



Environmental Resources Group

Assessment • Remediation • Compliance • Risk Management

INDOOR MOLD EVALUATION REPORT



**OKEMOS PUBLIC SCHOOLS
CORNELL ELEMENTARY SCHOOL
4371 CORNELL ROAD OKEMOS,
MICHIGAN 48864**

PREPARED FOR:

**OKEMOS PUBLIC SCHOOLS-OPERATIONS
4000 OKEMOS ROAD
OKEMOS, MICHIGAN 48864
ATTENTION: MR. BRIAN LIEBER**

PREPARED BY:

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1.0 INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Environmental Resources Group, LLC (ERG) was retained by Okemos Public Schools to conduct an Indoor Mold Evaluation within Cornell Elementary School, 4371 Cornell Road, Okemos, Michigan. The specific tasks of the evaluation were as follows:

- Conduct visual and olfactory observations within the building paying particular attention to classroom spaces that were reported to have visible mold on the carpet.
- Conduct sampling for carbon dioxide, temperature, relative humidity and the moisture on floor surfaces.
- Conduct tape lift sampling as needed to confirm the presence of mold.
- Collect digital photographs of current conditions.

Phillip A. Peterson conducted the evaluation on July 17 and 21, 2025, to determine current conditions following the reported presence of mold on carpet.

1.2 BACKGROUND INFORMATION

The structure is a single-story building of steel and masonry construction with a flat, membrane roof. The building is believed to have been built in the 1950's and was estimated to occupy approximately 35,000 square feet. The school was constructed slab-on-grade and has a perimeter service tunnel, except for the far north set of classrooms. No tunnel exists under that section of the building which represents a later construction period. The building is heated and cooled by unit ventilators.

On or about July 2, 2025, Ms. Kelly Bianchi of Okemos Public Schools was conducting a walkthrough inspection of the building with the cleaning contractor and no visible mold was observed in the building. Just one week later, the cleaning contractor reported visible mold on carpet in three classrooms. The contractor was instructed to clean the carpets in those three rooms. On July 17, 2025, Ms. Bianchi conducted another walkthrough inspection and observed widespread mold on classroom carpets in the building prompting a call to ERG to determine the cause of the mold.

Additionally, Brian Lieber reported that on July 18, 2025, Operations Department staff were working to replace air filters in classroom unit ventilators. It was reported that during this task it became obvious that unit ventilator filters were very dirty and had not been previously changed as directed. Filters were being changed and would be changed again after the matter of moldy carpets was resolved. The filters were reported to be dirty enough that air flow was restricted into the unit ventilators; this allowed the condensing coils to freeze, forcing the unit in to defrost mode. Once defrost mode was complete, units returned to cooling mode, but the lack of air flow allowed coils to refreeze, and the cycle repeated itself. In summary, the dirty filters prevented adequate air flow to allow for proper cooling and the associated dehumidification.

1.3 EVALUATION EQUIPMENT AND METHODS

Phillip A. Peterson, a trained investigator with over 37 years of environmental experience, made visual and olfactory observations and collected samples.

Carbon dioxide measurements were made using a TSI IAQCalc Carbon Dioxide Meter. The meter was allowed to equilibrate for five minutes prior to the collection of data from the instrument and was used pursuant to the manufacturer's recommendations.

Temperature and relative humidity measurements were made using a Protomex, Model MS6508, digital temperature humidity meter. This instrument was allowed to equilibrate for five minutes prior to the collection of data and was used pursuant to the manufacturer's recommendations.

Moisture measurements were collected using a TRAMEX Moisture Encounter Meter. The meter requires no warmup period. The meter was operated on the masonry setting. On the masonry setting moisture measurements are provided on a unitless scale from 0 to 100. Dry readings are in the range from 0-20 (green), damp readings range from 20 to 50 (yellow) and those above 50 are considered wet (red). The device was used pursuant to the manufacturer's recommendations.

Tape lift samples were collected using IMS Tape Lift Samplers. The tape lift samples were submitted to and analyzed in the ERG Indoor Air Quality Laboratory pursuant to the requirements of modified ASTM International Standard D7391.

2.0 VISUAL AND OLFACTORY OBSERVATIONS

During the mold evaluation, visual and olfactory observations were made by the inspector. A table describing the observations in detail appears in Appendix A and a summary of observations in select areas of the building follows:

Gym

- No musty or other odors were observed immediately upon entry.
- No water marks or stains were observed.
- No visible mold was observed.
- The room felt comfortable upon entry.
- The overall level of dust was low.

Staff Lounge

- No musty or other odors were observed immediately upon entry.
- No water marks or stains were observed.
- No visible mold was observed on the carpet or other surfaces (chairs, desks, bulletin boards, etc.).
- The carpet held no observable odor.
- An unusual pattern of dust was observed under the high tables.
- The overall level of dust was low.

Room 31, Childcare

- No musty or other odors were observed immediately upon entry.
- No water marks or stains were observed.
- No visible mold was observed on the carpet or other surfaces.
- The carpet held no observable odor.
- An unusual pattern of dust was observed under the high tables.
- The overall level of dust was low.

Room 26

- No musty odors were observed immediately upon entry.
- A distinct coconut-like odor was observed upon entry.
- A large, scented candle was observed on the desk.
- No water marks or stains were observed.
- A patch of visible mold several square inches was observed on the carpet.
- The overall level of dust was low.

Room 32, Library

- No musty or other odors were observed immediately upon entry.
- No water marks or stains were observed.
- No visible mold was observed on the carpet or other surfaces.
- The carpet held no observable odor.
- An unusual pattern of dust was observed under the high tables.
- The overall level of dust was low.

Room 20

- No musty or other odors were observed immediately upon entry.
- No water marks or stains were observed.
- Over a dozen patches of visible mold several square inches each were observed on the carpet.
- No mold was observed on other surfaces.
- The overall level of dust was low.

Room 14

- A distinctive odor of mold was observed immediately upon entry.
- No water marks or stains were observed.
- No carpet was present in the room.
- The floor surface was slightly slippery (due to condensation).
- Visible mold was observed on the underside of desks throughout the room. The mold did not appear to have been disturbed as might be the case with children's legs rubbing the underside of the tables.
- The overall level of dust was low.

Out-of-Doors

- The temperature was comfortable and skies were mostly clear with a slight breeze.
- No unusual odors were observed.
- The grounds were well-maintained.
- Moderate vehicular traffic was observed.
- No pedestrian traffic was observed.

3.0 RESULTS OF TESTING

All samples were collected by Phillip A. Peterson. During sampling, the building was occupied by the inspector.

A log with sample description information and the results of bioaerosol (air) and other sample data appear in Appendix A and are summarized below:

- Indoor carbon dioxide was measured between 402 and 501 parts per million (ppm). Carbon dioxide was measured at 425 ppm out-of-doors.
- Indoor temperature was recorded between 71.2 and 77.9 degrees Fahrenheit. Out-of-doors temperature was recorded at 70.7 degrees Fahrenheit.
- Indoor relative humidity was recorded between 63 and 75.5 percent on July 17, 2025. . Out-of-doors relative humidity was 73 percent. During the July 21 site visit, relative humidity in Room 15, which had been cleaned and was in the process of being dehumidified, was 38.5 percent
- Dry conditions were measured on the floor in the Staff Lounge and in Room 15 after cleaning and dehumidification. Damp or wet conditions were recorded at all other test locations.
- The results of tape lift sample analysis indicated the dust under the tables in the Staff Lounge was normal dust consisting of less than 1% mold. The test data from the underside of the tables in Room 14 indicated the clear presence of *Aspergillus/Penicillium* (90% mold).

A complete list of test data and observations appears in Appendix A.

Digital photographs appear in Appendix B.

4.0 CONCLUSIONS

Test results were indicative of conditions at the time of the investigation and may not represent conditions at other times. No conclusions can be drawn regarding areas of the building which were not inspected. Based upon reports by others, the visual and olfactory observations made by the investigator and the results of sample analysis, the following conclusions were drawn.

4.1 DIRECT-READ INSTRUMENT MEASUREMENTS

Carbon dioxide (CO₂), a colorless odorless gas that results from normal human respiration, concentrations were acceptable in the tested areas of the building and were below the limits established by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) in Voluntary Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality. The ASHRAE carbon dioxide recommended limit is 700 ppm above the out-of-doors concentration. The out-of-doors carbon dioxide concentration was 425 ppm, making CO₂ concentrations of 1125 ppm or less acceptable in this case. The data indicates that adequate fresh air ventilation was provided to the tested areas of the building given the occupancy rate at the time of testing.

Indoor temperatures were generally within the recommended summertime range (the American Society of Heating, Refrigeration and Air Conditioning Engineers, ASHRAE in Standard 55) which recommends a human comfort temperature range of 73-79 degrees Fahrenheit in all tested locations. As the building was unoccupied, variances from the normal range are not considered significant.

Indoor relative humidity recorded during the inspection was generally unacceptable and was generally above the limit (65%) recommended by ASHRAE (in voluntary standard 62.1-2007) in the building. In conditions where relative humidity reaches 65%, some mold can procure enough moisture from the atmosphere to grow and proliferate.

4.2 TAPE LIFT SAMPLE RESULTS

The tape lift sample from the Staff Lounge is considered normal dust and was found to contain fewer than 1% mold spores and none was of an allergenic or highly allergenic variety. The tape lift sample from Room 14 indicated that mold of the genera *Aspergillus*/*Penicillium* were present on the underside of tables in the room.

This analytical technique cannot differentiate spores of the genus *Aspergillus*/*Penicillium*, among others, due to their similar morphology. Additionally, some mold, pollen, yeast, bacteria, arthropods, and other airborne constituents may be present but are not identifiable by this technique.

No water-stained building materials were found in the inspected areas of the building.

Mold growth was observed on classroom carpet throughout the building.

ERG believes that the floor surface is cooler than surrounding surfaces and with humidity conditions over 60% is allowing moisture to condense on the floor surface (tile or carpet). This condensation is allowing mold to grow and proliferate on classroom carpet throughout the building.

Based on the observations reported by Ms. Bianchi, this is a quickly changing and developing situation which will require frequent monitoring.

The presence of detectable musty odors suggests that mold is actively growing in those locations.

The high indoor relative humidity (due to natural summertime conditions and unit ventilator malfunction) have resulted in the moldy carpets in Cornell Elementary School.

The above conclusions are based on the inspection results; observations made at the time of the inspection and information provided by others. Should new or revised information become available, ERG reserves the right to revise the report and modify or change the above conclusions and subsequent recommendations.

5.0 RECOMMENDATIONS

Based on the observations made by the investigator, the findings of this evaluation and the conclusions above, the following recommendations are offered:

1. Replace unit ventilator filters and ensure unit ventilators are functioning as designed and are capable of cooling and dehumidifying incoming air.
2. Except for Room 14, and for those rooms with moldy carpet, the Districts' cleaning contractor (Clean Team) may clean the carpet. The carpet in the entire room should be HEPA-vacuumed and then cleaned and disinfected or sanitized, not just the moldy spot(s). Recirculated cleaning water is prohibited. Dehumidification after cleaning is a critical step in this process. An appropriately sized dehumidifier must be present and operational in each room immediately after cleaning, and the dehumidifier shall not be removed until relative humidity has been documented to be at or below 55%. Do not clean carpet in rooms that cannot be immediately and continually dehumidified to 55% relative humidity or lower. The goal is to have the carpets completely dry within 24 hours of cleaning.
3. For Room 13, the distinct musty odor may require an ozone treatment to eliminate the odor after cleaning. Follow the cleaning contractors recommendations for the length of ozone treatment.
4. For Room 14, retain GFL Environmental to conduct cleaning and disinfection of the underside of the tables throughout the classroom. Conduct this work with a negative air machine exhausting to out-of-doors. Once tables are cleaned and disinfected or sanitized, surfaces (floors, window ledges, etc.) may be cleaned by HEPA vacuuming or wet wiping with a disinfecting solution. If odors persist after cleaning and dehumidification, ozone treatment may be necessary.
5. Rooms 21 and 23 smelled strongly of mold, but no visible mold was observed. ERG recommends dehumidification in these rooms until relative humidity drops below 55%. If odors persist, consider ozone treatment to eliminate the musty odor.
6. Room 26 has a strong coconut fragrance, presumably from the large, scented candle on the desk. Please remove the candle and refrain from bringing that or other strong fragrances into the building.
7. As was evidenced by the observations of Ms. Kelly Bianchi (that there was no mold present two weeks ago and now it is affecting carpet throughout the building) this is an evolving situation and rooms and hallways which have no mold currently should be inspected frequently to ensure that no mold has developed or if it has, that carpets be appropriately cleaned and sanitized and the room or hallway adequately dehumidified.
8. If conditions worsen, contact ERG to conduct additional testing or consulting.

The Test Data and Observations Summary, tape lift data and a Digital Photograph Log are attached for your records.

This evaluation was conducted consistent with sound investigative principles and current industry standards. Information in this report was provided by other than ERG. The accuracy or correctness of that information was not confirmed or verified by ERG. For additional information, please review the attached data or call ERG.



Phillip A. Peterson
Senior Project Manager

APPENDIX A

Test Data and Observations Summary and Laboratory Data



Test Data and Observations Summary

Project Number 250960

Project Name Cornell Elementary - Mold Inspection

Date of Sampling 7-17, 7-21-25

Sampled By Phil Peterson

Room #/ Designation	T	RH	CO2	Floor Moisture	Comments
10	-	-	-	30+ (red)	multiple small mold patches on carpet, dehumifier present
11	-	-	-	30+ (red)	multiple small mold patches on carpet, dehumifier present
12	-	-	-	30+ (red)	distinct musty odor upon entry, mold patch in hall
13	-	-	-	30+ (red)	mold patches throughout room on carpet
14	77.9	63.5	444	30+ (red)	no carpet, musty smell in room, mold on underside of tables, no pattern of disturbance
15	73	38.5	464	0	carpet cleaned and dehumidifier in operation (7/21/25)
16	72.6	57.2	415	0	multiple small mold patches on carpet
17	71.9	59.5	413	16 (yellow)	multiple small mold patches on carpet
18	-	-	-	30+ (red)	multiple small moldy patches on carpet
19	-	-	-	30+ (red)	multiple small moldy patches on carpet
20	71.9	75.5	417	30+ (red)	15+ moldy patches on carpet
21	72.8	74	435	25 (red)	no visible mold but room smells damp
22	73.4	69.5	439	21 (red)	mold patch near #16 on carpet
23	72.8	73	409	17 (yellow)	no visible mold but room smells damp
24	72.8	74	422	30 (red)	mold patches on carpet, room smells musty, door is potentially swollen
Main Office	-	-	-	-	no musty odors, no visible mold, no odor in carpet, fan running
25	73.7	72.5	460	25 (red)	multiple small mold patches on carpet
26	72.6	75	417	-	multiple small mold patches on carpet under tables. Candle observed.
27 (Art)	72.8	67.5	448	16 (yellow)	no musty odors, no visible mold, no odor from carpet
28	72.1	71.5	435	24 (red)	multiple mold patches on carpet
29	72.6	74	454	21 (red)	no musty odor, no visible mold, no moldy smell in carpet, faint 'damp' odor in room.
30	71.7	72	402	24 (red)	no musty odor, no visible mold, no moldy smell in carpet, faint 'damp' odor in room.
31 (Childcare)	71.2	71	499	20 (red)	no musty odor, no visible mold, no moldy smell in carpet, faint 'damp' odor in room.
32 (Library)	73.7	66	501	-	no musty odors, no visible mold, no moldy smell in carpet, no mold on furniture
38	-	-	-	-	no visible mold, no musty odors
39	-	-	-	-	no visible mold, no musty odors
Staff Lounge	68.9	63	395	<10 (green)	no musty odor, no visible mold, no moldy smell in carpet, faint 'damp' odor in room.

Gym Office	73.5	57.7	480	<10 (green)	no musty odor, no visible mold, no moldy smell in carpet, faint 'damp' odor in room.
Gym	73.7	63	414	0 (green)	no musty odor, no visible mold, wood floor (likely with underlayment/vapor barrier)
Corridor by Room 12	73	72.5	501	30 (red)	No musty odor or visible mold
Outdoors	70.7	73	425	-	light mist falling, N wind, overcast skies, no pedestrian traffic observed, moderate vehicular traffic observed, no unusual odors detected.

General notes - Except for Room 14, which had no visible mold on the bottom surface of desks, no mold was observed on furniture, bulletin boards, bookcases, desks or chairs. Unit ventilators were operational in each room. Not every room was inspected.



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: _____

Date: 7/18/2025



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[illegible]

APPENDIX B

Digital Photograph Log





1. Cornell Elementary School as viewed from Cornell Road.

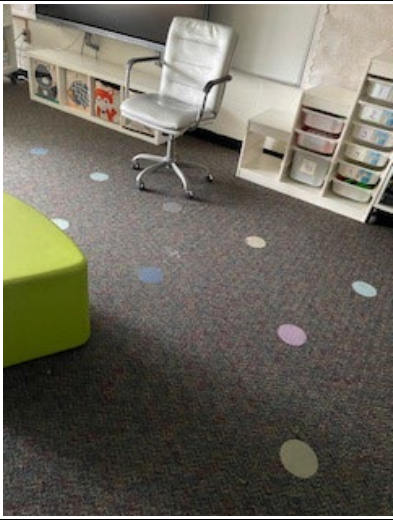


2. A number of instruments were used during the mold evaluation including, from left to right, a Tramex moisture meter, TSI Carbon Dioxide Meter and Protmex temperature and humidity probe.



3. Although difficult to see in this image, small white patches of mold were observed under desks in Room 26.

	4. White patches of mold were visible on the carpet in Room 25, mostly in a swath between the classroom door and Teacher's desk.
	5. Visible mold was observed on the carpet in Room 24
	6. Room 14 has no carpet, but the underside of classroom tables were visibly moldy. The mold did not appear to be disturbed as might occur when the tops of student legs hit the underside of the table.

		7. Small white patches of visible mold were observed on the carpet in Room 11.
		8. Visible patches of mold were present under one of the tables in Room 16.
		9. On July 21, Room 15 was observed to have clean carpet and a commercial dehumidifier and high velocity fan were in operation. Relative humidity in this room was 38.5%. No odors were present, the carpet appeared clean and no visible mold was observed.