

Limited Indoor Air Quality Report

August 31, 2023

Burr Elementary School

1960 Burr Street, Fairfield, Connecticut

Fairfield Public Schools

Fairfield, Connecticut

September 2023



FUSS & O'NEILL

59 Elm Street - Suite 500
New Haven, CT 06510



FUSS & O'NEILL

September 8, 2023

Mr. Angelus Papageorge
Executive Director of Operations
Fairfield Public Schools
501 Kings Highway East, Suite 210
Fairfield, CT 06825
apapageorge@fairfieldschools.org

**Re: Limited Indoor Air Quality Assessment
Burr Elementary School – Physical Education Office and Storage Room
1960 Burr Street, Fairfield, CT
Fuss & O'Neill, Inc. No. 20230741.A10**

Dear Mr. Papageorge:

Enclosed please find the report for the Limited Indoor Air Quality Assessment conducted at the Burr Elementary School located at 1960 Burr Street, Fairfield, Connecticut (the "Site"). The work was conducted for Fairfield Public Schools (the "Client").

The services were performed on August 31, 2023, by a Fuss & O'Neill, Inc. representative in accordance with our written agreement dated August 29, 2023.

If you have any questions regarding the enclosed report, please do not hesitate to contact me at (860) 783-4751. Thank you for this opportunity to have served your environmental needs.

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Maine
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Sincerely,

Eduardo Miguel Marques
Senior Environmental Analyst

Jared D. Smith, CSP
Associate | Senior Project Manager

Enclosure

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1 Introduction

Fuss & O'Neill, Inc. (Fuss & O'Neill) was retained to conduct a Limited Indoor Air Quality (IAQ) Assessment in the Physical Education Office and Storage Room at the Burr Elementary School located at 1960 Burr Street, Fairfield, Connecticut (the "Site"). The work was conducted for Fairfield Public Schools (the "Client") in accordance with our written agreement dated August 29, 2023, and is subject to the limitations included in *Appendix A*.

Fuss & O'Neill's Environmental Technician, Vincent Savarese, conducted the assessment on August 31, 2023.

2 Background

Based on information provided by the Client, the Physical Education Office and Storage Room (areas of concern (AOC)), were subject to water damage resulting from a pipe burst/faulty boilers located above the affected space. The boilers were subsequently replaced this past summer. The Client requested an IAQ assessment of the impacted areas (Physical Educations Office and Storage Room) following response actions.

3 Scope of Testing and Methodology

The scope of work included moisture, visual and olfactory assessments in the Physical Education Office and Storage Room at the Site where IAQ concerns were reported (as identified by the Client). The assessment also included real-time measurements for typical IAQ indicators and comparison to recognized guidelines.

Test parameters included measurement of temperature, relative humidity (RH), carbon monoxide (CO), carbon dioxide (CO₂), and Moisture.

Measurements were obtained using a calibrated portable TSI Q-Trak IAQ meter, Model 7575X, a Delmhorst Moisture Meter, Model BD-10.

Refer to *Appendix B* for a complete instrumentation list and corresponding calibration information used in conducting this assessment.

3.1 Temperature and Relative Humidity

Temperature and relative humidity levels are indicators of thermal comfort. The American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) recommends that wintertime indoor temperature be maintained between 68°F and 74°F and summertime indoor temperature be maintained between 73°F and 79°F. ASHRAE also recommends that humidity be maintained in the range of 30% to 60%. Humidity below this range may cause stress through the drying of mucous membranes and

skin. Humidity above this range may promote the growth of fungi spores with resultant contamination of the building and/or ventilation system.

According to its Standard 55-2020, Thermal Environmental Conditions for Human Occupancy, ASHRAE has defined the operative temperature (68°F to 79°F) as that temperature range at which at least 80% of the sedentary or near sedentary occupants will find the environment thermally acceptable.

3.2 Carbon Dioxide (CO₂)

Carbon dioxide (CO₂) is a product of human respiration. CO₂ concentrations in a building are used as a primary indicator of outside air exchange. CO₂ at very high concentrations (e.g., greater than 5,000 parts per million [ppm]) can pose a health risk. However, in most buildings, concentrations rarely rise to these levels and CO₂ at the concentrations commonly identified in buildings is not a direct health risk. At the activity levels in typical office buildings, steady CO₂ concentrations of about 700 ppm above outdoor air measurements indicate an outdoor air ventilation rate of about 15 cubic feet per minute (cfm) per person. CO₂ concentrations in outdoor air typically range from 300 to 500 ppm.

ASHRAE Standard 62.1-2022, Ventilation for Acceptable Indoor Air Quality, suggests an indoor CO₂ concentration of up to 1,000 to 1,200 ppm in spaces housing sedentary people is acceptable and an indicator of adequate outside air exchange.

3.3 Carbon Monoxide (CO)

Carbon monoxide (CO) is a colorless and odorless toxic gas that most often occurs as a by-product of incomplete hydrocarbon fuel combustion. The most likely sources of CO are from incomplete hydrocarbon fuel combustion inside a building, and from air intakes placed in, at, or near parking garages or street level that may entrain automotive exhaust gases into the air handling system. Back drafts from boiler flues may also provide a pathway for CO infiltration. In absence of any formal IAQ standard, Fuss & O'Neill uses the more conservative National Ambient Air Quality Standard (NAAQS) of 9 ppm for CO. The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for carbon monoxide is 50 ppm, as an eight-hour time-weighted-average (8-hr. TWA).

3.4 Moisture Meter Testing

Moisture concentration in building materials were evaluated using a Delmhorst Moisture Meter. Measurements were documented from the surfaces of various building materials in the Physical Education Office and Storage Room during the assessment to identify locations where elevated moisture concentrations present, which may be an indicator of an active or recently active, water intrusion.

4 Observations

On the day of the assessment, August 31, 2023, Fuss & O'Neill conducted a visual and olfactory assessment in the AOC at Burr Elementary School. Observations from the assessment are summarized below:

- Physical Education Storage Room
 - Obvious visible suspect mold growth was not observed
 - Mold or mildew odor was not observed
 - Approximately 48 square feet of suspended ceiling tiles were removed
 - Moisture readings of remaining suspended ceiling tiles determined to be insignificant
 - Moisture reading of drywall determined to be insignificant
 - Moisture reading of blue gym mats determined to be insignificant
 - Delaminated surfaces were not observed
 - Debris on blue gym mats stacked in storage room from ceiling

- Physical Education Office
 - Obvious visible suspect mold growth not observed
 - Mold or mildew odor not observed
 - Moisture reading of suspended ceiling tile determined to be insignificant
 - Moisture reading of drywall determined to be insignificant
 - Water staining was observed on approximately 2 square feet of ceiling tile
 - Delaminated surfaces were not observed

5 Results

5.1 Temperature and Relative Humidity

At the time of the assessment, interior temperature measurements ranged from 69.3 °F to 72 °F. These measurements were within the ASHRAE recommended range of between 68°F and 79°F.

At the time of the assessment, interior relative humidity measurements ranged from 48.3 % to 55.3 %. These measurements were within the ASHRAE recommended range of 30 to 60%.

Outdoor ambient temperatures ranged from 76 °F to 78.9 °F and outdoor relative humidity measurements ranged from 34.8 % to 40.1 %. The weather was clear, sunny, and warm. No precipitation occurred during the assessment.

Refer to *Appendix C* for the data sheet for temperature, relative humidity, carbon dioxide, carbon monoxide.

5.2 Carbon Dioxide

At the time of the assessment, the interior concentrations of carbon dioxide ranged from 642 ppm to 758 ppm. These measurements are acceptable in accordance with ASHRAE recommendations of up to 1,000 to 1,200 ppm.

5.3 Carbon Monoxide

Within the limitation of instrumental accuracy, there was no carbon monoxide detected in the building during this assessment.

5.4 Moisture Meter Testing

At the time of the assessment, elevated moisture content was not identified in the representative building materials and surfaces evaluated. This indicates an active moisture source was not present at the time of the assessment.

6 Conclusions and Recommendations

Based on the measurements, physical walk-through, and information available at the time of this assessment, Fuss & O'Neill concludes and recommends the following:

6.1 Conclusions

- Interior temperature measurements were within the ASHRAE recommended comfort range.
- Interior relative humidity measurements were within the ASHRAE recommended comfort range.
- Interior concentrations of carbon dioxide were acceptable in accordance with ASHRAE recommendations.
- Interior concentrations of carbon monoxide were acceptable and below levels specified by the NAAQS.
- Visible mold growth or mold/mildew odors were not identified in the areas included in the assessment
- Elevated moisture content was not identified in the representative building materials and surfaces evaluated.
- No significant active water intrusions were observed during the assessment.
- The majority of water damaged suspended ceiling tiles were removed with the exception of the Physical Education office where there was approximately 2 SF of visible water damage on ceiling tiles.

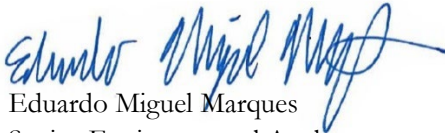
6.2 Recommendations

- Remove and replace water damaged ceiling tile identified in the Physical Education office.
- General housekeeping of Physical Education Office and Storage Room – HEPA vacuuming and wet wiping of surfaces observed to have debris resulting from the removal of moisture impacted ceiling tiles.

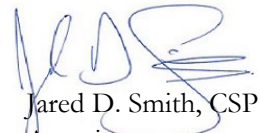
Refer to *Appendix D* for photographs taken during the assessment.

Report prepared by Environmental Technician, Vincent Savarese.

Reviewed by:



Eduardo Miguel Marques
Senior Environmental Analyst



Jared D. Smith, CSP
Associate

Appendix A

Limitations

APPENDIX A

**Site: Burr Elementary School
1960 Burr Street, Fairfield, Connecticut**

1. This environmental report has been prepared for the exclusive use of the Fairfield Public Schools (the “Client”), and is subject to, and is issued in connection with our written agreement on August 29, 2023. Any use or reliance upon information provided in this report, without the specific written authorization of the Client and Fuss & O’Neill, Inc. (Fuss & O’Neill) shall be at the User's individual risk.
2. Fuss & O’Neill has obtained and relied upon information from multiple sources to form certain conclusions regarding the Site when conducting this assessment. Except as otherwise noted, no attempt has been made to verify the accuracy or completeness of such information or verify compliance by any party with federal, state or local laws or regulations.
3. The findings, observations, and conclusions presented in this report are limited by the scope of services outlined in our Agreement dated August 29, 2023, which reflects schedule and budgetary constraints imposed by Client. Furthermore, the assessment has been conducted in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made.
4. The conclusions presented in this report are based solely upon information gathered by Fuss & O’Neill to date. Should further environmental or other relevant information be discovered at a later date, the Client should immediately bring the information to Fuss & O’Neill’s attention. Based upon an evaluation and assessment of relevant information, Fuss & O’Neill may modify this report and its conclusions.

Appendix B

Instrumentation List

Instrumentation

Measurement Parameter	Description	Calibration
Temperature, Relative Humidity, Carbon Dioxide & Carbon Monoxide	TSI IAQ-Calc IAQ Meter (7545X)	Annually – 2022
Moisture Content on/in Building Materials	Delmhorst Moisture Meter	Factory

Appendix C

Data Sheet for Temperature, Relative Humidity, Carbon Dioxide,
and Carbon Monoxide

Air Quality Parameters

CLIENT: Fairfield Public Schools

SITE ADDRESS: 1960 Burr Street

CITY & STATE: Fairfield, Connecticut

FUSS & O'NEILL PROJECT NO. : 20230741.A10

Date: August 31, 2023 Location: Physical Education Office/Storage Room Page 1 of 1

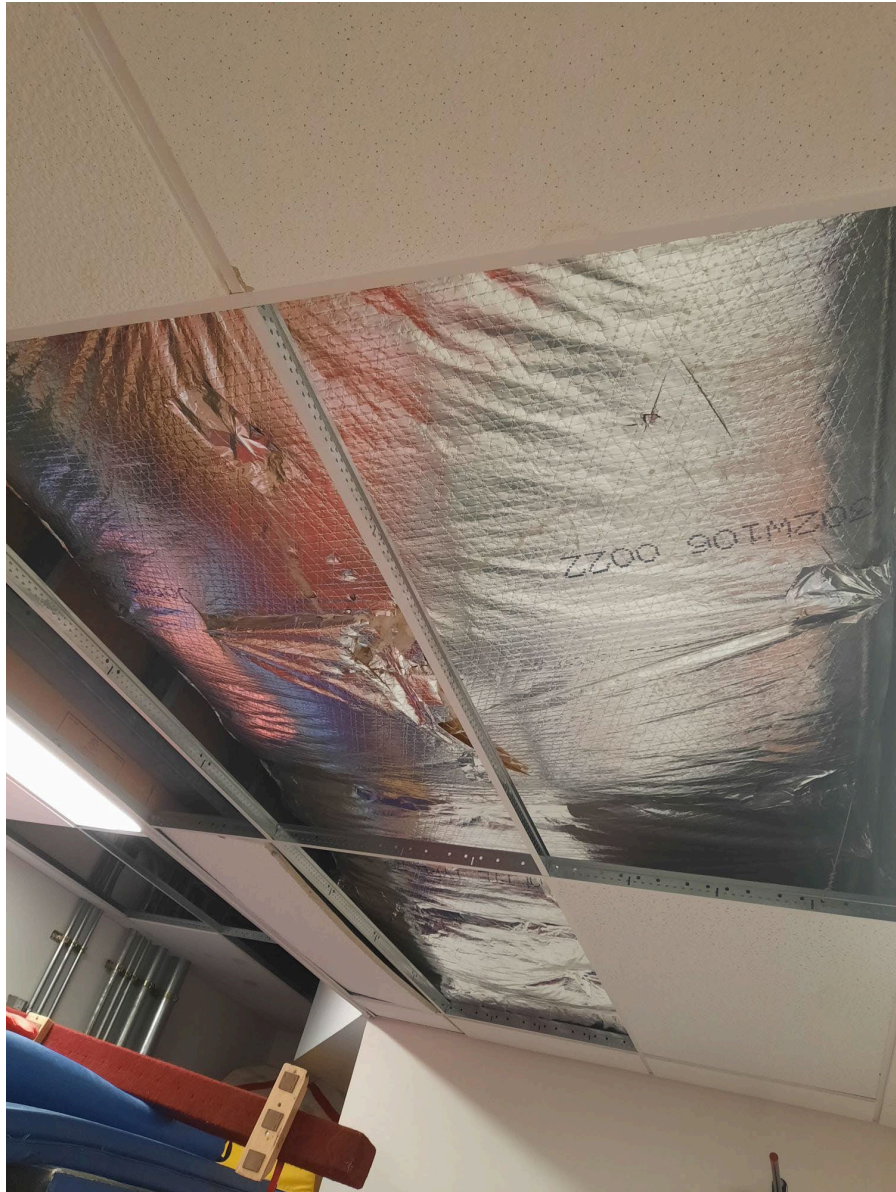
Location	Time (0000)	# of Occupants	CO ₂ (PPM)	CO (PPM)	Temp. (°F)	RH (%)
Recommended Guidelines			< 1,200	< 9.0	68-79	30-60
Outside Ambient Air Start	1:15 PM	Not Applicable	389	0	78.9	34.8
Physical Education Storage Room	1:25 PM	1	652	0	72.0	48.3
Physical Education Office	1:33 PM	1	642	0	70.0	51.5
Gym/Library Hallway	1:45 PM	1	758	0	69.3	55.3
Outside Ambient Air End	1:55 PM	Not Applicable	397	0	76.0	40.1

Appendix D

Site Photographs



Physical Education Storage Room



Physical Education Storage Room : Suspended ceiling tiles were removed



Physical Education Storage Room : Debris from water damaged ceiling tiles (previously removed) was observed on mats.



Physical Education Office : ~2 SF of water damaged ceiling tile



Physical Education Office