Environmental Resources Group
3125 Sovereign Drive • Suite B • Lansing, MI • 48911
Phone: 517-999-6020• Fax: 248-924-3108

February 13, 2025

Brian Lieber
Director of Operations
Okemos Public Schools
4406 Okemos Road
Okemos, Michigan

RE: Results of Building Wide Periodic Mold in Air Testing
Kinawa Middle School, 1900 Kinawa Drive, Okemos, Michigan
ERG Project No.: 240440

Dear Mr. Lieber:

Environmental Resources Group, LLC. (ERG) is pleased to provide the following report of findings. On January 20, 2025, ERG staff conducted air sampling for mold, pollen and other particulate from within select rooms at Kinawa Middle School (KMS), as part of the periodic sampling effort to ensure acceptable air quality in the building.

Bioaerosol samples were collected using Air-O-Cell cassettes, a calibrated air flow meter, tubing, and a high-volume vacuum pump. All bioaerosol (air) samples were submitted to and analyzed in the ERG Indoor Air Quality Laboratory pursuant to the requirements of ASTM International Standard D-7391.

INTERPRETATION OF DATA

Fungal Spores

Indoor airborne spore concentrations in "clean" commercial buildings generally total less than 2,650 s/m^3. *Aspergillus*/*Penicillium* together comprise less than 750 s/m^3 and spores of the groups Ascospores and Basidiospores generally make up less than 1,000 s/m^3. The total of all other spores should not exceed 900 s/m^3 (Baxter, Journal of Occupational Environmental Hygiene, January 2005). In addition, highly allergenic spores (i.e. – *Pithomyces*, *Stemphyllium*, *Stachybotrys*) should not be present in a statistically significant number (a raw count of 10 or more spores).

Often, an outdoor sample is collected as a point of comparison. No out of doors sample was collected as the temperature was below freezing.

Some of the bioaerosol air samples from within KMS were indicative of "clean" conditions and were below the limits established as the Baxter Criteria. Samples from the Auditorium, Cafeteria and Rooms 203, 303 which had *Stachybotrys* spores or detected or present that were above the raw count of 10 and were not indicative of “clean” conditions.

Pollen and Other Particulate

Indoor airborne pollen concentrations in “clean” air-conditioned buildings are generally below 30 s/m^3. Individuals with pollen allergy may exhibit symptoms when pollen concentrations exceed approximately 50 s/m^3, especially when grass or highly allergenic ragweed pollen are present. Pollen was not detected in the collected air samples.

Organic fibers such as cellulose (paper fibers) may be present in “clean” buildings in the range of 0 to 10,000 s/m^3. These fibers are not known to cause illness or allergy at these levels, but might suggest inadequate housekeeping or poor ventilation, among other things. Cellulose concentrations were within the normal range (0 to 10,000 s/m^3) in the collected air samples.

Inorganic fibers such as mineral wool or fiberglass (fibrous glass) may create dermal irritation when present in concentrations exceeding 1,000 s/m^3. Fibrous glass concentrations were not detected in the collected air samples.

Synthetic fibers include polyester and Dacron and do not generally exceed 1,000 s/m^3. The presence of elevated synthetic fiber concentrations suggests degrading synthetic fiber surfaces (clothing, carpet, upholstered furniture) and/or the need for improved housekeeping. Synthetic fibers were not detected above the desired 1,000 s/m^3 threshold.

Mineral fibers, such as gypsum, generally do not exceed 1,000 s/m^3 . Their presence may be indicative of uncontrolled renovation or demolition. Mineral fibers were not detected in the collected air samples.

Opaque particles, including soot, fly ash, binders, copy toner, etc., generally do not exceed 5,000 s/m^3. When indoor concentrations exceed 10,000 s/m^3, attempts to identify the source of the particles and reduce their number should be made. The opaque particle concentrations did not exceed the 5,000 s/m^3 threshold in any collected air sample.

Insect fragments, including antennae, legs, wings, etc., should not be observed in “clean” indoor environments. Detectable quantities of insect fragments, including excrement, may cause allergic reactions in sensitive individuals and suggests the existence of current or past infestation or poor housekeeping. Insect fragments were not detected in the collected air samples.

Conclusions

Based on the results of testing, the following conclusions were drawn:

- The bioaerosol (air) samples collected in the Library, Hallway off Room 305, Rooms 100, 105, 107, 109, 114, 221, 400, and 405 were indicative of “clean” conditions, were below the Baxter Criteria.

- The bioaerosol (air) samples collected in the Auditorium, Cafeteria and Rooms 203 and 303 were not indicative of "clean" conditions, due to the presence of highly allergenic mold.

Recommendations

Based on the conclusions above the following recommendation is offered:

1. Conduct further investigation in the Auditorium, Cafeteria and Rooms 203 and 303 to determine the source of the elevated *Stachybotrys* spores in the samples.

Sincerely,

ENVIRONMENTAL RESOURCES GROUP

Kristin Peterson
Senior Industrial Hygienist

Enclosures

PROJECT NUMBER 240440 DATE 1/20/2025

PROJECT Kinawa Middle School SAMPLED BY Kristin Peterson

CLIENT Okemos Public Schools ANALYZED BY ERG

AIR SAMPLE DATA SHEET

SAMPLE #	TYPE	DESCRIPTION	TIME ON TIME OFF	SAMPLE TIME (MIN)	FLOW ON FLOW OFF (L/MIN)	AVERAGE FLOW	VOLUME (LITERS)	Results
1	BA	Cafeteria 10' feet from Hallway entry	10:46 10:51	5	15.8 15.8	15.8	79	See attached data sheets
2	BA	Auditorium near door with State of Michigan Flag	10:58 11:03	5	15.8 15.8	15.8	79	See attached data sheets
3	BA	Choir Room (405) near center of room	11:07 11:12	5	15.8 15.8	15.8	79	See attached data sheets
4	BA	Room 400 15' from entryway	11:16 11:21	5	15.8 15.8	15.8	79	See attached data sheets
5	BA	Room 303 near center of room	11:25 11:30	5	15.8 15.8	15.8	79	See attached data sheets
6	BA	Library near Reception Desk	11:30 11:35	5	15.8 15.8	15.8	79	See attached data sheets
7	BA	Room 203 near bulletin board	11:41 11:46	5	15.8 15.8	15.8	79	See attached data sheets
8	BA	Room 221 10' from entry	11:50 11:55	5	15.8 15.8	15.8	79	See attached data sheets
9	BA	Room 114, 5' feet from exterior window	11:58 12:03	5	15.8 15.8	15.8	79	See attached data sheets
10	BA	Room 100, 10' from exterior windows	12:06 12:11	5	15.8 15.8	15.8	79	See attached data sheets

SAMPLE TYPES: FB - FIELD BLANK
B - BULK
MV - MICROVACUUM
V - VARIOUS
BA-BIOAEROSOL

ERG

PROJECT NUMBER 240440 DATE 1/20/2025

PROJECT Kinawa Middle School SAMPLED BY Kristin Peterson

CLIENT Okemos Public Schools ANALYZED BY ERG

AIR SAMPLE DATA SHEET

SAMPLE #	TYPE	DESCRIPTION	TIME ON TIME OFF	SAMPLE TIME (MIN)	FLOW ON FLOW OFF (L/MIN)	AVERAGE FLOW	VOLUME (LITERS)	Results
11	BA	Hallway outside of Room 305	12:14 12:19	5	15.8 15.8	15.8	79	See attached data sheets
12	FB	Field Blank						See attached data sheets

SAMPLE TYPES: FB - FIELD BLANK
B - BULK
MV - MICROVACUUM
V - VARIOUS
BA-BIOAEROSOL

IAQ Bioaerosol Analytical Report
ERG Project Number: 240440

Client Name: Okemos Public Schools
Project Name: Kinawa Middle School, Okemos, MI

Date of Sample Collection:	1/21/2025	Report Date:	1/22/2025
Date of Submittal:	1/21/2025	Analyst:	Kaila Schwanitz
Date of Analysis:	1/21/2025	Minimum Reporting Limit:	60 s/m³

Sample #	1			2			3		
Sample Location	Cafeteria, 10 feet from entry			Auditorium, near door, near state flag			Choir room 405, near center		
Spores	structures/ sample	s/m³	% trace scanned	structures/ sample	s/m³	% trace scanned	structures/ sample	s/m³	% trace scanned
Alternaria	ND			ND			ND		
Ascospore	ND			15	200	20.3%	ND		
Aspergillus/Penicillium	20	300	20.3%	5	60	20.3%	ND		
Basidiospore	ND			ND			ND		
Botrytis	ND			ND			ND		
Chaetomium	ND			ND			ND		
Cladosporium	5	60	20.3%	ND			ND		
Curvularia	ND			ND			ND		
Drechslera/Bipolaris	ND			ND			ND		
Epicoccum	ND			ND			ND		
Erysiphae/Oidium	ND			ND			ND		
Fusarium	ND			ND			ND		
Hyphal Fragments	ND			ND			ND		
Nigrospora	ND			ND			ND		
Periconia/ Myxomycete/Smut	ND			ND			ND		
Ulocladium/Pithomyces	ND			ND			ND		
Rhizopus	ND			ND			ND		
Stachybotrys	15	200	20.3%	64	810	20.3%	ND		
Stemphyllium	ND			ND			ND		
Torula	ND			ND			ND		
Miscellaneous/Unidentified Spores	ND			ND			ND		
Total	40	560		84	1070		ND		

Pollen									
Grass	ND			ND			ND		
Tree	ND			ND			ND		
Other/Unknown Pollen	ND			ND			ND		
Total	ND			ND			ND		

Other Particulate									
Cellulose Fibers	15	200	20.3%	20	300	20.3%	5	60	20.3%
Fibrous Glass	ND			ND			ND		
Synthetic Fibers	59	750	20.3%	25	300	20.3%	10	100	20.3%
Mineral Fibers	ND			ND			ND		
Opaque Particles	108	1400	20.3%	138	1700	20.3%	34	400	20.3%
Insect Fragments	ND			ND			ND		
Total	182	2350		183	2300		49	560	
*Debris rating	1			1			1		

Notes:

All samples prepared and analyzed per the modified ASTM D7391-09.

IAQ Bioaerosol Analytical Report
ERG Project Number: 240440

Client Name: Okemos Public Schools
Project Name: Kinawa Middle School, Okemos, MI

Date of Sample Collection:	1/21/2025	Report Date:	1/22/2025
Date of Submittal:	1/21/2025	Analyst:	Kaila Schwanitz
Date of Analysis:	1/21/2025	Minimum Reporting Limit:	60 s/m^3

Sample #	4			5			6		
Sample Location	Room 400, 15 feet from entry			Room 303, near center			Library near reception desk		
Spores	structures/ sample	s/m^3	% trace scanned	structures/ sample	s/m^3	% trace scanned	structures/ sample	s/m^3	% trace scanned
Alternaria	ND			ND			ND		
Ascospore	ND			15	200	20.3%	ND		
Aspergillus/Penicillium	ND			ND			ND		
Basidiospore	ND			ND			ND		
Botrytis	ND			ND			ND		
Chaetomium	ND			5	60	20.3%	ND		
Cladosporium	ND			5	60	20.3%	ND		
Curvularia	ND			ND			ND		
Drechslera/Bipolaris	ND			ND			ND		
Epicoccum	ND			ND			ND		
Erysiphae/Oidium	ND			ND			ND		
Fusarium	ND			ND			ND		
Hyphal Fragments	ND			ND			ND		
Nigrospora	ND			ND			ND		
Periconia/ Myxomycete/Smut	ND			ND			ND		
Ulocladium/Pithomyces	ND			ND			ND		
Rhizopus	ND			ND			ND		
Stachybotrys	ND			25	300	20.3%	ND		
Stemphyllium	ND			ND			ND		
Torula	ND			ND			ND		
Miscellaneous/Unidentified Spores	ND			ND			ND		
Total	ND			50	620		ND		
Pollen									
Grass	ND			ND			ND		
Tree	ND			ND			ND		
Other/Unknown Pollen	ND			ND			ND		
Total	ND			ND			ND		
Other Particulate									
Cellulose Fibers	ND			10	100	20.3%	15	200	20.3%
Fibrous Glass	ND			ND			ND		
Synthetic Fibers	10	100	20.3%	49	620	20.3%	30	400	20.3%
Mineral Fibers	ND			ND			ND		
Opaque Particles	25	300	20.3%	158	2000	20.3%	89	1100	20.3%
Insect Fragments	ND			ND			ND		
Total	35	400		217	2720		134	1700	
*Debris rating	1			1			1		
Notes:									

All samples prepared and analyzed per the modified ASTM D7391-09.

IAQ Bioaerosol Analytical Report
ERG Project Number: 240440

ERG

Client Name: Okemos Public Schools
Project Name: Kinawa Middle School, Okemos, MI

Date of Sample Collection:	1/21/2025	Report Date:	1/22/2025
Date of Submittal:	1/21/2025	Analyst:	Kaila Schwanitz
Date of Analysis:	1/21/2025	Minimum Reporting Limit:	60 s/m³

Sample #	7			8			9		
Sample Location	Room 203, near bulletin board			Room 221, 10 feet from entry			Room 114, 5 feet from window		
Spores	structures/ sample	s/m³	% trace scanned	structures/ sample	s/m³	% trace scanned	structures/ sample	s/m³	% trace scanned
Alternaria	ND			ND			ND		
Ascospore	ND			5	60	20.3%	49	620	20.3%
Aspergillus/Penicillium	5	60	20.3%	ND			20	300	20.3%
Basidiospore	ND			ND			ND		
Botrytis	ND			ND			ND		
Chaetomium	ND			ND			ND		
Cladosporium	ND			ND			ND		
Curvularia	ND			ND			ND		
Drechslera/Bipolaris	ND			ND			ND		
Epicoccum	ND			ND			ND		
Erysiphae/Oidium	ND			ND			ND		
Fusarium	ND			ND			ND		
Hyphal Fragments	ND			ND			ND		
Nigrospora	ND			ND			ND		
Periconia/ Myxomycete/Smut	ND			ND			ND		
Ulocladium/Pithomyces	ND			ND			ND		
Rhizopus	ND			ND			ND		
Stachybotrys	5	60	20.3%	ND			ND		
Stemphyllium	ND			ND			ND		
Torula	ND			ND			ND		
Miscellaneous/Unidentified Spores	ND			ND			ND		
Total	10	120		5	60		69	920	

Pollen									
Grass	ND			ND			ND		
Tree	ND			ND			ND		
Other/Unknown Pollen	ND			ND			ND		
Total	ND			ND			ND		

Other Particulate									
Cellulose Fibers	10	100	20.3%	5	60	20.3%	15	200	20.3%
Fibrous Glass	ND			ND			ND		
Synthetic Fibers	84	1100	20.3%	54	680	20.3%	30	400	20.3%
Mineral Fibers	ND			ND			ND		
Opaque Particles	148	1900	20.3%	79	1000	20.3%	59	750	20.3%
Insect Fragments	ND			ND			ND		
Total	242	3100		138	1740		104	1350	
*Debris rating	1			1			1		

Notes:			

All samples prepared and analyzed per the modified ASTM D7391-09.

IAQ Bioaerosol Analytical Report
ERG Project Number: 240440

Client Name: Okemos Public Schools
Project Name: Kinawa Middle School, Okemos, MI

Date of Sample Collection: 1/21/2025
Date of Submittal: 1/21/2025
Date of Analysis: 1/21/2025
Report Date: 1/22/2025
Analyst: Kaila Schwanitz
Minimum Reporting Limit: 60 s/m³

Sample #	10			11			12		
Sample Location	Room 100, 10 from window			Hallway outside room 305			Field Blank		
Spores	structures/ sample	s/m³	% trace scanned	structures/ sample	s/m³	% trace scanned	structures/ sample	s/m³	% trace scanned
Alternaria	ND			ND			ND		
Ascospore	ND			10	100	20.3%	ND		
Aspergillus/Penicillium	ND			ND			ND		
Basidiospore	ND			ND			ND		
Botrytis	ND			ND			ND		
Chaetomium	ND			ND			ND		
Cladosporium	5	60	20.3%	ND			ND		
Curvularia	ND			ND			ND		
Drechslera/Bipolaris	ND			ND			ND		
Epicoccum	ND			ND			ND		
Erysiphae/Oidium	ND			ND			ND		
Fusarium	ND			ND			ND		
Hyphal Fragments	ND			ND			ND		
Nigrospora	ND			ND			ND		
Periconia/ Myxomycete/Smut	ND			ND			ND		
Ulocladium/Pithomyces	ND			ND			ND		
Rhizopus	ND			ND			ND		
Stachybotrys	ND			ND			ND		
Stemphyllium	ND			ND			ND		
Torula	ND			ND			ND		
Miscellaneous/Unidentified Spores	ND			ND			ND		
Total	5	60		10	100		ND		
Pollen									
Grass	ND			ND			ND		
Tree	ND			ND			ND		
Other/Unknown Pollen	ND			ND			ND		
Total	ND			ND			ND		
Other Particulate									
Cellulose Fibers	20	300	20.3%	5	60	20.3%	ND		
Fibrous Glass	ND			ND			ND		
Synthetic Fibers	5	60	20.3%	30	400	20.3%	ND		
Mineral Fibers	ND			ND			ND		
Opaque Particles	69	870	20.3%	79	1000	20.3%	10		20.3%
Insect Fragments	ND			ND			ND		
Total	94	1230		114	1460		10		
*Debris rating	1			1			1		

Notes:			

All samples prepared and analyzed per the modified ASTM D7391-09.

Comments

*Debris rating (% obstructed by particulate matter): 0= no particulate matter detected, 1= >0-5%, 2= 6%-25%, 3= 26%-76%, 4= 75%-90%, 5= >90%. Where debris rating =5, fungal/pollen/other particulate are reported as "present." For debris ratings 2-4, negative bias is expected. The degree of negative bias increases with the percent of the trace that is obstructed.

Samples were received in acceptable condition, unless otherwise indicated. Results relate only to items tested. Results are reported in units of structures per cubic meter of air (s/m³), except blank samples, where the actual number of observed particles are reported. Spore types listed without a count or other data indicate that the specific analyte was not detected during the course of sample analysis. Spores of the genera *Aspergillus* and *Penicillium* are categorized together due to their small size and spherical shape with few distinguishing characteristics. Other similar spores will be categorized as *Aspergillus* /*Penicillium* unless fruiting bodies allow more precise identifications.

ND= none detected (minimum of 20.3% trace scanned) unless otherwise reported .

Minimum Reporting Limit represents the lowest calculated limit in this report.

This report shall not be reproduced, except in full, without written approval of the laboratory.

Flow Rate is in liters per minute. Time is reported in minutes.

The enclosed data from Environmental Resources Group, LLC (ERG) is for sample(s) collected by our client. The client bears all risk relative to the use of this data, including any course of action or inaction. Further, ERG asserts that the data pertains only to the submitted sample(s). ERG makes no representation or guarantee about the source of the material analyzed, the suitability of the sample size, sample frequency or sample distribution, or the relationship of the submitted sample(s) to the area sampled.

Approved Signatory: Phillip A. Petrov

Date: 1/22/2025

ERG Environmental Resources Group
3125 Sovereign Drive • Suite B • Lansing, MI 48911
Phone: 517-999-6020 • Fax 248-924-3108

Client Name: Okemos Public Schools
Contact Person: K. Peterson
Project Name/ Number: 240440
Project Location: Kinawa Middle School Okemos, Mi
Email Distribution List:
Phone No.:
Purchase Order No.:

Matrix Code: S Soil; A Air; O Oil; B Bulks; GW Ground Water; SW Surface Water; W Wastewater; X Other: Specify

Date	Time	Sample #	Client Sample Descriptor	MATRIX (SEE RIGHT CORNER FOR CODE)	# OF CONTAINERS	FAQ	HOLD SAMPLE	Remarks:
1/21/25		-01	Cafeteria 10' from entry	A	1	X		BA-79L
		-02	Auditorium Near door near state flag	A	1	X		
		-03	Choir Room 405 near center	A	1	X		
		-04	Room 400 ~~near~~ 15' ~~near~~ from entry	A	1	X		
		-05	Room 303 Near center	A	1	X		
		-06	Library near reception desk	A	1	X		
		-07	Room 203 Near bulletin board	A	1	X		
		-08	Room 221, 10' from entry	A	1	X		
		-09	Room 114, 5' from window	A	1	X		
		-10	Room 100, 10' from windows	A	1	X		

Comments:

Samples received in acceptable condition ☐

Sampled/Relinquished By: [signature]	Date/ Time 1/21/24 @ 8:22	Received By:
Relinquished By:	Date/ Time	Received By:
Relinquished By:	Date/ Time	Received By Laboratory: [signature]

Turnaround Time ALL RESULTS WILL BE SENT BY THE END OF THE BUSINESS DAY

___ Same day ___ 1 bus. day ___ 2 bus. days ___ 3 bus. days ___ 4 bus. days

X 5-7 bus. days (standard) Other (specify time/date requirement): ______

LAB USE ONLY
ERG project number: 240440/0001/0005
Temperature upon receipt at Lab (if applicable):

Please see back for terms and conditions

Environmental Resources Group
3125 Sovereign Drive • Suite B • Lansing, MI 48911
Phone: 517-999-6020 • Fax 248-924-3108

Client Name: Okemos Public Schools
Contact Person: K. Peterson
Project Name/ Number: 240440
Project Location: Kinawa M.S.
Email Distribution List:
Phone No.:
Purchase Order No.:

Matrix Code

S	Soil	GW	Ground Water
A	Air	SW	Surface Water
O	Oil	W	Wastewater
B	Bulks	X	Other: Specify

Date	Time	Sample #	Client Sample Descriptor	MATRIX (SEE RIGHT CORNER FOR CODE)	# OF CONTAINERS	PARAMETERS: IAQ	HOLD SAMPLE	Remarks:
1/21/24		-11	Hallway outside Room 305	A	1	x		79L - BA
↓		-12	Field Blank	A	1	x		OL BA

Samples received in acceptable condition ☑

Comments:

Sampled/Relinquished By: [signature]	Date/ Time 1/21/24 @ 8:24	Received By:
Relinquished By:	Date/ Time	Received By:
Relinquished By:	Date/ Time	Received By Laboratory: [signature]

Turnaround Time ALL RESULTS WILL BE SENT BY THE END OF THE BUSINESS DAY

___ Same day ___ 1 bus. day ___ 2 bus. days ___ 3 bus. days ___ 4 bus. days

X 5-7 bus. days (standard) Other (specify time/date requirement): ____

LAB USE ONLY

ERG project number: 240440/0001/0005

Temperature upon receipt at Lab (if applicable):

Please see back for terms and conditions