



www.esi4u.com (410)-867-6262

Discovery Environmental Inspection Report

Project Contact Information

Alex Baylor Environmental Specialists Environmental Safety Office 13306 Old Marlboro Pike Upper Marlboro, MD 20772 301-952-6760 alex.baylor@pgcps.org	Rose Valley Elementary School 56,252Ft ²	Vinny Gigliotti Certified Indoor Environmentalist Environmental Solutions, Inc. 6114 Drum Point Rd Deale, MD 20751 410-867-6262 Vinny@esi4u.com
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Property Location

9800 Jacqueline Dr, Fort Washington, MD 20744

Date of Inspection 2/27/2019



Prepared By: Vinny Gigliotti

Certified Indoor Environmentalist (CIE)

Dear Mr. Baylor,

The results of the inspection and testing performed at Rose Valley Elementary School are concluded, and the findings are enclosed. I want to thank you for allowing ESI the opportunity to service your indoor environmental needs. Included in this report are the observations, lab results, and recommendations from ESI's inspection and testing.

Background Information

The Prince Georges County Public School Environmental Team has taken a proactive approach in cleaning the above-mentioned school to ensure there are no health or environmental risks related to microbial and biological hazards. Historically elevated levels of humidity, condensation from pipes, periodic steam leaks and outdated HVAC systems, may have contributed to water damage ceiling tiles and colonization of mold spores in various area of the school.

Purpose

ESI was engaged to inspect the school in a random sufficient manner. Classrooms, administration offices, and common area building materials and contents, will be visually inspected for water damage and microbial growth.

In each location inspected, the indoor air quality will be tested for elevated levels of carbon dioxide and carbon monoxide, in addition to measuring the relative humidity and temperature. Microbial / biological hazards within the breathable air space will also be tested.

Based upon the visible assessment, instrument readings and lab results, ESI will determine if additional remediation is required.

Observations and instrument readings

The following table is designed for this project. Some of the fields may not be filled in due to not being applicable during the time of the inspection. You will notice either a 'YES' or 'NO' in the table. 'YES' indicates that mold and /or water damage was detected and 'NO' indicates it was not. If 'YES' is noted, remediation recommendation will be included for the area inspected. Please note, the total cubic feet of air per room is an approximate number.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
2	2374505	N/A	10.7	65.3	380	001	10,850	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2	CMU	1	1	7	5	1	0	2
No	No	No	No	No	No	No	N/A	No
Observation Notes								
<ul style="list-style-type: none"> There were NO signs of mold growth or elevated levels of moisture detected within this location. The remediation and cleaning efforts were completed successfully, and the indoor air quality should pose no health or environmental risk, as the total spore count was 560 spores per cubic meter of air. 								
Recommendations								
None								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
10	2374507	N/A	20.9	71.4	890	001	10,500	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2	CMU	1	23	5	3	1	0	2
No	No	No	No	No	No	Rust	N/A	No
Inspected								
<ul style="list-style-type: none"> Rust stains were seen on the convector. There were no signs of mold growth or elevated levels of moisture detected within this location. The remediation and cleaning efforts were completed successfully, and the indoor air quality should pose no health or environmental risk, as the total spore count was 200 spores per cubic meter of air. 								
Recommendations								
None								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
Gym Office	2374500	N/A	9.9	68.9	380	001	1,360	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2	CMU	1	0	0	3	1	0	2
YES	No	No	N/A	N/A	No	Rust	N/A	No
Observation Notes								
<ul style="list-style-type: none"> Two ceiling tiles were water stained. Water staining was seen on the desk, chair, and cabinets within this location. Contractor debris was seen on top of the cabinets. Rust was seen on the convector. The indoor air quality should pose no health or environmental risk, as the spore count was 400 spores per cubic meter of air. 								
Recommendations								
<ul style="list-style-type: none"> Remove and replace the water damaged ceiling tiles. The contaminated ceiling tiles should be placed in a sealed plastic bag for disposal. HEPA vacuum the contractor debris on top of the cabinetry, then damp-wipe with an anti-microbial agent. HEPA vacuum, then damp-wipe desk, chair and cabinets with an anti-microbial agent to remove water staining. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
13	2374501	N/A	10.2	71.6	416	001	8,960	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	2	10	4	1	0	4
Yes	No	No	No	No	No	No	N/A	No
Observation Notes								
<ul style="list-style-type: none"> Five ceiling tiles were water stained along the exterior wall. The indoor air quality should pose no health or environmental risk, as the spore count was 160 spores per cubic meter of air. 								
Recommendations								
<ul style="list-style-type: none"> Remove and replace the water damaged ceiling tiles. The contaminated ceiling tiles should be placed in a sealed plastic bag for disposal. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
21	2374504	N/A	12.6	76.1	470	001	8,960	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	10	5	4	1	0	7
No	No	No	No	No	YES	No	N/A	No
Observation Notes								
<ul style="list-style-type: none"> Water staining, and discolorations were seen on the sink cabinetry. The ceiling tile framing along the exterior wall was rusted. The indoor air quality should pose no health or environmental risk, as the spore count was 200 spores per cubic meter of air. 								
Recommendations								
<ul style="list-style-type: none"> HEPA vacuum, then damp-wipe the sink cabinetry with an anti-microbial agent to remove water staining and discolorations. 								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
General Office	2374503	N/A	16.5	76.6	655	001	2,520	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x2	CMU	2	1	0	3	1	0	2
No	No	No	No	N/A	No	No	N/A	No
Observation Notes								
<ul style="list-style-type: none"> There were NO signs of mold growth or elevated levels of moisture detected within this location. The remediation and cleaning efforts were completed successfully, and the indoor air quality should pose no health or environmental risk, as the total spore count was 240 spores per cubic meter of air. 								
Recommendations								
None								

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
4	2378013	Yes	19.9	62.6	459	001	10,500	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convactor	HVAC Diffusors	Windows
2x2	CMU	2	10	3	22	2	0	2
No	YES	No	YES	No	YES	Rust	N/A	No
Observation Notes								
<ul style="list-style-type: none"> • Visible microbial contamination was seen on the sink cabinetry, left CMU wall, chalkboard legs, one children's desk and on three of the mobile cabinets. • The floor tiles were heavily stained. • A surface swab was collected from the right chalkboard leg for Direct Identification Analysis. The Analysis indicates the presence of "Moderate" Aspergillus Species, "Rare" Cladosporium and Smuts/Myxomycetes. • Rust was seen on the convectors. • The indoor air quality should pose no health or environmental risk, as the spore count was 120 spores per cubic meter of air. 								
Recommendations								
<ul style="list-style-type: none"> • HEPA vacuum, spray antimicrobial, then damp wipe microbial growth from the sink cabinetry, CMU wall, chalkboard legs, children's desk and mobile cabinetry. • Engage HEPA filtered air scrubber in this location for approximately 4-6 hours. Damp wipe all horizontal surfaces with an antimicrobial, then fog the breathable air space. 								

Interpretation of Lab Results

In the enclosed Air Cassette Analysis report, you will notice Fungal Identification, which is the species detected in the breathable airspace inside, and outside. The Raw count is the actual number of spores counted on the slide, and the Count/m³ are the spores per cubic meter of air. The other particles are non-living particles such as dander, mycelial fragments, pollens, etc.

In order for humans to be exposed indoors, fungal spores, fragments, or metabolites must be released into the air and inhaled, physically contacted (dermal exposure), or ingested. Whether symptoms develop in people exposed to fungi depends on the nature of the fungal material (e.g., allergenic, toxic, or infectious), the amount of exposure, and the susceptibility of exposed persons.

Susceptibility varies with genetic predisposition (e.g., allergic reactions do not always occur in all individuals), age, state of health, and concurrent exposures.

Air Sampling Lab Results



Name: Environmental Solutions, Inc
 Address: 534-A Deale Road
 Deale, MD 20751
 Phone: 410-867-6262

Project Number: 9800 Jacqueline Dr.
 P.O. Number:
 Project Name: Rose Valley Elementary
 Collected Date: 2/26/2019
 Received Date: 2/27/2019 9:30:00 AM

SanAir ID Number
19009034
 FINAL REPORT
 3/1/2019 10:53:45 AM

Analyst: Shepperson, Josh

Air Cassette Analysis

ND = None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19009034-001			19009034-002			19009034-003			19009034-004		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2374513			2374505			2378013			2374507		
Sample Identification	Outdoors			Classroom #2			Classroom #4			Classroom #10		
Sample Type	Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5		
Volume	25 Liters			25 Liters			25 Liters			25 Liters		
Analytical Sensitivity	40 Count/M ³			40 Count/M ³			40 Count/M ³			40 Count/M ³		
Background Density	2			2			1+			1+		
Other	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%
Dander	2	80	n/a	24	960	n/a	11	440	n/a	48	1920	n/a
Fibers	2	80	n/a	3	120	n/a				6	240	n/a
Mycelial Fragments	1	40	n/a	1	40	n/a						
Pollen				1	40	n/a						
Fungal Identification	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%	Raw Count	Count/M ³	%
Aspergillus/Penicillium	4	160	50	11	440	79	2	80	67	2	80	40
Basidiospores	3	120	38							1	40	20
Bipolaris/Drechslera												
Cladosporium species	1	40	13	1	40	7				2	80	40
Curvularia species												
Epicoccum species				2	80	14						
Pestalotia- / Pestalotiopsis-like												
Smuts/Myxomycetes							1	40	33			
TOTAL	8	320		14	560		3	120		5	200	

Signature:

Date: 3/1/2019

Reviewed:

Date: 3/1/2019



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Analyst: Shepperson, Josh

Air Cassette Analysis

ND - None Detected. Blank spaces indicate no spores detected.

SanAir ID Number	19009034-005			19009034-006			19009034-007			19009034-008		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2374500			2374501			2374504			2374503		
Sample Identification	Gym Office			Classroom #13			Classroom #21			General Office		
Sample Type	Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5		
Volume	25 Liters			25 Liters			25 Liters			25 Liters		
Analytical Sensitivity	40 Count/M ³			40 Count/M ³			40 Count/M ³			40 Count/M ³		
Background Density	2			1+			2+			1+		
Other	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Dander	30	1200	n/a	11	440	n/a	39	1560	n/a	17	680	n/a
Fibers	4	160	n/a	1	40	n/a	5	200	n/a	6	240	n/a
Mycelial Fragments	3	120	n/a	1	40	n/a						
Pollen												
Fungal Identification	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%	Raw Count	Count/M³	%
Aspergillus/Penicillium	1	40	10									
Basidiospores	2	80	20	1	40	25	4	160	80	6	240	>99
Bipolaris/Drechslera	4	160	40									
Cladosporium species				2	80	50						
Curvularia species	1	40	10				1	40	20			
Epicoccum species												
Pestalotia- / Pestalotiopsis-like	2	80	20									
Smuts/Myxomycetes				1	40	25						
TOTAL	10	400		4	160		5	200		6	240	

Signature:

Date: 3/1/2019

Reviewed:

Date: 3/1/2019

Direct Identification Lab Results



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Received Date: 2/27/2019 9:30:00 AM

Analyst: Shepperson, Josh

Direct Identification Analysis

SanAir ID: 19009034-009 Sample #: Swab Classroom #4 Right Chalkboard Leg

D1 - Direct Identification Analysis on Surface Swab using STL 104

Direct ID of Mold

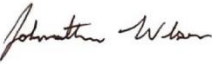
Fungi	Estimated Amount
Aspergillus species	Moderate
Cladosporium species	Rare
Smuts/Myxomycetes	Rare

Estimated Amount	Indication of Growth	Evidence of Mycelial Fragments/Conidiophores
Rare	Not Likely	None
Light	Possible	Some, 10 to 25% of Tape Covered
Moderate	Probable	Abundant, 25 to 50% of Tape Covered
Heavy	Significant	Throughout, 50 to 100% of Tape Covered

*Refer to additional information page for further details



Signature: 
Date: 3/1/2019

Reviewed: 
Date: 3/1/2019



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Organism Descriptions

The descriptions of the organisms presented are derived from various reference materials. The laboratory report is based on the data derived from the samples submitted and no interpretation of the data, as to potential, or actual, health effects resulting from exposure to the numbers of organisms found, can be made by laboratory personnel. Any interpretation of the potential health effects of the presence of this organism must be made by qualified professional personnel with first hand knowledge of the sample site, and the problems associated with that site.

Dander - Comprised of human and/or animal skin cells. Counts may be higher in carpeted rooms and in rooms with more traffic.
Health Effects: May cause allergies.

Fibers - This category can include clothing, carpet, and insulation fibers.

Mycelial Fragments - A mycelium (plural = mycelia) is the "body" of a fungus. It is a collective term for hyphae (singular = hypha), which are the tubular units of the mycelium usually composed of chitin. The terms hyphae and mycelial fragments are used interchangeably. [This information was referenced from the mycology text "The Fifth Kingdom"] In some cases a fungal identification cannot be obtained due to lack of sporulation. Only the mycelial fragments are present, and cannot be identified without the distinguishing characteristics of the spores or the structures they grow from.
Health Effects: Allergic reactions may occur in the presence of spores (conidia) or mycelial/hyphal fragments.

Pollen - Produced by trees, flowers, weeds and grasses. The level of pollen production can depend on water availability, precipitation, temperature, and light. Pollen is usually dispersed by either insects or the wind.
Health Effects: Mostly effects the respiratory tract with hay fever symptoms but has also been shown to trigger asthma in some people.

Aspergillus species - A genus of fungi containing over 180 recognized species. Members of this genus have been recovered from a variety of habitats, but are especially common as saprophytes on decaying vegetation, soils, stored food, and feed products in tropical and subtropical regions. Some species are xerophilic. Some species are parasitic on insects, plants and animals, including man. Some species are reported mycotoxin producers. Both Penicillium and Aspergillus spores share similar morphology on non-viable analysis and therefore are lumped together into the same group. Only through the visualization of reproductive structures can the genera be distinguished.
Health Effects: Can produce type I and III fungal hypersensitivities. All of the species contained in this genus should be considered allergenic. Various Aspergillus species are a common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchospasms. Chronic cases may develop pulmonary emphysema. Members of this genus are reported to cause a variety of opportunistic infections of the ears and eyes. Severe pulmonary infections may also occur.
References: Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control. London and New York: Taylor & Francis, 2001.

Aspergillus/Penicillium - These spores are easily aerosolized. Only through the visualization of reproductive structures can the genera be distinguished. Also included in this group are the spores of the genera Acremonium, Phialophora, Verticillium, Paecilomyces, etc. Small, round spores of this group lack the necessary distinguishing characteristics when seen on non-viable examination.
Health Effects: Can cause a variety of symptoms including allergic reactions. Most symptoms occur if the individual is immunocompromised in some way (HIV, cancer, etc). Both Penicillium and Aspergillus spores share similar morphology on non-viable analysis and therefore are lumped together into the same group.

Basidiospores - From the Subphylum Basidiomycotina which contains the mushrooms, shelf fungi, and a variety of other macrofungi. They are saprophytes, ectomycorrhizal fungi or agents of wood rot, which may destroy the structure wood of buildings. It is extremely difficult to identify a specific genera of mushrooms by using standard culture plate techniques. Some basidiomycete spores can be identified by spore morphology; however, some care should be exercised with regard to specific identification. The release of basidiospores is dependant upon moisture, and they are dispersed by wind.
Health Effects: Many have the potential to produce a variety of toxins. Members of this group may trigger Type I and III fungal hypersensitivity reactions. Rarely reported as opportunistic pathogens.



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Organism Descriptions

The descriptions of the organisms presented are derived from various reference materials. The laboratory report is based on the data derived from the samples submitted and no interpretation of the data, as to potential, or actual, health effects resulting from exposure to the numbers of organisms found, can be made by laboratory personnel. Any interpretation of the potential health effects of the presence of this organism must be made by qualified professional personnel with first hand knowledge of the sample site, and the problems associated with that site.

Bipolaris/Drechslera - Found on grasses, grains, various plants, and decaying food. May grow in semi-dry environments. Some species are found in indoor environments. Because of the microscopic similarities between the two genera, they are grouped together on non-viable analyses.

Health Effects: Can occasionally cause corneal infection of the eye. This group of fungi constitutes the most commonly reported causes of allergic fungal sinusitis. They produce type I fungal hypersensitivity in humans.

References: St-Germain, Guy, and Richard Summerbell. Identifying Filamentous Fungi: A Clinical Laboratory Handbook. California: Star Publishing Co., 1996.

Cladosporium species - The most commonly identified outdoor fungus. The outdoor numbers are reduced in the winter and are often high in the summer. Often found indoors in numbers less than outdoor numbers. It is commonly found on the surface of fiberglass duct liner in the interior of supply ducts. A wide variety of plants are food sources for this fungus. It is found on dead plants, woody plants, food, straw, soil, paint and textiles. Often found in dirty refrigerators and especially in reservoirs where condensation is collected, on moist window frames it can easily be seen covering the whole painted area with a velvety olive green layer.

Health Effects: It is a common allergen. It can cause mycosis. Common cause of extrinsic asthma (immediate-type hypersensitivity: type I). Acute symptoms include edema and bronchospasms, chronic cases may develop pulmonary emphysema. Illnesses caused by this genus can include phaeohyphomycosis, chromoblastomycosis, hay fever and common allergies.

References: Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control. London and New York: Taylor & Francis, 2001.

Curvularia species - Curvularia is found on plant material and is considered a saprobe. It has also been isolated from dust samples and from wallpaper.

Health Effects: It has been reported to cause type I hypersensitivity and to be a cause of allergic fungal sinusitis. It may cause corneal infections, mycetoma and infections in immune compromised hosts.

References: De Hoog, G.S., J. Guarro, J. Gene, and M.J. Figueras. Atlas of Clinical Fungi, 2nd Edition. The Netherlands: CBS, 2000.

Epicoccum species - It is found in plants, soil, grains, textiles, and paper products. Frequently isolated from air and occasionally occurs in house dust. Is a saprophyte and considered a weakly parasitic secondary invader of plants, moldy paper and textiles. Epicoccum is usually isolated with either Cladosporium species or Aureobasidium species.

Health Effects: A common allergen. It also has the potential to produce type I fungal hypersensitivity reactions.

References: Flannigan, Brian, Robert A. Samson, and J. David Miller, eds. Microorganisms in Home and Indoor Work Environments: Diversity, Health Impacts, Investigation, and Control. London and New York: Taylor & Francis, 2001.

Pestalotia- / Pestalotiopsis-like - This group consists of several genera. Mostly plant pathogens.

Smuts/Myxomycetes - Smuts and Myxomycetes are parasitic plant pathogens. They are typically grouped together due to their association with plants, the outdoors and because they share similar microscopic morphology.

Health Effects: Can produce type I fungal hypersensitivity reactions.

References: Martin, G.W., C.J. Alexopoulos, and M.L. Farr. The Genera of Myxomycetes. Iowa City, Iowa: University of Iowa Press, 1983.

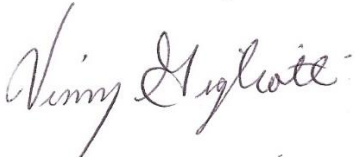
Conclusions/Recommendations

Although no elevated airborne mold spores were detected in Classroom #4, the room should have a wall-to-wall microbial cleaning due to the widespread presence of microbial growth on the contents and surfaces. In addition, the gym office should also be properly cleaned due to water staining/damage on multiple contents. Please refer to the instructions listed above.

The other rooms inspected appeared to be relatively clean besides water staining on the ceiling tiles in Classroom # 13 and the sink cabinetry in Classroom #21. The samples in this report do not indicate the presence of elevated airborne mold spores for the specific locations tested and should not pose health or environmental risks. Please refer to the attached lab results for identification and spore count per location.

I hope you found our service beneficial. If you have any questions or concerns, please feel free to contact me at 410-867-6262.

Respectfully,



Vinny Gigliotti (CIE)
Environmental Solutions, Inc.



Industry References

Since the 1993 New York City Department of Health (NYCDOH) document (Assessment and remediation of *Stachybotrys Atra* in Indoor Environments) was produced, several other guidance documents have been written. This report was developed in accordance with and including:

- *Fungal Contamination in Buildings: A Guide to Recognition and Management* (Health Canada, 1995).
- *Control of Moisture Problems Affecting Biological Indoor Air Quality* (Flannigan and Morey, 1996).
- *Bioaerosols: Assessment and Control* (American Conference of Government Industrial Hygienists [ACGIH], 1999).
- *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (NYCDOH, 2000). [external link]
- *Mold Remediation in Schools and Commercial Buildings* (U.S. EPA, 2001).
- *Report of the Microbial Growth Task Force* (The American Industrial Hygiene Association, 2001).
- *Fungal Contamination: A manual for investigation, remediation and control (BECi) 2005.*
- *29 CFR 1910, Occupational Safety and Health Standards for General Industry, U.S. Department of Labor*
- Institute of Inspection, Cleaning and Restoration Certification Standard IICRC S520 *29 CFR 1926, Occupational Safety and Health Standards for the Construction Industry, U.S. Department of Labor*
- *40 CFR 61, National Emission Standards for Hazardous Air Pollutants (NESHAP), U.S. Environmental Protection Agency*
- *ACR 2006, Assessment, Cleaning and Restoration of HVAC Systems, National Air Duct Cleaners Association, 2006**
- *ASHRAE Standards 62.1 or 62.2*
- *ASTM D-1653, Standard Test Methods for Water Vapor Transmission of Organic Coating Films*
- *Bioaerosols: Assessment and Control, American Conference of Governmental Industrial Hygienists, 1999*
- *Field Guide for Determination of Biological Contaminants in Environmental Samples, American Industrial Hygiene Association, 2005*
- *A Guide for Mold Remediation in Schools and Commercial Buildings, US Environmental Protection Agency, 2001 Protecting the Built Environment: Cleaning for Health, Michael A. Berry Ph.D., 1993*
- *IICRC S100 Standard and Reference Guide for Professional Carpet Cleaning, Fourth Edition, Institute of Inspection, Cleaning and Restoration Certification, (S100)**
- *IICRC S300 Standard and Reference Guide for Professional Upholstery Cleaning, First Edition, Institute of Inspection, Cleaning and Restoration Certification, (S300)**
- *ANSI/IICRC S500 Standard and Reference Guide for Professional Water Damage Restoration, Third Edition, Institute of Inspection, Cleaning and Restoration Certification, (S500)**