

AQM SUMMARY REPORT: Project # 10-104 Report Type: IAQ

Inspection Date: March 18th, 2010 Onsite Industrial Hygienist: Nick Ferrala, CIEC
 Client: Biddeford School Department, c/o Philip Radding Property Owner: Same
 Mailing Address: PO Box 586 - Biddeford, Maine 04005 Location: Biddeford High School
20 Maplewood Ave, Biddeford, ME

Concern: Unknown (possible concerns over water-stained ceiling tiles).

- Actions to Date:
- | | |
|--|---|
| <input checked="" type="checkbox"/> No Actions To Date | <input type="checkbox"/> Carpeting Cleaned / Extracted / Treated |
| <input type="checkbox"/> Repairs Made - See Comments | <input type="checkbox"/> Area(s) HEPA Vacuumed and Damp Dusted |
| <input type="checkbox"/> Installed Fresh-air Source and/or Air Exchange Unit | <input type="checkbox"/> HEPA Air Cleaners Installed - Portable |
| <input type="checkbox"/> Cleaned Mechanical System - including Ductwork | <input type="checkbox"/> Water-damaged Materials Removed - See Comments |
| <input type="checkbox"/> Mechanical System Filter(s) Changed | <input type="checkbox"/> Dehumidifier Installed |
| <input type="checkbox"/> Other: | |

Comments: None

TESTING

Sampling Decision Logic: Air samples were collected to determine airborne influences.
 Surface samples were collected to characterize suspect contamination.
 Health Issues reported None Allergies Asthma Other:
 Comments: None

RECOMMENDED GUIDELINES			TESTING METHOD				
Carbon Dioxide (CO ₂)	ASHRAE	1000 ppm	Gray Wolf DirectSense 100	<input checked="" type="checkbox"/>	Airborne Mold	Allergenco-D	<input checked="" type="checkbox"/>
	OSHA	5000 ppm	Colorimetric	<input type="checkbox"/>		N6	<input type="checkbox"/>
Carbon Monoxide (CO)	ASHRAE	9 ppm	Gray Wolf DirectSense 100	<input checked="" type="checkbox"/>	Other Mold	Surface - Tape	<input checked="" type="checkbox"/>
	OSHA	50 ppm	Colorimetric	<input type="checkbox"/>		Carpet - Dust	<input type="checkbox"/>
Relative Humidity (%)	ASHRAE	30 - 60%	Gray Wolf DirectSense 100	<input checked="" type="checkbox"/>	Airborne Particulate	ARTI HHPC-6	<input checked="" type="checkbox"/>
			Extech 445580 Pen	<input type="checkbox"/>		NIOSH/EPA	<input type="checkbox"/>
Optimal Recommended Temperatures (°F)	Summer	72 - 78°F	Gray Wolf DirectSense 100	<input checked="" type="checkbox"/>	Total Volatile Organic Compounds (TVOC)	ppbRAE	<input type="checkbox"/>
			Extech 445580 Pen	<input type="checkbox"/>		Detector Tube	<input type="checkbox"/>
	Winter	68 - 76°F	WBGT	<input type="checkbox"/>			

Other Testing: None

# of Air Samples	7	# of Surface Samples	1	# of Dust Samples	0	# of Swab Samples	0
------------------	---	----------------------	---	-------------------	---	-------------------	---

FINDINGS

Air Quality Monitoring Readings					Particulates (Counts / L)						Room Status
Location	CO ₂ (ppm)	CO (ppm)	Temp. (°F)	RH%	0.3um	0.5um	0.7um	1.0um	2.0um	5.0um	
Outdoor	450	0.0	60.1	25.3	29292	2323	722	337	133	14	N/A
Room 4	1100	0.5	69.9	28.0	20700	2362	1056	673	373	72	O
Room 14	840	0.5	71.4	27.5	24170	3050	1431	900	417	36	UO
Room 103	1670	0.2	72.4	29.4	28469	3618	1803	1200	650	92	O
Room 116	1020	0.2	73.0	25.1	28167	3341	1513	929	446	56	O
Room 200	980	0.4	74.2	23.4	24214	3101	1459	921	442	70	UO
Room 203	1120	0.1	73.8	24.2	27100	3832	1918	1210	569	82	O

Comments: ▶ Room status key: O = Occupied, UO = Unoccupied or minimally occupied.

AQM SUMMARY REPORT: Project # 10-104

FUNGAL GROWTH - See laboratory results for details

- Results are as follows:
- Air Samples: Concentrations similar to outdoor control and/or typical indoor levels seen in occupied indoor environments
 Concentrations above background (outdoor control) Trace Low Moderate High
 Air sample analysis suggests surface contamination is influencing the overall airborne fungal burden.
- Surface Samples: No active fungi detected for surfaces tested
 Fungal Growth Detected Trace Low Moderate High
 Personal contents have visible fungal growth or impact.
 Fungal contamination appears isolated to surfaces with minimal airborne influences (at time of sampling).

Comments: ▶ Each air sample as collected contained low to moderate airborne fungal spore levels that were similar to or slightly above the outdoor reference, with a typical mix of outdoor fungal types. No risks anticipated based on these results. Indicators of water-damage or indoor growth were not present in statistically-significant levels in any sample.
 ▶ A surface sample collected from a return-air register in Room 4 did not detect fungal growth.

RECOMMENDATIONS

- Ensure adequate ventilation (fresh-air source) per current ASHRAE guidelines for a facility of this type.
- Ensure the system filters are pleated with an efficiency rating of at least 40% (or greater) and properly sized for the system.
- Consult a Professional Engineer or Qualified Contractor to determine the appropriate mechanical system modifications.
- The HVAC system should be cleaned (including the ductwork) based on visible dust levels. The HVAC system should be part of a maintenance plan that includes monthly inspections of the filters and total system cleanings every three (3) to five (5) years, based on location and environmental influences.
- Enlist the services of an HVAC Cleaning Contractor that is competent / knowledgeable with NADCA ACR-2005 Cleaning Standards.
- Upgrade Housekeeping - Detail clean (HEPA vacuum & damp dust) to control dust / particulate levels. Ensure to address tops of cabinets, and other horizontal surfaces typically not cleaned.
- A resilient floor covering (vinyl tile / linoleum) or like product should be considered as a finished floor covering to afford ease of maintenance and resists moisture influences.
- Control water intrusion into area / space
- Mold Remediation should be undertaken by a qualified Contractor in accordance with the IICRC S520 Standard or other similarly recognized protocols. See Comments and CAD Drawings if Provided.
- Areas of immediate impact should be isolated from the unaffected areas of the building to prevent contaminant communications thus limiting damages and exposure risks.
- High Temperature Steam Clean and Treat all carpeting and ensure areas are rapidly dried to reduce microbial influences.

Comments:

► The recommendations checked above should aid in controlling particulate levels and maintaining carbon dioxide levels, and are general in nature and do not necessarily indicate that significant deficiencies were observed or noted.

► In most areas tested (other than noted below), CO₂, CO and Temperature were not significantly varied from recommended parameters and/or Outdoor Reference - no recommendations in these areas are warranted.

► CO₂ was slightly elevated in Room 103 - higher than the recommended ASHRAE maximum comfort level of 1000 ppm as well as higher than the supplementary ASHRAE recommendation of 700 ppm above the outdoor level (in this case 1150 ppm). This room was fully occupied at the time of testing. Ensure the mechanical systems are balanced and provide sufficient fresh-air exchanges per occupant to control carbon dioxide and other contaminants. Headaches and fatigue can occur given extent and duration of exposure (8-hr work shift) in the areas with elevated carbon dioxide levels.

► Relative Humidity readings for each test location were slightly below recommended comfort guidelines - likely due to the season (winter heating season). Low relative humidity can dry the upper respiratory system, which will affect the mucous membranes (1st line of defense to flu / colds). If mucous membranes become dry, individuals can experience irritations of the eyes, nose, throat, and upper respiratory system. Keep in mind that relative humidity is difficult to maintain in winter months as colder air does not hold moisture as well as warm air and this condition is typical in the Northeast during the winter heating seasons.

► Comparatively, the particle counts noted above were higher than the outdoor concentrations in Rooms 103 and 203 for particle sizes 1.0 to 5.0 um (substantially higher readings than outdoors were noted and highlighted in the chart on page 1). These differences are likely influenced by activity in areas, population density, and foot traffic over carpeting, and dust accumulations on horizontal surfaces. Increased particle counts may suggest (but are not limited to): ventilation system conditions, i.e. possible particulate entrainment past filters, and/or a need for a thorough cleaning of the occupied spaces (to remove settled dusts) and may include steam cleaning and treatment of carpeting (where applicable). Over time carpet fibers will degrade if not properly maintained and add to the environmental dust burden. There are no regulatory standards specifically for indoor particulates and the readings above should be used only for comparative purposes.



Client: Air Quality Management
 Address: 19B Portland Road
 Gray ME 04039
 Project Number: 10-104

Date Sampled: 3/18/10
 Date Received: 3/19/10
 Date Reported: 3/22/10

1-800-244-8378 Phone
 1-207-873-7022 FAX
 227 China Rd., Winslow, ME 04901
 SOP 4.3.24

Sample Type:	Allergenco-D	Percent of Trace Assayed (1):	25	Analyst	Tom Cheetham
Volume Sampled (L):	75	A2	75	75	75
Sample Description:	A1	Room 4	A4	Room 103	A5
Lab Number:	MJ 04261	MJ 04262	Good	MJ 04264	Room 116
Sample Condition:	Good	Good	Good	Good	Good
Background Debris rating, 0-5 (2)	2	3	2	3	3
	Raw Ct.	Ct./m ³	%	Raw Ct.	Ct./m ³
Total Mold Spores & Fragments	8	430	101	16	860
Ascospores					
Aspergillus/Penicillium-like					
Basidiospores	5	270	63	3	160
Cladosporium					
Mycelial Fragments					
Unidentified Spores	3	160	38	2	110
Particulates (3)					
Skin cell fragments (2-3)	1			3	
Black opaque particles (n.d. - 2)	2			2	
Other fibers (n.d. - 2)	n.d.			2	
Misc. Clear particulates (n.d. - 2)	2			3	
				Raw Ct.	Ct./m ³
				11	590
				1	53
				9	480
				1	53
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110
				3	160
				2	110
				3	160
				2	110
				10	540
				2	110
				5	270
				3	160
				2	110
				1	53
				3	160
				2	110
				10	540
				2	110



Client: Air Quality Management
 Address: 19B Portland Road
 Gray ME 04039
 Project Number: 10-104

Date Sampled: 3/18/10
 Date Received: 3/19/10
 Date Reported: 3/22/10

1-800-244-8378 Phone
 1-207-873-7022 FAX
 227 China Rd., Winslow, ME 04901
 SOP 4.3.24

Sample Type:	Allergenco-D	Percent of Trace Assayed (1):	25	Analyst	Tom Cheetham
Volume Sampled (L):	75	Raw Ct.	75		
Sample Description:	A6 Room 203	Ct./m ³	A7 Room 203		
Lab Number:	MJ 04266	%	MJ 04267		
Sample Condition:	Good		Good		
Background Debris rating, 0-5 (2)	3		3		
	Raw Ct.	Ct./m ³	Raw Ct.	Ct./m ³	%
Total Mold Spores & Fragments	10	540	3	160	100
Aspergillus/Penicillium-like	2	110	1	53	33
Basidiospores	4	210			
Cladosporium	2	110	2	110	67
Unidentified Spores	2	110			
Particulates (3)					
Skin cell fragments (2-3)	3		3		
Black opaque particles (n.d. - 2)	2		2		
Other fibers (n.d. - 2)	2		2		
Misc. Clear particulates (n.d. - 2)	2		2		

Note: Some values may not appear to be perfectly additive due to rounding.

(1) Value indicates % of sample trace analyzed. 100% of Sample Trace is always examined for anomalies, spore clusters and Stachybotrys / Memnoniella spores, and any appropriate corrections are made as a result of findings. This process results in a lower MDL for Stachybotrys / Memnoniella spores and a more accurate overall analysis.

(2) Debris Rating Scale: 0 = No trace visible; 5 = Contiguous debris. Background debris levels greater than 3 indicate poor visibility for the analyst reading the slide, which can result in under-counting of small spores such as those from members of the Aspergillus/Penicillium-like group.

(3) Particulate are rated on a scale from n.d. (not detected) to 5 (highest abundance). Values in parentheses indicate typical indoor levels. No discernable field blank was submitted with these samples. Minimum detection limit varies with amount of air sampled: 30L= 133 ct./m³; 75L= 53 ct./m³; 150L= 13 ct./m³

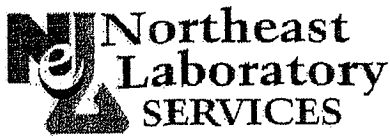
Created by:

Reviewed By:

Tom Cheetham, PhD, Environmental Microbiology Division

Brett Goodrich, Manager, Environmental Microbiology Division

Analytical results and reports are generated by NEL at the request of and for the exclusive use of the person or entity (client) named on this report. Results, reports or copies of same will not be released by NEL to any third party without the prior express written consent from the client named in this report. This report applies only to those samples taken at the time, place and location referenced by the client. This report makes no express or implied warranty or guarantee as to the sampling methodology used by the individual performing the sampling unless sampling was performed by NEL. The client is solely responsible for the use and interpretation of these results and NEL makes no express or implied warranties as to such use or interpretation. NEL is not able to make and does not make a determination as to the soundness or safety of a product, environment or property from only the samples sent to their laboratory for analysis. Unless otherwise specified by the Client, NEL reserves the right to dispose of all samples after the testing of such samples is sufficiently completed or after a thirty-day period, whichever period is greater. Samples for Microbiology that degrade rapidly or pass their hold times will be retained for shorter periods or not at all. NEL liability extends only to the cost of the testing.



1-800-244-8378 Phone
 1-207-873-7022 FAX
 227 China Rd.
 Winslow, ME 04901

Client: Air Quality Management
Address: 19B Portland Road
 Gray, ME 04039
Project: 10-104

**Analysis Report
 Direct Microscopic Exam**

Date Sampled: 3/18/10
Date Received: 3/19/10
Date Reported: 3/22/10

SOP: Tape 4.3.25 Swab 4.3.26 Bulk 4.3.27

Lab Number	Sample Type	Description	Background Debris (1)	Mold Growth (2)	Comments	Sample Condition
MJ 04268	Tape Lift	T1 - Room 4 Return Grill	4	n.d.		Good

Qualitative Scale: N.D. = Not Detected; 1 = Lowest (Trace); 5 = Highest (Heavy or Highly Abundant Presence)
 *= Spores only, no growth structures present.

Specific comments will be made above (in addition to numerical ratings) where deemed necessary or useful.

- (1) Background particles include organic and inorganic debris from a variety of sources, and generally occur as a result of settling from an airborne state.
- (2) Mold observed with associated vegetative structures (unless otherwise indicated). In addition to a relative numerical abundance rating, molds present are identified to the highest level possible. Mold growing at level 4 or above could obscure the visibility of other, smaller mold growing under and/or within the heavily growing mold.

Created By: Tom Cheetham, PhD, Environmental Microbiology Dept.

Reviewed By: Brett Goodrich, Manager, Environmental Microbiology Dept.

Analytical results and reports are generated by NEL at the request of and for the exclusive use of the person or entity (client) named on this report. Results, reports or copies of same will not be released by NEL to any third party without the prior express written consent from the client named in this report. This report applies only to those samples taken at the time, place and location referenced by the client. This report makes no express or implied warranty or guarantee as to the sampling methodology used by the individual performing the sampling unless sampling was performed by NEL. The client is solely responsible for the use and interpretation of these results and NEL makes no express or implied warranties as to such use or interpretation. NEL is not able to make and does not make a determination as to the soundness or safety of a product, environment or property from only the samples sent to their laboratory for analysis. Unless otherwise specified by the Client, NEL reserves the right to dispose of all samples after the testing of such samples is sufficiently completed or after a thirty-day period, whichever period is greater. Samples for Microbiology that degrade rapidly or pass their hold times will be retained for shorter periods or not at all. NEL liability extends only to the cost of the testing.

3 D 5