



Windjammer Environmental LLC
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June 2, 2023

Alex Baylor
Environmental Specialist
PGCPS Environmental Safety Office
13306 Old Marlboro Pike
Upper Marlboro, MD 20772
Alex.baylor@pgcps.org

Re: IAQ and Particulate Assessment Report
Prince George's County Public Schools
Green Valley Administrative Offices

Dear Mr. Baylor,

Windjammer Environmental LLC (Windjammer) was contracted to measure indoor air quality (IAQ) parameters and particulates at Prince George's County Green Valley Administrative Offices Room 202 located at 2215 Chadwick St Temple Hills, MD 20748. This assessment was conducted by Industrial Hygienist Shanita Thomas MPH, ASP on May 23, 2023.

This assessment included:

- Indoor air quality measurements
- Measurement of dust and particulate concentrations

Methods

A TSI IAQ-Calc Model 7545 was used to measure temperature, relative humidity, carbon dioxide (CO₂) and carbon monoxide (CO).

A TSI DustTrak II Desktop 8530 dust/aerosol was used to monitor and record airborne dust (particulate) and provide mass and size fractions.

Direct read instrumentation used were calibrated in accordance with the manufacturer's specifications prior to the start of this assessment.

Guidance

The Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs) are the only enforceable regulatory standards for indoor air quality. However, other organizations such as the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) and the Environmental Protection Agency (EPA) have developed widely accepted consensus standards that can be used to assess the suitability of indoor air quality.

ASHRAE Standards

62.1-2013 and 55-2017 are consensus standards that outline acceptable practices for the design of ventilation systems in commercial and residential structures. Both documents were developed "to specify minimum ventilation rates and indoor air quality that will be acceptable to human occupants and are intended to minimize the potential for adverse health effects." The standards also consider chemical, physical, and biological contaminants and other factors that impact indoor air quality and affect occupant health and comfort.

ASHRAE 55-2017 recommends temperature and relative humidity ranges that are considered suitable for indoor air quality. Recommended ranges are as follows:

- Temperature should be maintained between 67 and 82 degrees Fahrenheit (°F)
- Relative humidity to be maintained below 65%

Carbon Dioxide

CO₂ is widely used as a surrogate gas in the assessment of indoor air quality. It is a byproduct of respiration and can be used to determine the effectiveness and/or management of building ventilation systems. Based on ASHRAE recommendations, indoor CO₂ concentrations that are below 1000 parts per million (ppm) or have a differential of less than 700 ppm compared to outside concentrations are considered to be suitable.

For example, if outside CO₂ concentration is measured at 431 ppm, then indoor CO₂ concentrations measured up to 1131 ppm would be considered suitable.

Carbon Monoxide

ASHARE has adopted the EPA National Ambient Air Quality Standard (NAAQS) for CO of 9 ppm when evaluating indoor air quality. In nonindustrial settings, the NAAQS standard is commonly used to assess the suitability of IAQ.

Respirable and Total Dust in Air Sampling

OSHA regulation 1910.1000 limits exposure to respirable nuisance dust and particulates not otherwise regulated to 5 mg/m³.

Findings

Indoor Air Quality

A total of 8 areas within room 202 were tested and all indoor air quality measurements collected were satisfactory with respect to temperature, relative humidity, carbon dioxide (CO₂), and carbon monoxide (CO). Recorded indoor air quality results are summarized below in Table 1.

Table 1
Indoor Air Quality Measurement Summary

Measurement Location	Temperature (°F)	Relative Humidity (%)	CO₂ (ppm)	CO (ppm)
Outside	69.5	53.1	431	0.1
Rm 202 Front right desk	72.4	38.6	480	0.0
Rm 202 Front left storage	71.8	37.5	486	0.2
Rm 202 Back left desk	72.5	39.7	484	0.1
Rm 202 Back right desk	72.8	38.7	491	0.0
Rm 202 Entrance	72.3	37.4	485	0.1
Rm 202 Center of office	71.7	44.1	487	0.1
Hallway	72.6	51.2	460	0.1
Rm 205 Conference room	73.1	47.1	451	0.1

ppm – parts per million

Airborne Dust/Particulates

A 10-mm nylon Door-Oliver Cyclone was attached to the DustTrak to assess inhalable dust and particulates that have a diameter of 10 micrometers and smaller. Six different areas within room 202 were tested and the average of 12 samples per tested location were recorded as a single measurement. Measurements collected by the DustTrak were all below 5 mg/m³. DustTrak results are summarized below in Table 2 and full data can be found in attachment A.

Table 2
DustTrak Data

Test Name	Measurement Location	Average Particulate Mass (mg/m³)
003	Rm 202 Front right desk	0.04
004	Rm 202 Front left storage	0.04
005	Rm 202 Back left desk	0.039
006	Rm 202 Back right desk	0.039
007	Rm 202 Entrance	0.039
008	Rm 202 Center of office	0.039
009	Hallway	0.041
010	Rm 205 Conference room	0.041

Conclusions & Recommendations

At the time of the assessment the temperature, relative humidity, carbon dioxide, and carbon monoxide levels for all sampled areas were within acceptable ranges according to ASHRAE 55-2017.

Respirable nuisance dust and particulates did not exceed 5 mg/m³.

At this time, no further action is required.

Windjammer appreciates the opportunity to provide this indoor air quality assessment. If you have any questions or comments, please feel free to contact us at (888) 270 - 8387.

Best regards,

Shanita Thomas

Shanita Thomas, MPH, ASP
Industrial Hygienist

Attachment A: DustTrak Data

Attachment A

DustTrak Data

Instrument Name	DustTrak II
Model Number	8530
Serial Number	8530153111
Firmware Version	3.1
Calibration Date	8/18/2022
Test Name	MANUAL_003
Test Start Time	8:09:29 AM
Test Start Date	5/23/2023
Test Length [D:H:M]	0:00:01
Test Interval [M:S]	0:05
Mass Average [mg/m3]	0.04
Mass Minimum [mg/m3]	0.038
Mass Maximum [mg/m3]	0.041
Mass TWA [mg/m3]	0
Photometric User Cal	1
Flow User Cal	0
Errors	
Number of Samples	12
Elapsed Time [s]	Mass [mg/m3]
5	0.041
10	0.04
15	0.04
20	0.041
25	0.04
30	0.038
35	0.04
40	0.039
45	0.04
50	0.041
55	0.039
60	0.04

Instrument Name	DustTrak II
Model Number	8530
Serial Number	8530153111
Firmware Version	3.1
Calibration Date	8/18/2022
Test Name	MANUAL_004
Test Start Time	8:14:18 AM
Test Start Date	5/23/2023
Test Length [D:H:M]	0:00:01
Test Interval [M:S]	0:05
Mass Average [mg/m3]	0.04
Mass Minimum [mg/m3]	0.039
Mass Maximum [mg/m3]	0.041
Mass TWA [mg/m3]	0
Photometric User Cal	1
Flow User Cal	0
Errors	
Number of Samples	12
Elapsed Time [s]	Mass [mg/m3]
5	0.041
10	0.04
15	0.041
20	0.04
25	0.04
30	0.039
35	0.04
40	0.04
45	0.041
50	0.039
55	0.039
60	0.04

Instrument Name	DustTrak II
Model Number	8530
Serial Number	8530153111
Firmware Version	3.1
Calibration Date	8/18/2022
Test Name	MANUAL_005
Test Start Time	8:23:21 AM
Test Start Date	5/23/2023
Test Length [D:H:M]	0:00:01
Test Interval [M:S]	0:05
Mass Average [mg/m3]	0.039
Mass Minimum [mg/m3]	0.037
Mass Maximum [mg/m3]	0.041
Mass TWA [mg/m3]	0
Photometric User Cal	1
Flow User Cal	0
Errors	
Number of Samples	12
Elapsed Time [s]	Mass [mg/m3]
5	0.039
10	0.037
15	0.039
20	0.038
25	0.039
30	0.039
35	0.039
40	0.039
45	0.039
50	0.041
55	0.039
60	0.039

Instrument Name	DustTrak II
Model Number	8530
Serial Number	8530153111
Firmware Version	3.1
Calibration Date	8/18/2022
Test Name	MANUAL_006
Test Start Time	8:25:56 AM
Test Start Date	5/23/2023
Test Length [D:H:M]	0:00:01
Test Interval [M:S]	0:05
Mass Average [mg/m3]	0.039
Mass Minimum [mg/m3]	0.038
Mass Maximum [mg/m3]	0.039
Mass TWA [mg/m3]	0
Photometric User Cal	1
Flow User Cal	0
Errors	
Number of Samples	12
Elapsed Time [s]	Mass [mg/m3]
5	0.039
10	0.039
15	0.039
20	0.039
25	0.038
30	0.038
35	0.038
40	0.038
45	0.039
50	0.039
55	0.039
60	0.038

Instrument Name	DustTrak II
Model Number	8530
Serial Number	8530153111
Firmware Version	3.1
Calibration Date	8/18/2022
Test Name	MANUAL_007
Test Start Time	8:27:43 AM
Test Start Date	5/23/2023
Test Length [D:H:M]	0:00:01
Test Interval [M:S]	0:05
Mass Average [mg/m3]	0.039
Mass Minimum [mg/m3]	0.037
Mass Maximum [mg/m3]	0.04
Mass TWA [mg/m3]	0
Photometric User Cal	1
Flow User Cal	0
Errors	
Number of Samples	12
Elapsed Time [s]	Mass [mg/m3]
5	0.04
10	0.038
15	0.04
20	0.04
25	0.039
30	0.039
35	0.039
40	0.038
45	0.039
50	0.037
55	0.038
60	0.038

Instrument Name	DustTrak II
Model Number	8530
Serial Number	8530153111
Firmware Version	3.1
Calibration Date	8/18/2022
Test Name	MANUAL_008
Test Start Time	8:29:29 AM
Test Start Date	5/23/2023
Test Length [D:H:M]	0:00:01
Test Interval [M:S]	0:05
Mass Average [mg/m3]	0.039
Mass Minimum [mg/m3]	0.038
Mass Maximum [mg/m3]	0.04
Mass TWA [mg/m3]	0
Photometric User Cal	1
Flow User Cal	0
Errors	
Number of Samples	12
Elapsed Time [s]	Mass [mg/m3]
5	0.039
10	0.039
15	0.039
20	0.04
25	0.039
30	0.038
35	0.039
40	0.038
45	0.04
50	0.039
55	0.039
60	0.038

Instrument Name	DustTrak II
Model Number	8530
Serial Number	8530153111
Firmware Version	3.1
Calibration Date	8/18/2022
Test Name	MANUAL_009
Test Start Time	8:31:02 AM
Test Start Date	5/23/2023
Test Length [D:H:M]	0:00:01
Test Interval [M:S]	0:05
Mass Average [mg/m3]	0.041
Mass Minimum [mg/m3]	0.04
Mass Maximum [mg/m3]	0.042
Mass TWA [mg/m3]	0
Photometric User Cal	1
Flow User Cal	0
Errors	
Number of Samples	12
Elapsed Time [s]	Mass [mg/m3]
5	0.042
10	0.042
15	0.042
20	0.041
25	0.04
30	0.042
35	0.041
40	0.041
45	0.04
50	0.042
55	0.042
60	0.04

Instrument Name	DustTrak II
Model Number	8530
Serial Number	8530153111
Firmware Version	3.1
Calibration Date	8/18/2022
Test Name	MANUAL_010
Test Start Time	8:33:26 AM
Test Start Date	5/23/2023
Test Length [D:H:M]	0:00:01
Test Interval [M:S]	0:05
Mass Average [mg/m3]	0.041
Mass Minimum [mg/m3]	0.04
Mass Maximum [mg/m3]	0.043
Mass TWA [mg/m3]	0
Photometric User Cal	1
Flow User Cal	0
Errors	
Number of Samples	12
Elapsed Time [s]	Mass [mg/m3]
5	0.041
10	0.041
15	0.042
20	0.043
25	0.041
30	0.041
35	0.041
40	0.041
45	0.04
50	0.041
55	0.041
60	0.042