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October 13, 2017

Ms. Gail Woicekowski, School Business Administrator/Board Secretary
Mr. Doug De Matteo, Supervisor of Buildings and Grounds
Hackettstown Public Schools
315 Washington Street
Hackettstown, NJ 079540

Re: Results Post Remediation Verification Assessment
Hatchery Hill Elementary School

Dear Ms. Woicekowski,

We enclose our report on Post Remediation Verification (PRV) assessment in the remediated areas of Hatchery Hill Elementary School. Several rooms were found to exhibit unusual fungal populations in initial sampling results and remediation was indicated. Results of the countable air and surface sampling conducted in these locations are included in the report.

Remedial activities, including air scrubbing and surface cleaning, were conducted by ServPro of Toms River and RK performed our PRV assessment on October 3, 2017. The PRV sampling results were unremarkable. Results of the countable air sampling from the remediated rooms reflected outdoor conditions with basidiospore levels being dominant and other common outdoor fungi being present. This is what is expected in clean and dry indoor environments.

If you have any questions or need further information please feel free to call us at (908) 454-6316. We look forward to continuing to serve you.

Sincerely,

Michael McGuinness, CIH, CET, CIAQP
ABIH-certified in Indoor Environmental Quality
Principal
Attachment

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Post Remediation Verification Assessment
Hatchery Hill Elementary School

1. Introduction and Summary

Remedial activities, including air scrubbing and surface cleaning, were conducted by ServPro of Toms River in the following rooms:

- C103
- A117/Nurse
- C101
- B100
- C108
- B103

RK performed our PRV assessment on October 3, 2017, which included a visual assessment and countable fungi in the air and on surfaces. The PRV sampling results were unremarkable. Results of the countable air sampling from the remediated rooms reflected outdoor conditions with basidiospores being dominant and other common outdoor fungi being present. The results from the gel-tape samples are "normal background". This indicates that the mold spores are present in the settled dust are those expected to be present as they are very common outdoors and are not associated with the presence of wet or damp building materials or mold growth on these materials. This is what is expected in clean and dry indoor environments.

2. Results

Wei Tang, Ph.D. completed analysis of our samples at QLab in Metuchen, NJ. They are successful participants in the Environmental Microbiology Proficiency Analytical Testing (EMPAT) program administered by the American Industrial Hygiene Association (AIHA). Copies of the laboratory reports and sample logs showing sample locations and analyses performed are appended at the end of this report.

2.1 Interpretation of Sampling Results

For a discussion of our procedures relative to results interpretation, please see our initial report for this school.

2.2 Air Samples for Countable Fungi

We collected six (6) composite air samples from the remediated classrooms in the school and two (2) outdoor reference samples to be analyzed for countable fungal material. We used Allergenco-D cassettes and a high volume air sampling pump operating at a flow rate of 15 liters per minute for 5 minutes yielding a collection volume of 75 liters. Composite samples are taken in various locations in a given room rather than one stationary location in an effort to approximate the actual airborne biodiversity in the room.

Air samples for countable fungal material identify both viable and non-viable fungal spores resulting in a "spore count" for all spores in the sample regardless of viability of the individual spores. Viable spores will reproduce if given sufficient moisture and nutrients whereas the non-viable spores will not. Please note that, with the exception of direct infection of individuals with

significant immune system performance or other serious health conditions, the health effects associated with exposure to fungi are not tied to the viability of fungal spores.

As air enters the cassette, spores and other biogenic materials become impacted on a glass slide coated with adhesive material and airflow continues out the exit orifice. The air sample cassettes are forwarded to the laboratory where the glass slide containing the captured materials is removed and analyzed using direct microscopic methods and staining techniques.

Results are presented as fungal structures per cubic meter of air sampled (str/M^3). These results are considered presumptive identification of the noted species since the analysis is performed optically and does not assess colonies of fungi, reproductive structures, or associated staining and other morphological assessments.

Hackettstown Board of Education
Hatchery Hill Elementary School **(17-133)**
Analysis Type: Direct Exam **Sample Type: Air**
Sample Device: high volume pump @ 15 lpm and Alergenco-D cassettes

Table 1: Air Samples for Countable Fungi - 10/3/17

Sample ID	Sample Location	Sample Test Sequence	Sample Test Result	Lab Rpt Appx Pg	Comment	Result [1] (str/M^3)	Dominant Species (str/M3)	Hyphae[2]
2150668	Outdoor Air Reference	NA	NA	1	NA	7,600	Basidiospores - 6,300 (83%)	No
2150658	C103	PRV	Normal fungal populations	1	Unremarkable	2,500	Basidiospores - 2,300 (93%)	No
2150636	A117/Nurse	PRV	Normal fungal populations	1	Unremarkable	4,200	Basidiospores - 1,800 (43%) Myxomycetes/Smuts/Periconia - 990 (24%) Ascospores - 450 (11%) *Cladosporium* , Group C - 410 (10%)	No
2150640	C101	PRV	Normal fungal populations	2	Unremarkable	3,000	Basidiospores - 1,800 (60%) Myxomycetes/Smuts/Perioconia - 720 (24%)	Yes - 40 (1%)
2150667	B100	PRV	Normal fungal populations	2	Unremarkable	2,600	Basidiospores - 1,100 (42%) Myxomycetes/Smuts/Periconia - 910 (34%) *Cladosporium* , Group C - 400 (15%)	Yes - 13 (<1%)
2150548	C108	PRV	Normal fungal populations	2	Unremarkable	3,700	Basidiospores - 1,600 (43%) Myxomycetes/Smuts/Periconia -1,300 (35%) *Cladosporium* , Group C - 510 (14%)	No
2150537	B103	PRV	Normal fungal populations	3	Unremarkable	4,000	Basidiospores - 2,200 (55%) Myxomycetes/Smuts/Periconia - 1,400 (35%)	Yes - 27 (<1%)
2150671	Outdoor Air Reference 10/3	NA	NA	3	NA	8,200	Basidiospores - 6,800 (83%) *Cladosporium* , Group C - 960 (12%)	Yes - 40 (<1%)

(*) indicate unusual fungal populations are present in the collected sample location
(**) indicate locations that exhbit unusual fungal populations and should not be occupied until remedial action is completed and PRV tests indicate a safe environment
[1] results are expressed as "fungal structures per cubic meter" or str/M^3
[2] "Hyphae" or hyphal fragments are expressed as "fungal structures per cubic meter" or str/M^3

+ - Hyphal fragments are expressed as "fungal structures per cubic meter" or str/M^3. Hyphal fragments are from the "roots" that fungi use to attach their growth structures to the substrate materials upon which they grow. An excessive amount of hyphal structures suggest fungal growth in the vicinity where we collected the sample. In this case, three (3) indoor samples identified hyphal fragments, however these fragments were less than one percent or one percent (<1% or 1%) of the sample. This is of no consequence.

Results of the countable air sampling from the remediated rooms reflected outdoor conditions with basidiospore levels being dominant and other common outdoor fungi being present. This is what is expected in clean and dry indoor environments.

2.3 Countable Fungal Identification in Settled Dust via Optical Microscopy

We collected two (2) composite samples for countable fungi from hard surfaces in A117/Nurse and Room C103. We used special gel tapes that were analyzed using optical microscopic and staining techniques. This method provides quick, qualitative, and descriptive results that may confirm or infer fungal growth in the area(s) sampled. Certain fungal genera can also be identified in the sample. The results indicate the relative density of fungal structures observed under the microscope, not a concentration to determine the relative risk of exposure.

Peak density of biomass (spores, reproductive structures, and hyphae) is the result for individual fungal genera on a range of percentage of the 200x view field of the microscope. When individual fungal species can be identified, the peak densities for these species are reported as follows:

- ++++ (4+) signifies very heavy presence or growth of a particular fungus and the biomass covers more than 50% of the 200x view field;

- +++ (3+) signifies heavy presence or growth of a particular fungus covering 10% to 50% of the 200x view field;

- ++ (2+) signifies moderate growth or presence of a particular fungus covering 3%to 10% of the 200x view field;

- + (1+) signifies slight growth or presence of a particular fungus covering less than 3% of the 200x view field;

- <1+ signifies very light growth or presence of a particular fungus

The extent of fungal growth and amplification is described qualitatively as a "Mold Sense" Fungal Biomass Level. The ranges for the Biomass Level for the total of the fungal genera present in the sample are as follows:

- 1A – Normal Background: The designation of "normal background" is made when a mix of spore types is present with the same general distribution as is usually found outdoors and that would be expected to be present in clean, dry indoor environments.

- 2A – Settled Biomass: This term usually indicates that a small amount of mold spores are present either due to poor cleaning, poor filtration or fallout from recent activities that may have disturbed mold growth.

- 2B – Residual Biomass: Residual biomass usually refers to higher levels of materials that remain when compared to level 2A. It may indicate the presence of mold growth in the vicinity of the sample collection site or that mold remediation efforts are incomplete and that more cleaning and/or air scrubbing are necessary to achieve a clean environment.

- 3A, 3B or 3C – Slight, Moderate, or Heavy Mold Growth: These categories indicate that mold growth is present. Low, medium, or high amounts of spores, hyphae or other fungal structures are present on the samples. These levels also indicate mold contamination is present in the areas or locations where the sample was collected.

Results are listed in Table 2 as follows:

Hackettstown Board of Education
Hatchery Hill Elementary School **(17-133)**
Analysis Type: Direct Exam **Sample Type: Surface**
Sample Device: Gel-Tape

Table 2: Tape Lifts for Countable Fungi 10/3/17

Sample ID	RK-HH-01T	RK-HH-02T
Sample Location	A117/Nurse	C103
Lab Rpt Appx Pg	1	1
Indicator Spp	None	None
Fungal BioMass Level	1: Normal Background	1: Normal Background
Mold/Yeast Growth Observed	No	No
Mold/Yeast Coverage	Trace (<3%)	Trace (<3%)
Sample Debris Coverage	Low (3-10%)	Medium (10-50%)
Hyphae Present	No	No
Impression	Unremarkable	Unremarkable

The results from the gel-tape samples are "normal background". This indicates that the mold spores are present in the settled dust are those expected to be present as they are very common outdoors and are not associated with the presence of wet or damp building materials or mold growth on these materials. These results are unremarkable and indicative of a dry indoor environment.

3. Conclusions and Recommendations

Results of air and surface samples are unremarkable. Results of the countable air sampling from the remediated rooms reflected outdoor conditions with basidiospores being dominant and other common outdoor fungi being present. The results from the gel-tape samples are "normal

background". This indicates that the mold spores are present in the settled dust are those expected to be present as they are very common outdoors and are not associated with the presence of wet or damp building materials or mold growth on these materials. This is what is expected in clean and dry indoor environments. The remediated rooms may be re-occupied.

Report prepared by:

Michael McGuinness

Michael McGuinness, CIH, CET, CIAQP
ABIH-certified in Indoor Environmental Quality
Principal

References

American College of Occupational and Environmental Medicine (ACOEM). *Evidence Based Statement - Adverse Human Health Effects Associated with Molds in the Indoor Environment.*

American Conference of Governmental Industrial Hygienists (ACGIH). *Bioaerosols: Assessment and Control.* Macher, J. 1989.

American Industrial Hygiene Association (AIHA). *Field Guide for the Determination of Biological Contaminants in Environmental Samples* (1st and 2nd Editions). Dillon, HK, Heinsohn, PA, and Miller, JD. Falls Church, VA. 1996.

American Industrial Hygiene Association (AIHA). *Recognition, Evaluation and Control of Indoor Mold.* Prezant, B., D. Weekes and J.D. Miller, Ed's. Falls Church, VA. 2003.

American Industrial Hygiene Association (AIHA). *The Facts about Mold* pamphlet.a2003.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE). *Standard 62-2013: Ventilation for Acceptable Indoor Air Quality (ANSI Approved).* 2013.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE). *Standard 55: Thermal Comfort*

Berry, M. *Protecting the Built Environment - Cleaning for Health*. TriComm Press. Research Triangle Park, NC. 1994.

California Environmental Protection Agency, Air Resources Board, Report to the California Legislature. *Indoor Air Pollution in California.* 2005.

Canada Mortgage and Housing Corporation (CMHC). *Moldy Houses: Why They Are and Why We Care* and *Additional Analysis of Wallaceburg Data: the Wallaceburg Health and Housing Studies.* 2002.

Health Canada. *Fungal Contamination in Public Buildings: Health Effects and Investigation Methods.* 2004.

Institute of Inspection, Cleaning and Restoration Certification (IICRC). *IICRC S-500: Standard and Reference Guide for Professional Water Damage Remediation*. 3rd Edition, 2006.

Institute of Inspection, Cleaning and Restoration Certification (IICRC). *IICRC S-520: Standard and Reference Guide for Professional Mold Remediation*. 2003.

Institute of Medicine (U.S.) - Committee on the Assessment of Asthma and Indoor Air. Washington, D.C. National Academy Press, 2000. *Clearing the Air: Asthma and Indoor Air Exposures* and *Damp Indoor Spaces and Health.* 2004.

International Academy of Indoor Air Sciences, International Society of Indoor Air Quality and Climate. Proceedings from annual Indoor Air conferences, 2002, 2005, 2008 and 2011.

McGuinness, M. (U.S.) – *Analysis of Settled Dust – Another Diagnostic Tool for the IEQ Practitioner*. Proceedings of the 2011 International Society of Indoor Air Quality and Climate (ISIAQ) Conference; Austin, TX; June 2011

McGuinness, M. *Post-remediation Verification – One Practitioner's Approach.* Proceedings of the 2011 International Society of Indoor Air Quality and Climate (ISIAQ) Conference; Austin, TX; June 2011

McGuinness, M. *"Initial Microbiological Assessment in Four New Condominiums*." Proceedings from the Third International Conference on Bioaerosols, Mycotoxins, and Fungi; Eastern New York Occupational and Environmental Health Center, Albany, NY. 2003

McGuinness, M., Matthew Dieda, Meredith Yuran, David Wieller and Amy Warner. *"An Analysis of Outdoor Air Reference Samples in the Eastern US."* Proceedings of Indoor Air 2002, the 9th International Conference on Indoor Air Quality and Climate, Monterey, CA.

McGuinness, M. *"Mold Remediation Procedures at an Elementary School in New Jersey."* Proceedings of Indoor Air 2002, the 9th International Conference on Indoor Air Quality and Climate, Monterey, CA.

New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology. *Guidelines on Assessment and Remediation of Fungi in Indoor Environments.* 2000.

New York State Committee for Occupational Safety and Health (NYCOSH). *Methods for Evaluation of Indoor Mold Growth.* NY State Department of Health

US Environmental Protection Agency (EPA). *Mold Remediation in Schools and Commercial Buildings.* EPA 402-K-01-001, March 2001.

US Environmental Protection Agency (EPA). *Building Air Quality – A Guide for Facility Owners and Managers.*

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AIHA EMPAT Lab ID: 178794

AccuScience™ Analysis Report

Analysis: AccuScience Premium Level 3 Fungal Spore Count™
Client: RK Environmental
Phillipsburg, NJ
Contact: McGuinness, Michael
Project ID: Hatchery Hill Elem School
Date Sampled: 10/3/2017

QLab Job No.: CH17-1003-13
Date Received: 10/3/2017
Date Analyzed: 10/4/2017
Date Reported: 10/4/2017

Reviewed by: WT **Approved by:** Wei-Chih Tang, Ph.D., Lab Director

Lab Sample No.	CH17-1003-13(1)			CH17-1003-13(2)			CH17-1003-13(3)		
Sample ID	**2150668**			**2150658**			**2150636**		
Sample Location	**OAR**			**C103**			**A117 / Nurse**		
Sample Type (Device)	Air (Allergenco-D)			Air (Allergenco-D)			Air (Allergenco-D)		
Air Volume	75 L			75 L			75 L		
Total Concentration (counts/m³)**	**7,600 cts/m³**			**2,500 cts/m³**			**4,200 cts/m³**		
Mycologix Profile Group 1, 2 & 3	**cts/smp***	**counts/m³**	**%**	**cts/smp***	**counts/m³**	**%**	**cts/smp***	**counts/m³**	**%**
1. Common Dominant Spores	DL = 53; LQL = 1100 cts/m³			DL = 53; LQL = 1100 cts/m³			DL = 53; LQL = 1100 cts/m³		
Ascospores, non-specified (O)	30	400	5				34	450	11
Basidiospores (O,I)	473	6,300	83	170	2,300	93	136	1,800	43
Cladosporium, Group HM (O)	8	110	1						
Aspergillus/Penicillium-like, DOT (O)									
#Cluster-Chain-Loose Spore Profile™									
Cladosporium, Group C (O,I)	45	**600**	**8**	8	**110**	**4**	31	**410**	**10**
Cladosporium, Group S (I)									
Aspergillus/Penicillium-like (I,O)							26	**350**	**8**
## Cluster-Chain-Loose Spore Profile™									*0% - 0% - 100%*
Cluster(s)									
2. Indoor Hydrophilic Fungi#	DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³		
Stachybotrys (I)									
Chaetomium (I)									
Ulocladium (I)									
Memnoniella (I)									
Trichoderma (I)									
Scopulariopsis (I)									
3. Others	DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³		
Hyphal fragment (O,I)									
Alternaria (O,I)	2	27	<1						
Cercospora (O)									
Curvularia (O,I)							2	27	<1
Drechslera/Bipolaris-like (O)	1	13	<1						
Epicoccum (O)	1	13	<1						
Fusarium (O,I)									
Myxomycetes/Smuts/Periconia (O,I)	5	67	<1	2	27	1	74	990	24
Nigrospora (O)									
Pithomyces (O)							2	27	<1
Rusts (O)	5	67	<1	2	27	1	7	93	2
Unknown (O,I)	1	13	<1	1	13	<1	3	40	<1
Skin Cells Rating	None			Low			Medium		
Debris Rating	2 (6 - 25%)			2 (6 - 25%)			3 (26 - 75%)		
Note									

*: cts/smp: counts per sample. **: All concentrations are rounded to two digits of significant figures. Total concentrations/percentages may not be equal to the sum of individual concentrations/percentages due to rounding. #: Water-loving indoor fungi (min Aw ≥0.89). Absence of hydrophilic fungi does not exclude the possibility of a water damage history. DL: detection limit (analytical sensitivity). LQL: Lower quantitation limit = 20 x DL. Upper quantitation limit depends on sample conditions. ## Asp/Pen-like spores: Loose: 1 to 2 spores; Chain: 3 to 9 spores; Cluster: 10 spores or more. O: Mostly outdoor origin with rare exceptions; I: Mostly indoor origin with rare exceptions. Distinct Outdoor Type (DOT): Distinct outdoor Asp/Pen spores that can be easily differentiated from indoor Asp/Pen spores. DOT is specific to the batch of samples collected at the same time and cannot be used for other batches.

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AIHA EMPAT Lab ID: 178794

AccuScience™ Analysis Report

Analysis: AccuScience Premium Level 3 Fungal Spore Count™
Client: RK Environmental
Phillipsburg, NJ
Contact: McGuinness, Michael
Project ID: Hatchery Hill Elem School
Date Sampled: 10/3/2017

QLab Job No.: CH17-1003-13
Date Received: 10/3/2017
Date Analyzed: 10/4/2017
Date Reported: 10/4/2017

Lab Sample No.	CH17-1003-13(4)			CH17-1003-13(5)			CH17-1003-13(6)		
Sample ID	**2150640**			**2150667**			**2150548**		
Sample Location	**C101**			**B100**			**C108**		
Sample Type (Device)	Air (Allergenco-D)			Air (Allergenco-D)			Air (Allergenco-D)		
Air Volume	75 L			75 L			75 L		
Total Concentration (counts/m³)**	**3,000 cts/m³**			**2,600 cts/m³**			**3,700 cts/m³**		
Mycologix Profile Group 1, 2 & 3	**cts/smp***	**counts/m³**	**%**	**cts/smp***	**counts/m³**	**%**	**cts/smp***	**counts/m³**	**%**
1. Common Dominant Spores	DL = 53; LQL = 1100 cts/m³			DL = 53; LQL = 1100 cts/m³			DL = 53; LQL = 1100 cts/m³		
Ascospores, non-specified (O)	8	110	4				8	110	3
Basidiospores (O,I)	136	1,800	60	79	1,100	42	117	1,600	43
Cladosporium, Group HM (O)									
Aspergillus/Penicillium-like, DOT (O)									
#Cluster-Chain-Loose Spore Profile™									
Cladosporium, Group C (O,I)	11	**150**	**5**	30	**400**	**15**	38	**510**	**14**
Cladosporium, Group S (I)									
Aspergillus/Penicillium-like (I,O)	8	**110**	**4**						
## Cluster-Chain-Loose Spore Profile™	*0% - 0% - 100%*								
Cluster(s)									
2. Indoor Hydrophilic Fungi#	DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³		
Stachybotrys (I)									
Chaetomium (I)									
Ulocladium (I)									
Memnoniella (I)									
Trichoderma (I)									
Scopulariopsis (I)									
3. Others	DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³		
Hyphal fragment (O,I)	3	40	1	1	13	<1			
Alternaria (O,I)									
Cercospora (O)									
Curvularia (O,I)							2	27	<1
Drechslera/Bipolaris-like (O)									
Epicoccum (O)				1	13	<1			
Fusarium (O,I)									
Myxomycetes/Smuts/Periconia (O,I)	54	720	24	68	910	34	96	1,300	35
Nigrospora (O)									
Pithomyces (O)	2	27	<1	3	40	2	1	13	<1
Rusts (O)	3	40	1	11	150	6	12	160	4
Unknown (O,I)				1	13	<1			
Skin Cells Rating	High			High			High		
Debris Rating	3 (26 - 75%)			3 (26 - 75%)			3 (26 - 75%)		
Note									

*: cts/smp: counts per sample. **: All concentrations are rounded to two digits of significant figures. Total concentrations/percentages may not be equal to the sum of individual concentrations/percentages due to rounding. #: Water-loving indoor fungi (min Aw ≥0.89). Absence of hydrophilic fungi does not exclude the possibility of a water damage history. DL: detection limit (analytical sensitivity). LQL: Lower quantitation limit = 20 x DL. Upper quantitation limit depends on sample conditions. ## Asp/Pen-like spores: Loose: 1 to 2 spores; Chain: 3 to 9 spores; Cluster: 10 spores or more. O: Mostly outdoor origin with rare exceptions; I: Mostly indoor origin with rare exceptions. Distinct Outdoor Type (DOT): Distinct outdoor Asp/Pen spores that can be easily differentiated from indoor Asp/Pen spores. DOT is specific to the batch of samples collected at the same time and cannot be used for other batches.

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AccuScience™ Analysis Report

Analysis: AccuScience Premium Level 3 Fungal Spore Count™
Client: RK Environmental
Phillipsburg, NJ
Contact: McGuinness, Michael
Project ID: Hatchery Hill Elem School
Date Sampled: 10/3/2017

QLab Job No.: CH17-1003-13
Date Received: 10/3/2017
Date Analyzed: 10/4/2017
Date Reported: 10/4/2017

Lab Sample No.	CH17-1003-13(7)			CH17-1003-13(8)		
Sample ID	**2150537**			**2150653**		
Sample Location	**B103**			**OAR 10 / 3**		
Sample Type (Device)	Air (Allergenco-D)			Air (Allergenco-D)		
Air Volume	75 L			75 L		
Total Concentration (counts/m³)**	**4,000 cts/m³**			**8,200 cts/m³**		
Mycologix Profile Group 1, 2 & 3	**cts/smp***	**counts/m³**	**%**	**cts/smp***	**counts/m³**	**%**
1. Common Dominant Spores	DL = 53; LQL = 1100 cts/m³			DL = 53; LQL = 1100 cts/m³		
Ascospores, non-specified (O)				8	110	1
Basidiospores (O,I)	166	2,200	55	510	6,800	83
Cladosporium, Group HM (O)				8	110	1
Aspergillus/Penicillium-like, DOT (O)						
#Cluster-Chain-Loose Spore Profile™						
Cladosporium, Group C (O,I)	11	**150**	**4**	72	**960**	**12**
Cladosporium, Group S (I)						
Aspergillus/Penicillium-like (I,O)						
## Cluster-Chain-Loose Spore Profile™						
Cluster(s)						
2. Indoor Hydrophilic Fungi#	DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³		
Stachybotrys (I)						
Chaetomium (I)						
Ulocladium (I)						
Memnoniella (I)						
Trichoderma (I)						
Scopulariopsis (I)						
3. Others	DL = 13; LQL = 270 cts/m³			DL = 13; LQL = 270 cts/m³		
Hyphal fragment (O,I)	2	27	<1	3	40	<1
Alternaria (O,I)	1	13	<1			
Cercospora (O)						
Curvularia (O,I)	3	40	<1			
Drechslera/Bipolaris-like (O)						
Epicoccum (O)	2	27	<1	1	13	<1
Fusarium (O,I)						
Myxomycetes/Smuts/Periconia (O,I)	103	1,400	35	5	67	<1
Nigrospora (O)						
Pithomyces (O)	1	13	<1	1	13	<1
Rusts (O)	10	130	3	9	120	1
Unknown (O,I)	1	13	<1			
Skin Cells Rating	High			Trace		
Debris Rating	3 (26 - 75%)			2 (6 - 25%)		
Note						

*: cts/smp: counts per sample. **: All concentrations are rounded to two digits of significant figures. Total concentrations/percentages may not be equal to the sum of individual concentrations/percentages due to rounding. #: Water-loving indoor fungi (min Aw ≥0.89). Absence of hydrophilic fungi does not exclude the possibility of a water damage history. DL: detection limit (analytical sensitivity). LQL: Lower quantitation limit = 20 x DL. Upper quantitation limit depends on sample conditions. ## Asp/Pen-like spores: Loose: 1 to 2 spores; Chain: 3 to 9 spores; Cluster: 10 spores or more. O: Mostly outdoor origin with rare exceptions; I: Mostly indoor origin with rare exceptions. Distinct Outdoor Type (DOT): Distinct outdoor Asp/Pen spores that can be easily differentiated from indoor Asp/Pen spores. DOT is specific to the batch of samples collected at the same time and cannot be used for other batches.

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Client: RK Environmental
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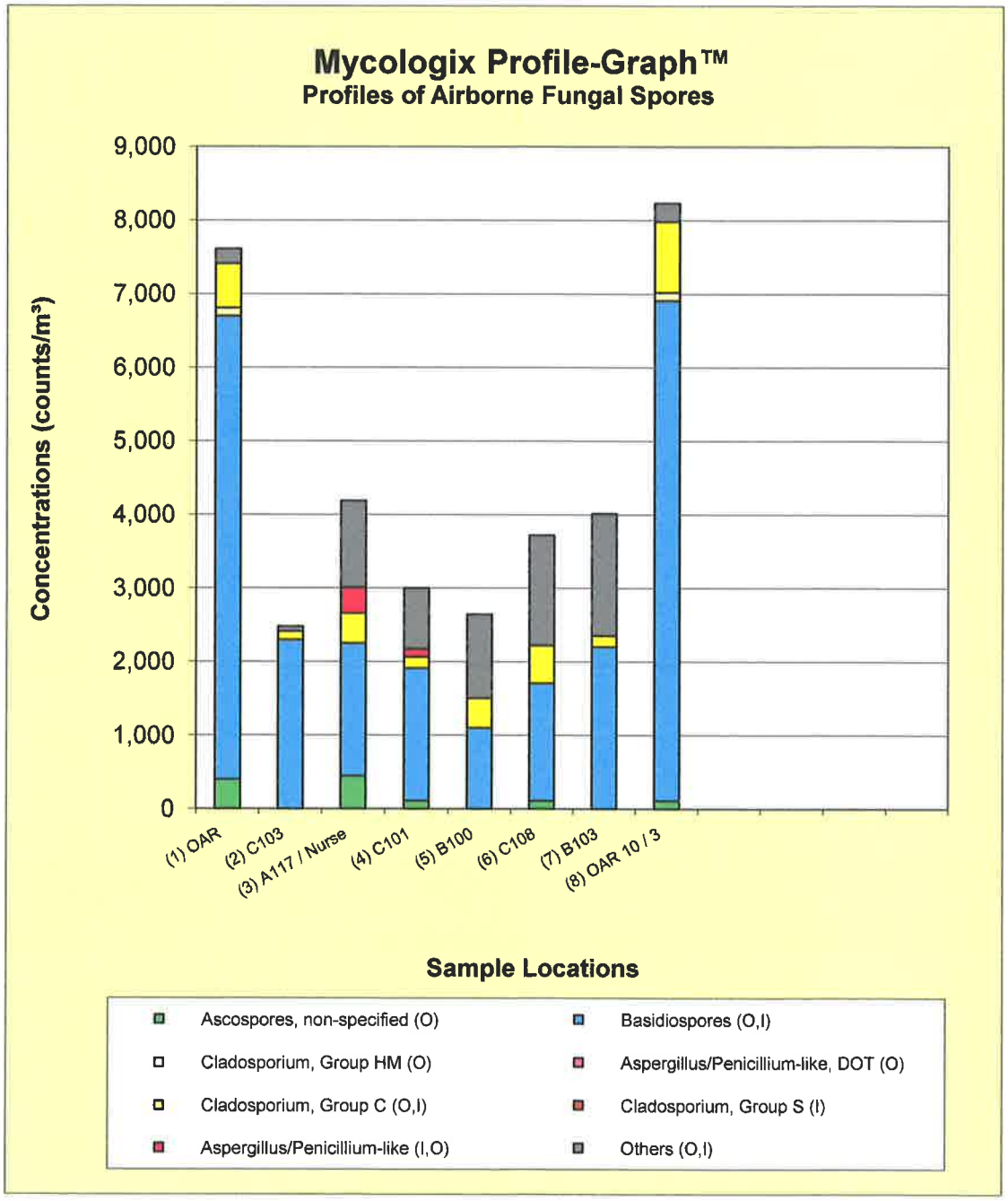
Contact: McGuinness, Michael
Project ID: Hatchery Hill Elem School
Date Sampled: 10/3/2017

QLab Job No.: CH17-1003-13
Date Received: 10/3/2017
Date Analyzed: 10/4/2017
Date Reported: 10/4/2017

Reviewed by: WT **Approved by:** Wei-Chih Tang, Ph.D., Lab Director

Please see original data for complete interpretation.



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Chain of Custody

Toll Free Tel/Fax: 888-QLab-Wei (888-752-2934)
Tel: 856-489-0011 www.QLabUSA.com

Lab Job No.: (lab use only) CH17-1003-13	**Telephone No.:** 908-454-6316	**Company Contact:** McGuinness. Michael
Company Name: RK Environmental	**Please select:** Fax Report ( ) or Email Report ( )	**Project ID:** Hatchery Hill Elem School
Company Address: 401 St. James Ave, Phillipsburg, NJ	**Fax No.:**	**Date/Time sampled:** 10/3/17. :
	Email address: rkenvironmental@entermail.net	**P.O. No.:**

	Sample ID	Sample Location	Analysis Code	Turnaround Time (Std,1-2 Day,3-6 Hr) Std	Day	24 Hr	Sample Type (see below)	Volume (L) or Area (in^2)	Note (e.g.: material type, weather, etc.)
1	2150688	[redacted] OAR	FD-01HP			24	Allergen D	75L	
2	2150658	C103	↓			↓	↓	↓	
3	2150636	A117 / Nurse							
4	2150640	C101							
5	2150667	B100							
6	2150548	C108							
7	2150537	B103							
8	2150653	OAR 10/3	↓				↓	↓	
	RK-HH								
9	01T	A117 / Nurse	FD-02HP				Gel Tape	Compare	
10	02T	C103	↓			↓	↓	↓	

Sample Types: Air-O-Cell, Bio-Tape, swab, Andersen, bulk, dust, filter cassette, potable water, non-potable water, etc. **Material Types:** wood, paper, etc.

Common Analysis Codes: Fungi, Direct Exam: **(1) Spore Trap: FD-01HP; (2) Tape-lift: FD-02HP; (3) Swab, Bulk, Dust: FD-04HP.**
Fungi, Culture: **(1) Andersen/plate: FC-11; (2) Swab, Bulk, Dust: FC-12**

Submitted by: (sign) _____ (print) Adam Simon Date submitted: 10/3/17

Received by: (sign) _____ (print) WAYNE WANG Date and time received: 10/3/17 3:19PM

RK_COC_Blank

QLab, 256 Bridge St, Metuchen, NJ 08840
info@qlabusa.com www.QLABusa.com
AIHA EMPAT Lab ID: 178794

AccuScience™ Analysis Report

Analysis: AccuScience Premium Direct Exam (FD-02HP)
Client: RK Environmental
Phillipsburg, NJ
Contact: McGuinness, Michael
Project ID: Hatchery Hill Elem School

QLab Job No.: CH17-1003-13
Date Sampled: 10/3/2017
Date Received: 10/3/2017
Date Reported: 10/4/2017

Reviewed by: WT **Approved by:** Wei-Chih Tang, Ph.D., Lab Director

Lab Sample No.	CH17-1003-13(9)		CH17-1003-13(10)			
Sample ID	**RK-HH 01T**		**RK-HH 02T**			
Sample Location	**A117 / Nurse**		**C103**			
Sample Type (Device)	Surface (Gel-Tape)		Surface (Gel-Tape)			
Date Analyzed	10/3/2017		10/3/2017			
	(1) Peak Density (within 1 mm dia.)*		**(1) Peak Density (within 1 mm dia.)***			
Identification	Spores	Hyphae/Structure	Spores	Hyphae/Structure		
Major Hydrophilic Fungi:						
Stachybotrys						
Chaetomium						
Ulocladium						
Acremonium						
Trichoderma						
Aureobasidium						
Yeasts (cells)						
Other Fungi:						
Aspergillus/Penicillium-like						
Aspergillus						
Penicillium						
Cladosporium						
Alternaria						
Curvularia						
Epicoccum						
Myxomycetes/smuts/Periconia	+		+			
Nigrospora						
Pithomyces						
Unidentifiable w/o culturing						
Summary	**(2) Overall Coverage**		**(2) Overall Coverage**			
Sample Size Examined	**150 mm²**		**150 mm²**			
Mycologix™ Fungal Biomass Level#	**1: Normal Background**		**1: Normal Background**			
Mold/Yeast Growth Observed	**No**		**No**			
Sample Mold/Yeast Coverage**	**Trace: < 3%**		**Trace: < 3%**			
Sample Debris Coverage**	**Low: 3 - 10%**		**Medium: 10 - 50%**			
Note						

 # Mycologix™ Fungal Biomass Level: 1: Normal Background, 2A: Settled Biomass, 2B: Residual Biomass
3A: Slight Growth, 3B: Moderate Growth, 3C: Heavy Growth

***Peak Density:** Peak density of fungal biomass (spores, reproduction structures, hyphae, etc.) observed under the microscope within the viewfield of 200X magnification (approximately 1 mm in diameter).
++++, +++, ++, +: Biomass covering >50%, 10-50%, 3-10%, <3% of the 200X viewfield, respectively

**** Sample Coverage of Fungi/Debris:** Overall coverage of fungal biomass/debris collected on the tape samples
Tape/slide samples are taken from bulk/swab samples received and then analyzed under microscope.
High, Medium, Low, Trace: Biomass/debris covering >50%, 10-50%, 3-10%, <3% of the entire sample, respectively

*****Hydrophilic Fungi:** Water-loving fungi, Min. Aw >0.89. Absence of hydrophilic fungi does not exclude the possibility of a water damage history.