

IEA, INC.

# 2022 - 2023 IAQ Walkthrough



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## Saint Paul Public Schools Murray Middle School

Walkthrough Date:  
Monday, November 28, 2022  
Retest Date: February 13, 2023

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## Project Description

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IEA conducted an Indoor Air Quality (IAQ) walkthrough at Murray Middle School by IEA representative, Nick Lundgren. This walkthrough was conducted with the intent of gathering basic air quality and visual observations which will assist the District in making informed and proactive decisions to improve and maintain acceptable air quality in the building. This walkthrough is based upon the Environmental Protection Agency's (EPA's) Tools for Schools IAQ guidelines.

Some observations gathered during the walkthrough may identify issues which may require additional testing, evaluation or further investigation.

The findings, conclusions and recommendations presented herein are believed to be accurate and representative of the building on the date and time of the walkthrough.

### **GENERAL COMMENTS**

The analysis and opinions expressed in this report are based upon data obtained from Saint Paul Public Schools at the indicated locations. This report does not reflect variations in conditions that may occur across the site, property, or facility. Actual conditions may vary and may not become evident without further assessment.

The report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted indoor air quality practices. Other than as provided in the preceding sentence, no warranties are extended or made.

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## Building Information

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General information regarding the building was collected during the walkthrough. The information gathered during this process is a vital component, as it is helpful in determining how these items may play a role in possible IAQ related issues.

Below is a summary of the information gathered during the walkthrough:

- The building has three (3) floors.
- The building has not had recent construction.
- There are operable and inoperable windows in the exterior rooms within the building.
- The building was originally constructed in 1925.
- There are additions to the building, in the following year(s): 1930, 1939, 1963 and 1977.
- The building does utilize walk-off mats.
- There are below grade floors.
- There are tunnels under portions of the building.

## Observations Summary and Air Quality Measurements

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO <sub>2</sub> (ppm)	CO (ppm)	RH (%)	Temp (°F)
OUTDOORS					380	0.4	78.0	29.0
1001	3	No	<ul style="list-style-type: none"> <li>Stained Ceiling Tiles</li> </ul>	Yes Ceiling Tiles Around Air Supply	703	0.1	32.8	72.0
1003	2	No		No	975	0.2	22.6	69.4
1004	1	No	<ul style="list-style-type: none"> <li>Stained Ceiling Tiles</li> </ul>	No	587	0.2	22.3	70.0
1005	1	No		No	582	0.3	22.5	71.1
1006	1	Yes Fragrance	<ul style="list-style-type: none"> <li>Plants</li> </ul>	No	624	0.3	22.2	70.5
1007	2	No		Yes Air Return	607	0.3	22.9	69.8
1008	1	No		No	616	0.2	23.3	69.1
1009	1	No		No	634	0.3	23.0	69.4
1010	0	No		No	579	0.3	22.6	69.4
1011	1	Yes Diffuser		No	934	0.3	23.5	70.7
1012	1	No	<ul style="list-style-type: none"> <li>Stained Ceiling Tiles</li> </ul>	No	647	0.3	22.4	70.3
0203	15	No		No	1,218	0.3	23.3	70.3
RETEST 0203	21	No		No	1,031	0.6	23.9	74.1
0212	0	No		No	634	0.3	22.5	70.2
0206	1	No		Yes Air Return	464	0.3	19.4	72.1
0206A	1	Yes Stuffy		No	581	0.3	22.1	74.5
0209	13	No		No	1,190	0.4	22.5	72.3

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO <sub>2</sub> (ppm)	CO (ppm)	RH (%)	Temp (°F)
RETEST 0209	16	No		No	1,077	0.6	24.4	73.6
0211	22	No		No	997	0.3	23.7	72.0
0216	0	Yes Essential oils		No	675	0.3	21.9	71.2
0215	24	No	• Plants	No	1,451	0.3	27.6	70.9
RETEST 0215	13	No		No	1,133	0.6	24.9	73.0
0217	23	Yes Musty		Yes Ceiling Tiles Around Air Supply	1,055	0.3	24.9	70.5
0404A	1	No		Yes Horizontal Surfaces	553	0.3	21.3	74.1
0406	0	No		No	1,092	0.4	24.0	75.6
0408	28	No		No	1,440	0.4	28.8	73.9
RETEST 0408	30	No		No	1,551	0.7	28.1	74.3
0410	21	No		No	1,375	0.3	24.9	72.7
RETEST 0410	15	No		No	1,280	0.6	25.1	73.8
0412	6	No		No	698	0.3	22.3	71.8
0409	20	No	• Plants	No	991	0.3	25.5	71.4
0407	19	No		No	1,128	0.3	26.3	71.1
RETEST 0407	17	No		No	1,188	0.7	25.5	73.2
0405	0	No		No	730	0.3	22.9	70.9
2403	4	No		No	1,062	0.3	23.6	72.3
2402	0	No		No	652	0.3	22.8	70.3
AUDITORIUM	0	No		No	533	0.1	22.6	71.8
2216	2	No		No	870	0.3	26.2	73.0
2214	18	No		No	830	0.3	22.5	72.0
2215	30	No	• Plants	No	805	0.3	22.9	71.4
2212	15	No	• Plants	No	902	0.3	25.0	72.0
2213	22	No		No	1,053	0.3	23.3	72.0
2210	12	No		No	748	0.3	24.8	71.4

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO <sub>2</sub> (ppm)	CO (ppm)	RH (%)	Temp (°F)
2208	0	No		No	622	0.5	21.2	71.8
RETEST 2208	0	No		No	810	0.5	20.7	73.2
2209	19	No		No	818	0.2	24.6	71.4
2217	2	No	• Plants	No	1,760	0.3	25.7	72.1
RETEST 2217	1	No		No	1,072	0.7	24.5	73.2
2207	24	No		No	1,407	0.4	25.3	71.4
RETEST 2207	23	No		No	907	0.6	22.4	73.4
2202	1	No		No	725	0.2	22.8	70.7
2203	10	No		No	1,128	0.3	25.6	70.2
RETEST 2203	3	No		No	684	0.6	20.6	72.5
2205	0	No	• Housekeeping: Storage	No	633	0.1	22.3	70.2
2211	0	No		No	541	0.2	23.9	67.8
2210	30	No	• Aquariums (fish) • Taxidermy	No	990	0.2	27.7	70.3
2109	16	No	• Plants • Taxidermy	No	1,032	0.3	24.6	70.0
2109D	0	No		Yes Ceiling Tiles Around Air Supply	519	0.2	22.7	69.1
2108	13	No		No	1,308	0.3	25.1	70.9
2105	0	No	• Stained Ceiling Tiles	No	516	0.2	21.5	71.1
2105A	0	No		No	634	0.3	22.4	71.4
2108A	0	No		No	517	0.2	20.9	72.7
2104	30	No	• Plants • Taxidermy	No	823	0.3	24.4	71.2
2103	21	No	• Plants	No	702	0.2	23.4	71.8
2102	24	No		No	880	0.2	23.8	71.6
KITCHEN	3	No		No	614	0.1	26.8	69.1

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO <sub>2</sub> (ppm)	CO (ppm)	RH (%)	Temp (°F)
KITCHEN OFFICE	1	No		Yes Air Return	572	0.3	24.6	68.7
1105C	1	No		No	652	0.2	24.7	71.8
1108	0	No		No	568	0.2	22.4	71.1
1108B	0	No		No	583	0.3	21.9	72.1
1108A	0	No	• Stained Ceiling Tiles	No	594	0.3	22.0	72.3
1105B	0	No		No	549	0.3	21.8	72.0
1108C	0	No		No	577	0.2	22.8	71.6
1105D	0	No		No	592	0.3	22.8	72.5
1105	14	No		No	899	0.3	22.4	71.4
CAFETERIA	100	No	• Stained Ceiling Tiles	No	646	0.2	25.3	69.1
1301A	0	No		No	470	0.1	22.3	70.0
1301B	1	No	• Stained Ceiling Tiles	No	483	0.1	22.7	70.0
1301	2	No		Yes Horizontal Surfaces, Air Supply	437	0.2	22.0	69.4
1301D	1	No		No	525	0.1	21.3	71.2
1206	2	No	• Plants	No	1,106	0.5	26.7	73.6
RETEST 1206	2	No		No	982	0.6	22.2	74.8
1204	0	No		No	908	0.3	22.9	73.8
1202	25	No	• Plants	No	901	0.3	24.9	72.0
1203	0	No		No	680	0.2	22.0	72.1
1205	0	No		No	774	0.2	22.4	72.9
1212	0	No		No	666	0.5	21.7	72.3
1214	1	No	• Plants	No	734	0.2	23.0	71.6
1207	0	No	• Stained Ceiling Tiles	No	673	0.1	22.1	71.8
1209	9	No		No	783	0.1	23.0	72.9
1216	0	No		No	525	0.2	20.9	72.1
1211	0	No		No	532	0.1	22.3	69.8
1218	1	No		No	589	0.1	23.9	68.9

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO <sub>2</sub> (ppm)	CO (ppm)	RH (%)	Temp (°F)
1401	0	No		No	937	0.2	23.7	72.5
1403	1	No		No	1,145	0.2	23.8	72.7
RETEST 1403	1	No		No	754	0.7	21.5	73.4
GYM EAST	0	No		Yes Ceiling Tiles Around Air Supply	541	0.3	24.0	68.7
GYM WEST	0	No		Yes Ceiling Tiles Around Air Supply	553	0.2	23.8	67.8



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## Summary of Concerns & Recommendations

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See below for IEA's list of concern areas and recommendations:

### **Indoor Air Quality Parameters/Guidelines**

IEA recorded area(s) with carbon dioxide measurements above 1,200 ppm in the room(s) listed below. IEA considers carbon dioxide measurements above 1,200 ppm as an indication of a possible ventilation issue. The ventilation system(s) serving the location(s) with these levels should be evaluated.

- 0203
- 0215
- 0408
- 0410
- 2108
- 2207
- 2217
- RETEST 0408
- RETEST 0410

After IEA completed the initial IAQ walkthrough, the ventilation system(s) serving rooms with carbon dioxide measurements at or above 1,100 ppm were evaluated by SPPS. After ventilation adjustments or repairs were made, IEA returned to those rooms on February 13, 2023, to repeat the walkthrough. The “retest” data is included in this report for reference.

IEA recorded area(s) with humidity levels outside the ASHRAE recommended range of 30 - 60%. Relative humidity levels identified in area(s) listed below were found to be outside these guidelines. Low humidity levels tend to dry mucous membranes which may result in increased susceptibility to irritation. Elevated humidity levels can lead to condensation and provide conditions conducive to fungal growth. Low relative humidity is common in buildings during the heating season. An evaluation of the ventilation system controls, performance and operation is recommended.

- IEA identified ninety-seven (97) rooms with relative humidity levels below 30%. However, this is common for non-humidified buildings during the heating season and is not considered an issue.

IEA recorded area(s) with temperatures outside the recommended range. During the heating season, ASHRAE recommends that temperatures be between 68°F and 75°F. Evaluation of temperature controls and/or ventilation system performance and operation is recommended.

- 0406
- 2211
- GYM WEST

### **Odors**

Odors were detected during the site visit in the building. If the source of the odor cannot be easily identified, IEA can provide further investigation or recommendations.

- 0206A *Stuffy*
- 0216 *Essential oils*
- 0217 *Musty*
- 1006 *Fragrance*
- 1011 *Diffuser*

### **Stained Ceiling Tiles**

Stained ceiling tiles were found in the room(s) shown below. The impacted ceiling tiles should be removed and replaced, and the cause of the moisture repaired.

- 1001
- 1004
- 1012
- 1108A
- 1207
- 1301B
- 2105
- CAFETERIA

### **Plants**

Plants in an occupied location can be a source of allergens to sensitized individuals due to the pollen and soil mold. It is recommended that plants be removed from locations occupied by sensitized individuals. If plants are to remain in the area, IEA recommends that plants should not be placed near air unit ventilators or air supply diffusers. Additionally, plants should be watered from the bottom. These measures will help control pollen and mold spores from becoming airborne.

- 0215
- 0409
- 1006
- 1202
- 1206
- 1214
- 2103
- 2104
- 2109
- 2212
- 2215
- 2217

### **Taxidermy**

IEA observed area(s) with taxidermy mounts present. Individuals with allergies or asthma may be sensitive to dust, animal fur, or dander, and may have a reaction when exposed to these allergens. IEA recommends using an alternative to taxidermy mounts if allergen symptoms are found by occupants within the classroom.

- 2104
- 2109
- 2210

**Live Animals / Aquariums**

IEA observed live animal(s). Prior to having animals, the Building Principal should be consulted. Consult parents about potential allergies in a take-home note with students or during parent-teacher conferences. IEA recommends that the animal and cages/cases are regularly cleaned/maintained and stored away from air supply and return vents.

- 2210

**Poor Housekeeping**

Area(s) identified by IEA as having poor housekeeping (excessive clutter, excessive dust/debris on horizontal surfaces, etc.) were documented within the building. Poor housekeeping can limit building maintenance from conducting a proper cleaning of the area. This can result in elevated potential for allergen issues in sensitized individuals due to dirt and debris loading. Poor housekeeping can also allow for pest (insects and rodents) issues in the space.

- 2205 *Storage*

**Dust Accumulation**

IEA observed dust accumulation in the following room(s) and recommend that the specified area is wiped clean using a damp rag.

- 0206 *Air Return*
- 0217 *Ceiling Tiles Around Air Supply*
- 0404A *Horizontal Surfaces*
- 1001 *Ceiling Tiles Around Air Supply*
- 1007 *Air Return*
- 1301 *Horizontal Surfaces, Air Supply*
- 2109D *Ceiling Tiles Around Air Supply*
- GYM EAST *Ceiling Tiles Around Air Supply*
- GYM WEST *Ceiling Tiles Around Air Supply*
- KITCHEN OFFICE *Air Return*