

IEA, INC.

2022 - 2023 IAQ Walkthrough



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Saint Paul Public Schools Central Senior High School

Walkthrough Date:
Friday, December 16, 2022

Project Description

IEA conducted an Indoor Air Quality (IAQ) walkthrough at Central Senior High School by IEA representative, Sashya Wandmaker. 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.

Building Information

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 five (5) 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 1912.
- There are additions to the building, in the following year(s): 1924 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 ₂ (ppm)	CO (ppm)	RH (%)	Temp (°F)
OUTDOORS					323	0.3	31.4	53.8
1406	2	No	<ul style="list-style-type: none"> Stained Ceiling Tiles 	No	295	1.2	23.0	72.3
1405	2	No		No	315	1.3	23.0	72.3
1318	7	No		No	330	0.3	23.2	71.1
1303	18	No	<ul style="list-style-type: none"> Stained Ceiling Tiles Plants 	No	504	0.2	23.2	70.5
1304 OFFICE	1	No		No	309	0.2	21.9	72.7
1304	23	No		No	491	0.2	24.2	69.8
1415	0	No	<ul style="list-style-type: none"> Stained Ceiling Tiles 	No	346	0.1	20.5	71.2
1305	14	No	<ul style="list-style-type: none"> Stained Ceiling Tiles Plants 	No	335	0.3	22.6	72.0
1316	19	No	<ul style="list-style-type: none"> Stained Ceiling Tiles 	No	436	0.3	24.8	71.1
1309	6	No		No	380	0.2	24.6	71.2
1313	0	No		No	284	0.2	20.9	73.4
1314	13	No	<ul style="list-style-type: none"> Bubbling/Peeling Paint: See Appendix A 	No	362	0.2	22.4	71.2
1312	2	No		No	484	0.1	24.5	72.3
1311	0	No	<ul style="list-style-type: none"> Bubbling/Peeling Paint: Duct work & North Wall; See Appendix A 	No	283	0.1	20.0	73.0
1317	15	No		Yes Ceiling Tiles Around Air Supply	467	0.1	23.3	70.9
1203	19	No		No	395	0.1	23.1	70.0
1202	14	No	<ul style="list-style-type: none"> Plants 	No	450	0.2	22.2	71.4
1201	2	No		No	388	0.1	22.1	70.5

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO ₂ (ppm)	CO (ppm)	RH (%)	Temp (°F)
1101	3	No		No	389	0.1	21.9	70.9
1102	0	No		No	354	0.1	21.7	71.2
1102A OFFICE	0	No		No	357	0.1	21.0	71.1
1103	5	No	• Stained Ceiling Tiles	No	406	0.1	21.6	71.2
1103A	2	No		No	452	0.1	23.1	71.2
1104	5	No		No	416	0.1	21.4	71.8
1106	5	No		No	411	0.1	22.3	71.8
1108	5	Yes Fragrance		No	464	0.1	26.2	71.8
1111	0	No		No	325	0.1	25.8	72.5
1112	0	No		No	329	0.1	24.2	72.9
1114	7	No		Yes Ceiling Tiles Around Air Supply	365	0.2	25.3	70.9
1117	8	No		No	405	0.3	24.8	69.6
1506	0	No		No	339	0.1	23.4	70.6
1505	1	No		No	332	0.2	23.4	68.5
1505A	0	No		No	324	0.1	25.0	67.1
1214	15	No		No	466	0.1	26.4	72.1
1414	23	No	• Stained Ceiling Tiles	Yes Ceiling Tiles Around Air Supply	449	0.1	21.4	72.5
1409	0	No		No	395	0.1	21.0	71.8
1410	2	No	• Stained Ceiling Tiles	No	383	0.1	21.3	71.2
1407	2	No		No	430	0.1	21.0	71.2
1310	0	No		No	341	0.2	19.4	73.0
POOL	0	No		No	355	0.1	25.3	77.5
POOL OFFICE	0	No		No	374	0.1	22.0	79.0
1209	1	No	• Stained Ceiling Tiles	No	405	0.1	22.3	71.4
1210	1	No	• Stained Ceiling Tiles	No	465	0.1	22.4	71.8

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO ₂ (ppm)	CO (ppm)	RH (%)	Temp (°F)
1208	0	No		No	382	0.1	21.1	72.0
1119D	3	No		No	376	0.2	25.8	72.3
1121	1	No		No	329	0.2	24.4	71.9
1119	13	No		No	385	0.1	25.0	72.3
1119A	0	No	• Stained Ceiling Tiles	No	320	0.1	24.8	71.1
1119B	0	No		No	335	0.1	24.8	71.6
1119C	5	No	• Stained Ceiling Tiles	No	391	0.1	24.8	72.1
2201	5	No		No	308	0.2	19.5	73.2
1501 GYMNASIUM	35	No		No	348	0.1	21.1	70.5
1503	1	No		No	414	0.1	22.4	70.5
1109	1	No		No	352	0.1	24.5	72.0
1217	1	No		No	369	0.2	20.7	71.8
1218	7	No		No	460	0.3	23.1	69.4
0101	32	No		No	451	0.1	22.9	69.6
0202	27	No	• Bubbling/Peeling Paint: SW Corner	No	415	0.1	22.1	70.0
0203	0	No		No	388	0.1	21.7	70.3
0401	1	No		No	397	0.1	23.1	71.2
0404	0	No	• Bubbling/Peeling Paint: See Appendix A	No	396	0.1	22.7	70.9
OUTDOORS					323	0.3	31.4	53.8
4201 LIBRARY	7	No		No	460	0.3	21.4	68.2
4209 OFFICE	0	No		No	452	0.2	22.3	67.5
4207 CONFERENCE	0	Yes Stuffy		No	480	0.2	22.8	67.6
4208 CONFERENCE	0	No		No	471	0.3	22.3	67.5
4210 OFFICE	0	Yes Stuffy		No	499	0.3	23.1	68.5

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO ₂ (ppm)	CO (ppm)	RH (%)	Temp (°F)
4202 CONFERENCE	1	Yes Stuffy		No	490	0.3	21.7	68.5
4205	23	No		No	895	0.3	28.5	67.8
4206	0	No		No	444	0.3	22.6	68.7
4222 OFFICE	0	No		No	492	0.3	19.7	71.6
4401	20	No		No	744	0.4	20.5	73.0
4402	29	Yes Fragrance		No	705	0.5	20.1	73.0
4403	24	No		No	686	0.5	20.5	72.7
4404	28	No		No	702	0.5	21.9	72.3
4405	26	Yes Stuffy		No	635	0.5	23.5	72.1
4417	1	No		No	541	0.5	19.7	72.3
4414	1	No		No	543	0.5	19.1	74.1
4406	22	No		No	637	0.5	18.8	73.4
4407	2	No		No	487	0.5	19.4	72.1
4408	19	No		No	641	0.4	20.4	70.9
4409	13	Yes Fragrance		No	748	0.4	21.9	70.7
4410	33	No		No	618	0.4	20.3	71.1
4412	0	No		No	492	0.4	18.3	71.8
4213	3	No		No	539	0.4	18.8	72.1
4215	0	No		No	584	0.3	16.2	75.4
4216	1	No		No	622	0.3	17.8	74.5
4217	0	No		No	603	0.3	16.8	75.4
4218	1	No		No	578	0.4	18.8	73.6
4219	1	No	• Plants	No	615	0.2	19.4	72.9
4214	0	No		No	512	0.4	17.0	74.7
4117	19	No		No	707	0.5	21.2	72.9
4101	13	No		No	673	0.4	20.4	72.0

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO ₂ (ppm)	CO (ppm)	RH (%)	Temp (°F)
4102	2	No	• Plants	No	718	0.3	22.4	70.9
4103	15	No	• Plants	No	704	0.3	22.3	70.9
4104	13	No		No	739	0.3	23.6	70.5
4105	1	Yes Food	• Plants	No	656	0.3	22.9	70.7
4116	0	No		No	817	0.2	24.6	71.2
4114	19	Yes Food		No	893	0.3	23.1	72.1
4106	23	No		No	831	0.3	21.2	71.8
4107	17	No		No	872	0.3	23.5	71.2
4108	25	No		No	833	0.3	24.1	71.6
4109	0	No		No	553	0.2	19.2	71.4
4110	14	No		No	731	0.3	22.2	72.9
4112	8	Yes Fragrance		No	851	0.3	22.3	72.1
3115	0	No		No	569	0.0	20.5	69.4
3118	6	No		No	656	0.0	23.0	69.4
3114	1	No		No	696	0.0	21.2	69.8
3110	1	Yes Fragrance		No	547	0.1	19.9	70.2
3108	21	No		No	890	0.0	22.8	70.5
3107	2	Yes Fragrance		No	674	0.0	20.6	70.9
3106	18	No		No	680	0.1	21.0	71.2
3105	2	No	• Plants	No	540	0.1	19.5	70.7
3103	15	No		No	714	0.1	21.4	70.5
3102	18	No		No	651	0.1	21.0	70.9
3104	14	No	• Plants	No	715	0.1	21.0	70.5
3121	1	No		No	702	0.1	20.6	70.0
3101	25	No		No	952	0.1	22.8	70.0

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO ₂ (ppm)	CO (ppm)	RH (%)	Temp (°F)
3205	1	No	• Plants	No	538	0.0	17.3	72.3
3206	0	No		No	547	0.2	15.5	75.7
3401	34	No		No	809	0.2	18.2	75.7
3420	6	No		No	572	0.3	17.6	75.0
3419	0	No		No	586	0.2	17.3	74.8
3415	0	No		No	527	0.2	16.0	74.7
3420	0	No		No	529	0.2	16.5	75.0
3402	19	No		No	633	0.2	19.1	73.8
3403	26	No		No	656	0.1	19.2	73.2
3404	18	No		No	641	0.0	20.0	72.7
3405	19	No	• Plants	No	679	0.0	20.2	72.7
3406	20	No		No	600	0.0	17.7	72.3
3407	1	No		No	454	0.0	16.7	70.2
3408	14	No		No	631	0.0	19.6	69.3
3409	0	No	• Plants	No	466	0.1	18.4	68.9
3410	0	No		No	499	0.1	18.5	68.9
3414	0	No		No	556	0.1	19.1	70.2
2408	23	No		No	633	0.0	16.9	74.3
2407	1	No		No	468	0.0	15.7	72.9
2406	33	No	• Stained Ceiling Tiles	No	729	0.0	19.4	72.1
2405	13	No		No	639	0.0	18.1	72.7
2404	3	No	• Plants	No	558	0.0	17.1	73.0
2410	1	No		No	499	0.0	17.1	72.9
2403	20	No		No	635	0.0	19.4	72.3
2204 KITCHEN	3	No		No	860	0.1	23.4	72.9
2204A	1	No		No	942	0.2	21.9	74.1
2304	19	No	• Stained Ceiling Tiles	No	630	0.1	18.5	73.0
2312	28	No		No	657	0.1	20.4	72.0
2311	24	No	• Plants	No	610	0.0	19.2	71.4

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO ₂ (ppm)	CO (ppm)	RH (%)	Temp (°F)
2305	0	No		No	471	0.0	18.3	71.1
2306	1	No		No	502	0.1	18.7	70.2
2307	38	No		No	699	0.0	21.1	70.3
2200 CAFETERIA	120	No		No	801	0.0	23.1	69.6
2201 AUDITORIUM	1	No		No	383	0.0	16.4	69.6
2201A STAGE	18	No		No	406	0.0	17.2	68.7
2104 NURSE WAITING	1	No		No	596	0.0	19.4	72.1
2105	1	No		No	704	0.0	20.2	72.9
2107 HEALTH OFFICE	1	No		No	579	0.1	18.1	74.1
2109 COT	0	No		No	564	0.1	17.6	75.2
2106 CLINIC RECEPTION	1	No		No	586	0.2	16.7	75.7
2111 OFFICE	0	No		No	569	0.2	17.0	75.9
2112 LAB	0	No		No	563	0.2	16.4	76.1
2113 OFFICE	0	No		No	577	0.2	16.7	75.7
2114 OFFICE	0	No		No	566	0.2	16.9	74.8
2115 OFFICE	0	No		No	556	0.1	18.2	73.8
2116 OFFICE	0	No		No	570	0.1	17.8	73.6
2002 OFFICE	1	Yes Fragrance		No	690	0.1	19.4	73.4
2001 MAIN OFFICE	5	No		No	650	0.1	19.3	73.8
2001A WORKROOM	1	No		No	633	0.1	19.0	73.9
2014 OFFICE	2	No		No	725	0.1	19.7	73.9
2013 COPY ROOM	0	No		No	610	0.1	18.5	74.1
2003 OFFICE	0	No		No	619	0.1	19.5	73.4

Room / Location	Number of Occupants	Odor Present	Observations	Dust Accumulation	CO ₂ (ppm)	CO (ppm)	RH (%)	Temp (°F)
2005 OFFICE	2	No		No	682	0.1	19.7	73.2
2006 OFFICE	1	No		No	691	0.1	20.4	73.0
2007 OFFICE	2	No		No	694	0.1	20.3	73.0
2012 OFFICE	1	No		No	723	0.1	20.1	72.9
2008 OFFICE	0	No	• Plants	No	602	0.1	19.3	72.9
2009 OFFICE	0	No		No	625	0.0	20.3	72.5
2010A	3	No		No	641	0.0	20.0	72.7
2010B	1	No		No	650	0.0	20.1	72.5
2023 OFFICE	0	No		No	634	0.0	19.6	72.5
2022 OFFICE	1	No	• Plants	No	673	0.0	20.6	72.3
2021 OFFICE	1	No		No	714	0.0	20.3	73.0
2020 OFFICE	1	No		No	725	0.1	19.0	74.7
2026	1	No		No	662	0.1	19.0	74.1
2019 OFFICE	1	No		No	723	0.1	19.5	73.6
2018 OFFICE	0	No		No	634	0.1	18.4	73.9
2017 OFFICE	1	No		No	751	0.1	19.6	73.9
2027 STAFF LOUNGE	0	No		No	652	0.1	19.2	73.8
2016 OFFICE	0	No		No	667	0.1	19.8	74.5
2015 RECEPTION	0	No		No	658	0.1	18.5	74.7
218	38	No		No	882	0.1	21.7	73.8
2501 CHOIR	39	Yes Fragrance		No	689	0.2	19.2	72.1
2503 OFFICE	1	No		No	600	0.0	20.8	71.2
2504 PRACTICE	2	No		No	640	0.0	19.2	72.5
2505 PRACTICE	4	No		No	620	0.0	19.4	72.1
2507 BAND	0	No		No	458	0.0	18.2	71.2
1415	1	No	• Stained Ceiling Tiles	No	447	0.0	18.0	70.0
0404	0	No		No	547	0.0	18.8	72.1
0401	8	No		No	584	0.0	19.4	71.8

Summary of Concerns & Recommendations

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

Indoor Air Quality Parameters/Guidelines

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 one hundred and ninety-seven (197) 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.

- 1505A
- 2106 CLINIC RECEPTION
- 2109 COT
- 2111 OFFICE
- 2112 LAB
- 2113 OFFICE
- 3206
- 3401
- 4205
- 4207 CONFERENCE
- 4208 CONFERENCE
- 4209 OFFICE
- 4215
- 4217
- POOL
- POOL OFFICE

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.

- 1108 *Fragrance*
- 2002 OFFICE *Fragrance*
- 2501 CHOIR *Fragrance*
- 3107 *Fragrance*
- 3110 *Fragrance*
- 4105 *Food*
- 4112 *Fragrance*
- 4114 *Food*
- 4202 CONFERENCE *Stuffy*
- 4207 CONFERENCE *Stuffy*
- 4210 OFFICE *Stuffy*
- 4402 *Fragrance*
- 4405 *Stuffy*
- 4409 *Fragrance*

Appendix A

Photo Documentation



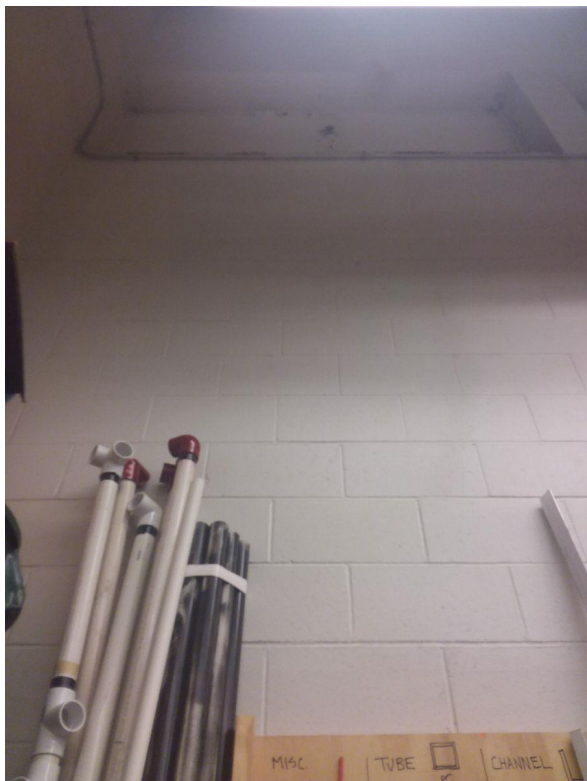
1314

Bubbling/Peeling Paint



1311

Bubbling/Peeling Paint



1311

Bubbling/Peeling Paint



0404

Bubbling/Peeling Paint