ESI Environmental Solutions, Inc.

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

Discovery Environmental Inspection Report

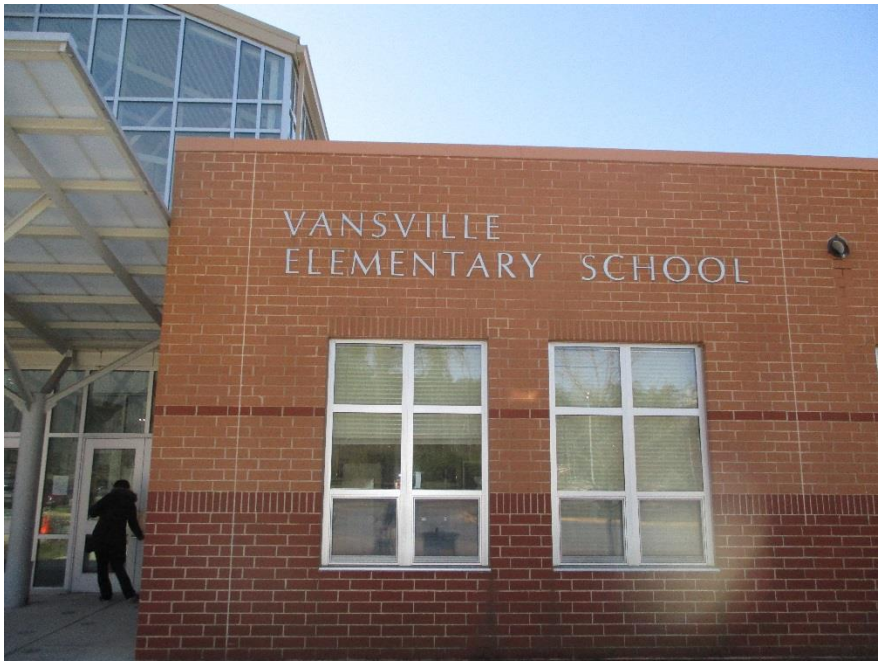
Project Contact Information

Alex Baylor Environmental Specialists Environmental Safety Office 13306 Old Marlboro Pike Upper Marlboro, MD 20772 301-952-6760 alex.baylor@pgcps.org	Vansville Elementary 94,975 Ft^2	Vinny Gigliotti Certified Indoor Environmentalist Environmental Solutions, Inc. 6114 Drum Point Rd Deale, MD 20751 410-867-6262 Vinny@esi4u.com

Property Location

6813 Ammendale Road, Beltsville, MD 20705

Date of Inspection: 3/26/2019



Prepared By: Vinny Gigliotti & Ryan Fitzgerald

Certified Indoor Environmentalist (CIE)

Dear Mr. Baylor,

The results of the inspection and testing performed at Vansville Elementary 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 Historically elevated levels of humidity, condensation from pipes, periodic steam leaks, and outdated HVAC systems, may have contributed to water damage ceiling tiles and colonization of mold spores in various area of the school.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 visual assessment, instrument readings and lab results, ESI will determine if additional remediation in 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 that the cubic feet of air in the rooms inspected is an approximate number.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
B124	2428566	N/A	19.7	70.1	823	000	9,675	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	**Windows**
2x4	CMU/SR	1	0	10	8	0	3	6
Yes	No	No	N/A	No	No	N/A	No	No

Observation Notes

- Two ceiling tiles were water stained.
- The indoor air quality should not pose environmental or exposure risks at these levels as no airborne mold spores or elevated levels of Carbon monoxide or Carbon dioxide were detected.

Recommendations

- 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.	
B117	2428561	N/A	19.2	71.9	**1,018**	000	9,225	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	**Windows**
2x4	CMU/SR	1	0	9	6	0	3	6
No	No	No	N/A	No	No	N/A	No	No

Observations Notes

- Light accumulations of dust were on the diffusors.
- The Carbon Dioxide CO2 level in this room were slightly elevated at 1,018 ppm.
- No airborne mold spores were detected during the time of the inspection and should not pose environmental or exposure risks.

Recommendations

- To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
D136	2428556	N/A	18.5	71.2	**1,119**	000	12,240	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU/SR	1	1	0	3	0	5	6
No	No	No	No	N/A	No	N/A	No	No

Observation Notes

- Light accumulations of dust were on the diffusors
- The Carbon Dioxide CO2 level in this room were slightly elevated at 1,119 ppm. The CO2 level may have been increased due to the room being occupied.
- The total spore count was 80 Count/M^3 and should not pose environmental or exposure risks at these levels.

Recommendations

- To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
A223	2428551	N/A	24.4	71.0	**1,149**	000	6,050	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	**Windows**
2x4	CMU/S	1	2	5	4	0	4	0
No	No	No	No	No	No	N/A	No	N/A

Observation Notes

- There were no signs of visible mold growth or elevated levels of moisture detected within this location.
- The Carbon Dioxide CO2 level in this room were slightly elevated at 1,149 ppm.
- The total spore count was 80 Count/M^3 and should not pose environmental or exposure risks at these levels.

Recommendations

- To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
A217	2428590	N/A	30.5	72.6	**2,088**	000	8,775	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	**Windows**
2x4	CMU/S	1	26	3	4	0	5	8
No	No	No	No	No	No	N/A	No	No

Observation Notes

- There were no signs of visible mold growth or elevated levels of moisture detected within this location.
- The Carbon Dioxide CO2 level in this room were elevated at 2,088 ppm.
- The total spore count was 200 Count/M^3 and should not pose environmental or exposure risks at these levels.

Recommendations

- To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
B204	2428595	N/A	23.1	69.0	835	000	8,160	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	**Windows**
2x4	CMU/S	1	0	4	4	0	4	6
No	No	No	N/A	No	No	N/A	No	No

Observation Notes

- There were no signs of visible mold growth or elevated levels of moisture detected within this location.
- The indoor air quality should not pose environmental or exposure risks at these levels. No airborne mold spores or elevated levels of Carbon monoxide and Carbon dioxide were detected.

Recommendations

None

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
B221	2428585	N/A	29.4	72.6	**2,120**	000	8,250	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	**Windows**
2x4	CMU/S	1	26	2	4	0	4	6
No	No	No	No	No	No	N/A	No	No

Observation Notes

- There were no signs of visible mold growth or elevated levels of moisture detected within this location.
- The Carbon Dioxide CO2 level in this room were elevated at 2,120 ppm. The CO2 level may have been increased due to the room being occupied.
- The total spore count was 160 Count/M^3 and should not pose environmental or exposure risks at these levels.

Recommendations

- To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
A106	2428580	N/A	30.2	71.0	**1,629**	000	6,915	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	**Windows**
2x4	CMU/S	1	26	1	5	0	4	6
No	No	No	No	No	No	N/A	No	No

Observation Notes

- There were no signs of visible mold growth or elevated levels of moisture detected within this location.
- The Carbon Dioxide CO2 level in this room were elevated at 1,629 ppm.
- The total spore count was 240 Count/M^3 and should not pose environmental or exposure risks at these levels.

Recommendations

- To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
A121	2428560	N/A	22.3	70.1	**1,615**	000	9,900	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU/S	1	26	3	4	0	3	6
No	No	No	No	No	No	N/A	No	No

Observation Notes

- There were no signs of visible mold growth or elevated levels of moisture detected within this location.
- The Carbon Dioxide CO2 level in this room were elevated at 1,615 ppm.
- The total spore count was 40 Count/M^3 and should not pose environmental or exposure risks at these levels.

Recommendations

- To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

Location	IAQ Sample #	Swab	R/H	Temp	CO2	Co	Cubic feet of air.	
C106	2428565	N/A	29.0	70.5	**1,528**	000	8,400	
Inspected								
Ceiling Tiles	Walls	Teachers Desk	Children's Desk	Tables	Cabinets Shelving	Convector	HVAC Diffusors	Windows
2x4	CMU	1	0	7	5	0	4	6
No	No	No	N/A	No	No	N/A	No	No

Observation Notes

- There were no signs of visible mold growth or elevated levels of moisture detected within this location.
- The Carbon Dioxide CO2 level in this room were elevated at 1,629 ppm.
- The total spore count was 40 Count/M^3 and should not pose environmental or exposure risks at these levels.

Recommendations

- To reduce Carbon dioxide (CO2) levels, increase air exchange within this room. Ventilating or circulating the air with a fan will also reduce Carbon dioxide (CO2) levels.

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

SanAir Technologies Laboratory

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

Project Number: 6813 Ammendale Rd
P.O. Number:
Project Name: Vansville Elementary
Collected Date: 3/26/2019
Received Date: 3/27/2019 9:35:00 AM

SanAir ID Number
19014140
FINAL REPORT
3/28/2019 9:34:59 AM

Analyst: Shepperson, Josh

Air Cassette Analysis

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

SanAir ID Number	19014140-001			19014140-002			19014140-003			19014140-004		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2428564			2428566			2428561			2428556		
Sample Identification	Outdoors			Classroom #B124			Classroom #B117			Classroom #D136		
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/M³			40 Count/M³			40 Count/M³			40 Count/M³		
Background Density	1+			1+			2			2		
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Dander	1	40	n/a	12	480	n/a	8	320	n/a	43	1720	n/a
Fibers	1	40	n/a	2	80	n/a	1	40	n/a	4	160	n/a
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Ascospores												
Aspergillus/Penicillium	1	40	17									
Basidiospores												
Cladosporium species	5	200	83							2	80	>99
TOTAL	**6**	**240**								**2**	**80**	

Signature: Date: 3/27/2019 Reviewed: Date: 3/28/2019

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Analyst: Shepperson, Josh

Air Cassette Analysis

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

SanAir ID Number	19014140-005			19014140-006			19014140-007			19014140-008		
Analysis Using STL	107C			107C			107C			107C		
Sample Number	2428551			2428590			2428595			2428585		
Sample Identification	Classroom #A223			Classroom #A217			Classroom #B204			Classroom #B221		
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/M³			40 Count/M³			40 Count/M³			40 Count/M³		
Background Density	4			2			1+			2+		
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Dander	16	640	n/a	51	2040	n/a	20	800	n/a	92	3680	n/a
Fibers				4	160	n/a	1	40	n/a	19	760	n/a
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**
Ascospores										1	40	25
Aspergillus/Penicillium	1	40	50	5	200	>99				2	80	50
Basidiospores										1	40	25
Cladosporium species	1	40	50									
TOTAL	**2**	**80**		**5**	**200**					**4**	**160**	

Signature: Date: 3/27/2019 Reviewed: Date: 3/28/2019

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SanAir ID Number
19014140
FINAL REPORT
3/28/2019 9:34:59 AM

Analyst: Shepperson, Josh

Air Cassette Analysis

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

SanAir ID Number	19014140-009			19014140-010			19014140-011			
Analysis Using STL	107C			107C			107C			
Sample Number	2428580			2428560			2428565			
Sample Identification	Classroom #A106			Classroom #A121			Classroom #C106			
Sample Type	Air Cassette - Micro-5			Air Cassette - Micro-5			Air Cassette - Micro-5			
Volume	25 Liters			25 Liters			25 Liters			
Analytical Sensitivity	40 Count/M³			40 Count/M³			40 Count/M³			
Background Density	2			2			2			
Other	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	
Dander	18	720	n/a	27	1080	n/a	34	1360	n/a	
Fibers	1	40	n/a	7	280	n/a	3	120	n/a	
Fungal Identification	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	**Raw Count**	**Count/M³**	**%**	
Ascospores										
Aspergillus/Penicillium	2	80	33				1	40	>99	
Basidiospores	3	120	50	1	40	>99				
Cladosporium species	1	40	17							
TOTAL	**6**	**240**		**1**	**40**		**1**	**40**		

Signature: Date: 3/27/2019 Reviewed: Date: 3/28/2019

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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.

Ascospores - From the fungal Subphylum Ascomycotina. Ascospores are ubiquitous in nature and are commonly found in the outdoor environment. This class contains the "sac fungi" and yeasts. Some ascospores can be identified by spore morphology, however; some care should be excercised with regard to specific identification. They are identified on tape lifts and non-viable analysis by the fact that they have no attachment scars and are sometimes enclosed in sheaths with or without sacs. Ascomycetes may develop both sexual and asexual stages. Rain and high humidity may help asci to release, and dispurse ascospores, which is why during these weather conditions there is a great increase in counts.
Health Effects: This group contains possible allergens.

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.

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 bronchiospasms, 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.

Conclusions/Recommendations

The school was relatively clean during the inspection. No elevated airborne mold spores were detected in the locations tested and should pose no health of environmental risks. Please refer to the attached lab results for identification and spore count per location.

Elevated carbon dioxide was detected in several rooms which may have been due to the rooms being occupied or recently occupied. The carbon dioxide should be monitored, and the recommendations should be followed as needed.

In addition, the water stained ceiling tiles in room B124 should be removed and discarded.

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)**