is a large and sticky mold spore that is water-based, which means it is difficult to become airborne. These spores are not normally found in indoor air even if a large mold reservoir is present **unless** it is being disturbed, for example, by incompetent demolition/cleaning, or being transported by means of HVAC ductwork. *Stachybotrys* should not be detected in indoor air samples at all in a healthy building.

Concerning the 1st floor of this building: supplemental data found in the "Moldstat" report illustrates that it is statistically/mathematically improbable that the airborne mold found in that sample originates from an outdoor source. This is more proof that the HVAC system is the main source.

All samples taken from the HVAC coils were discovered to contain high to very-high concentration levels of non-viable materials such as dust, dirt, hyphal fragments, pollen, skin cells, etc. This presents another issue. The buildup of both non-viable and viable material such as fungi, bacteria, dirt, dust, grime, etc. acts as an insulator on the heat transfer surfaces of the HVAC system. It retards proper cooling. This results in a direct increase in energy consumption which results in increased operating costs. An additional detriment is that it shortens the usable life of the equipment resulting in early replacement. This combination of non-viable and viable buildup of bioaerosols leads to poor air quality and the potential for occupant illness due to inhalation and respiration of these particles.

All laboratory reports and photo documentation are included with this document. Please contact me if you have any further questions. Thank you.

Respectfully,

Kevin Martin

Kevin Martin
Vice President
Arthur V. Martin Associates, Inc.

EMLab P&K
1150 Bayhill Drive, Suite 100, San Bruno, CA 94066
(866) 888-6653 Fax (650) 829-5852 www.emlab.com

Client: Arthur V. Martin Associates
C/O: Mr. Kevin Martin
Re: Sandels

Date of Sampling: 05-11-2009
Date of Receipt: 05-12-2009
Date of Report: 05-26-2009

SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	14929542: Outdoor		14929614: Sandels , 1st floor		14929587: Sandels , 2nd floor		14929543: Sandels , 3rd floor		14929565: Sandels , 4th floor	
Comments (see below)	None		None		None		None		None	
Lab ID-Version‡:	2398744-1		2398745-1		2398746-1		2398747-1		2398748-1	
	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3
Alternaria	3	40								
Arthrinium										
Ascospores*	2	110								
Aureobasidium										
Basidiospores*			2	110	3	160	3	160		
Bipolaris/Drechslera group										
Botrytis										
Chaetomium			45	600	2	27				
Cladosporium	6	320	1	53			5	270	1	53
Curvularia					1	13				
Epicoccum										
Fusarium										
Myrothecium										
Nigrospora										
Oidium	2	27								
Other brown			2	27						
Penicillium/Aspergillus types†					2	110	1	53		
Pithomyces										
Rusts*										
Smuts*, Periconia, Myxomycetes*	2	27	1	13			1	13	2	27
Stachybotrys			4	53						
Stemphylium										
Torula										
Ulocladium										
Zygomycetes										
Background debris (1-4+)††	3+		3+		2+		3+		2+	
Hyphal fragments/m3	13		1,300		13		< 13		13	
Pollen/m3	< 13		27		< 13		< 13		< 13	
Skin cells (1-4+)	< 1+		1+		1+		1+		1+	
Sample volume (liters)	75		75		75		75		75	
§ TOTAL SPORE/m3		520		850		310		490		80

Comments:

* Most of these spore types are not seen with culturable methods (Andersen sampling), although some may appear as non-sporulating fungi. Most of the basidiospores are "mushroom" spores while the rusts and smuts are plant pathogens.
† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium, Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.
††Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher then reported. It is important to account for samples volumes when evaluating dust levels.
The Limit of Detection is the product of a raw count of 1 and 100 divided by the percent read. The analytical sensitivity (counts/m3) is the product of the Limit of Detection and 1000 divided by the sample volume.
‡ A "Version" greater than 1 indicates amended data.
§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.
TestAmerica Environmental Microbiology Laboratory, Inc.

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Re: Sandels

Date of Sampling: 05-11-2009
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DIRECT MICROSCOPIC EXAMINATION REPORT
(Wet Mount)

Background Debris and/or Description	Miscellaneous Spores Present*	MOLD GROWTH: Molds seen with underlying mycelial and/or sporulating structures†	Other Comments††	General Impression
Lab ID-Version‡: 2398733-1: Swab sample SW1: (SA) AHU 1A				
Heavy	Variety	1+ *Cladosporium* species	None	Mold growth
Lab ID-Version: 2398734-1: Swab sample SW2: (SA) AHU 1B				
Moderate	Few	2+ *Chaetomium* species	None	Mold growth
Lab ID-Version: 2398735-1: Swab sample SW3: (SA) AHU 2B				
Very Heavy	Variety	1+ *Cladosporium* species	None	Mold growth
Lab ID-Version: 2398736-1: Swab sample SW4: (SA) AHU 3A				
Heavy	Few	1+ *Chaetomium* species	A few *Stachybotrys* spores detected.	Mold growth
Lab ID-Version: 2398737-1: Swab sample SW5: (SA) AHU 3B				
Heavy	Few	None	A few *Stachybotrys* and *Chaetomium* spores detected.	Mold growth in vicinity?
Lab ID-Version: 2398738-1: Swab sample SW6: (SA) AHU 4A				
Heavy	Few	1+ *Chaetomium* species	None	Mold growth
Lab ID-Version: 2398739-1: Swab sample SW7: (SA) AHU 4B				
Heavy	Few	1+ *Cladosporium* species 1+ *Chaetomium* species	None	Mold growth
Lab ID-Version: 2398740-1: Swab sample SW8: (SA) AHU 5				
Very Heavy	Few	1+ *Cladosporium* species < 1+ *Chaetomium* species	None	Mold growth

Background Debris and/or Description	Miscellaneous Spores Present*	MOLD GROWTH: Molds seen with underlying mycelial and/or sporulating structures†	Other Comments††	General Impression
Lab ID-Version‡: 2398741-1: Swab sample SW9: (SA) AHU 6				
Very Heavy	Few	None	None	Normal trapping

* Indicative of normal conditions, i.e. seen on surfaces everywhere. Includes basidiospores (mushroom spores), myxomycetes, plant pathogens such as ascospores, rusts and smuts, and a mix of saprophytic genera with no particular spore type predominating. Distribution of spore types seen mirrors that usually seen outdoors.

† Quantities of molds seen growing are listed in the MOLD GROWTH column and are graded 1+ to 4+, with 4+ denoting the highest numbers.

†† Some comments may refer to the following: Most surfaces collect a mix of spores which are normally present in the outdoor environment. At times it is possible to note a skewing of the distribution of spore types, and also to note "marker" genera which may indicate indoor mold growth. Marker genera are those spore types which are present normally in very small numbers, but which multiply indoors when conditions are favorable for growth.

‡ A "Version" greater than 1 indicates amended data.