



U.S. Micro-Solutions, Inc.
 475-C Willow Crossing Road
 Greensburg, PA 15601
 724-853-4047 • Fax 724-853-4049

Client: Applied Technology Services, Inc.
 240 North Ave
 New Rochelle, NY 10801

Project: E02403

Sample Date: February 26, 2002

Date of Report: March 12, 2002

Attention: Steve Vanderwoude

Procedure

Four swab samples were received in our laboratory on February 27, 2002 for bacterial and fungal analyses. Two transparent tape samples were also received for microscopic examination of fungal conidia/hyphal fragments. The swab samples were placed in one milliliter (ml) of sterile deionized water, allowed to stand at room temperature for thirty minutes, vortexed vigorously and serial dilutions streaked to trypticase soy agar (TSA) and inhibitory mold agar (IMA) plates. The TSA plates were incubated at 35°C for ten days and at 27°C for two days. The IMA plates were incubated at 27°C for twelve days. The bacteria and fungi were identified and the number of CFU/in² calculated.

Interpretation

The bacteria and fungi isolated and identified in this report are expressed as a percent (%) of the most predominant genera recovered from the samples. The two swab samples had high concentrations of bacteria (#16-022602-01S and 02S). Three of the swab samples had a high concentration of fungi (16-022602-01S, 02S and 04S). The following chart is a guideline to use if a course of action is to be taken. It is only a guideline and not a standard.

Swab Guidelines:

<u>Bacteria</u>	<u>Fungi</u>	<u>Concentration</u>
< 10,000 CFU/in ²	< 1,000 CFU/in ²	Low Concentration
10,000 – 100,000 CFU/in ²	1,000 – 10,000 CFU/in ²	Moderate Concentration
> 100,000 CFU/in ²	> 10,000 CFU/in ²	High Concentration

Corynebacterium spp (gram-positive bacteria) are widespread in nature and are commonly found on the skin of humans and mammals. *Bacillus spp* are commonly recovered from a variety of environmental sites such as soil, air, dust, debris and surfaces that come into contact with water (e.g., fountains, condensation pans).

Pseudomonas fluorescens and *Pseudomonas putida* are gram-negative bacilli that are often isolated where there is a stagnant water source such as improperly drained drip pans, humidifiers, cooling towers, sink traps, factories, waste and sewage treatment plants.

Alternaria, *Cladosporium* and *Penicillium spp* are widely distributed in nature and can be commonly isolated in low concentrations from the indoor environment. These fungi are known to colonize the ventilation systems of homes, schools and office buildings. The isolation of fungi such as *Ulocladium spp* often suggest excess moisture and/or increased relative humidity within the areas sampled.

Fungi can easily grow on many common building materials when exposed to moisture. Increased concentrations of many fungal species within the occupied spaces of a residence or building may cause allergenic or hypersensitive reactions in the sensitized individual. There is no practical way to eliminate all fungal spores from the indoor environment. The way to control indoor fungal contamination is to control moisture. This is obtained by reducing indoor humidity to below 60% and by eliminating sources of moisture.

Herbert Layman

Herbert Layman BS, SM (ASCP)
Lab Director

Suzanne Mamrose

Suzanne Mamrose BS, SM (ASCP)
Lab Administrator

Results of Microbial Analysis

<i>Client:</i>	<i>Phone Number:</i>	<i>Fax Number:</i>	
Applied Technology Services	(914) 654-0080	(914) 654-1332	
<i>Address:</i>	<i>City:</i>	<i>State:</i>	<i>Zip Code:</i>
240 North Avenue	New Rochelle	NY	10801
<i>Attention:</i>	<i>Project:</i>		
Steve Vanderwoude	E02403		
<i>Sample Collection Date:</i>	<i>Date of Report:</i>		
February 26, 2002	March 12, 2002		
<i>Sampling Method:</i>			
Swabs / Transparent Tapes	Lab # 2528-02		

Sample Number	Media	Sample Description or Location	Results of Microbial Analysis %
----------------------	--------------	---------------------------------------	--

Swab Samples

16-022602-01S	TSA	12 – SW Corner - GWB – 20'E Column	Total Bacterial Count 600,000 CFU/in² <i>Pseudomonas fluorescens</i> – 80% <i>Pseudomonas putida</i> – 20%
	IMA		Total Fungal Count 120,000 CFU/in² <i>Alternaria spp</i> – 99% <i>Cladosporium spp</i> - <1%
16-022602-02S	TSA	12 – SW Corner - Under Water Fountain	Total Bacterial Count 13.2 x 10⁶ CFU/in² <i>Pseudomonas fluorescens</i> – 99% <i>Bacillus</i> - <1%
	IMA		Total Fungal Count 40,000 CFU/in² <i>Alternaria spp</i> – 98% <i>Cladosporium spp</i> – <1% <i>Penicillium spp</i> – <1%

Sample Number	Media	Sample Description or Location	Results of Microbial Analysis	%
16-022602-03S	TSA	12 – SW Corner - GWB – Under Covering	Total Bacterial Count 70,000 CFU/in ² <i>Bacillus spp</i> – 100%	
	IMA		Total Fungal Count 5,000 CFU/in ² <i>Epicoccum spp</i> – 40% <i>Penicillium spp</i> – 40% <i>Ulocladium spp</i> – 20%	
16-022602-04S	TSA	11 - Under Water Fountain	Total Bacterial Count 5,670 CFU/in ² <i>Corynebacterium spp</i> – 52% <i>Bacillus spp</i> – 48%	
	IMA		Total Fungal Count 351,000 CFU/in ² <i>Ulocladium spp</i> – 100%	

Direct Microscopic Examination of Transparent Tapes

16-022-602-01DR 12 – SW Corner – GWB – 20'E Column
(1 ml of H₂O)

Few *Alternaria* conidia, few dematiaceous conidia and rare *Cladosporium* conidia were noted on direct microscopic examination. Few hyphal fragments and hyaline conidia were also noted.

16-022-602-01DR 12 – SW Corner – GWB – 20'E Column
Original

Moderate *Alternaria* conidia, *Cladosporium* conidia, few dematiaceous conidia, rare *Curvularia* conidia and *Bipolaris* conidia were noted on direct microscopic examination. Few hyaline conidia and rare hyphal fragments were also noted.

Sample Number	Media	Sample Description or Location	Results of Microbial Analysis	%
------------------	-------	-----------------------------------	----------------------------------	---

16-022-602-04DR 11 – Under Water Fountain
(1 ml of H₂O)

Few *Alternaria* conidia, *Aspergillus/Penicillium* conidia and rare dematiaceous conidia were noted on direct microscopic examination. Few hyaline conidia and rare hyphal fragments were also noted.

16-022-602-04DR 11 – Under Water Fountain
Original

Moderate *Alternaria* conidia, dematiaceous conidia, few *Cladosporium* conidia and rare *Aspergillus/Penicillium* conidia were noted on direct microscopic examination. Rare hyaline conidia and hyphal fragments were also noted.