

## MCPS Indoor Air Quality Threshold Table

The threshold values in the table below are based on IAQ industry national consensus standards and best practices, best available scientific information, and collaborative work sessions with the MCCPTA Health and Wellness Committee and the MCCPTA School Construction Work Group. This is a living document and will be modified as necessary.

MCPS developed three separate thresholds in response to sensor data. In the event that a value is exceeded for the duration indicated below, MCPS staff typically take the following action(s):

- **Comfort**
    - Internal notification summaries are received and reviewed by MCPS staff.
    - Follow-up investigation initiated when exceeded for more than 2 weeks, response action(s) dependent on this review.
  - **Ventilation**
    - Actively investigate (generally initiated within 5 days) the need for mechanical repairs or administrative/engineering controls.
  - **Health & Safety**
    - Urgent investigation; administrative action such as relocating classes and community notification may be made.
- **Direction of local emergency response officials will always override the response actions herein.**

Dashboard	Comfort		Ventilation		Health & Safety*	
	(6am - 6pm)		(6am - 6pm)		(6am - 6pm)	
Category	Threshold	Duration (hr)	Threshold	Duration (hr)	Threshold	Duration (hr)
Comfort Indicators (all monitors)						
<a href="#">Temperature</a> <sup>1</sup> – High	78 °F	4	84 °F	2	NA	NA
<a href="#">Temperature</a> <sup>1</sup> – Low	69 °F	4	62 °F	2	NA	NA
<a href="#">Humidity</a> <sup>1</sup>	70%	2	80%	2	NA	NA
Primary Air Quality Indicators (all monitors)						
<a href="#">Carbon Dioxide</a> <sup>2</sup> (CO <sub>2</sub> )	1,500 ppm <sup>**</sup>	2	3,500 ppm	1	5,000 ppm	6
<a href="#">Particulate Matter</a> <sup>3</sup> (PM) 1.0	8 µg/m <sup>3***</sup>	4	150 µg/m <sup>3</sup>	2	250 µg/m <sup>3</sup>	6
<a href="#">PM</a> <sup>3</sup> 2.5	12 µg/m <sup>3</sup>	4	150 µg/m <sup>3</sup>	2	250 µg/m <sup>3</sup>	6

Additional Indicators (selected monitors)						
<a href="#">Carbon Monoxide<sup>a</sup></a> (CO)	4 ppm	4	9 ppm	1	25 ppm	8
<a href="#">Ozone<sup>b</sup></a> (O <sub>3</sub> )	42 ppb (0.04 ppm)	4	60 ppb (0.06 ppm)	1	60 ppb	8
<a href="#">PM<sub>2.5</sub></a> 10	50 µg/m <sup>3</sup>	4	355 µg/m <sup>3</sup>	2	425 µg/m <sup>3</sup>	6

Please see our Frequently Asked Questions page at [MCPS IAQ Monitoring FAQs](#) for more information on each of these parameters, including reference sources. Additional Questions - please email: [IAQdropbox@mcpsmd.org](mailto:IAQdropbox@mcpsmd.org).

Additional information and resources regarding Indoor Air Quality - [Care for Your Air: A Guide to Indoor Air Quality | US EPA](#)

## **Notes:**

\* In general, public safety regulatory levels are based on an 8 or 24-hour average; MCPS adjusted duration to 6 hours to match a “school day”

\*\* ppm - parts per million

\*\*\* µg/m<sup>3</sup> - micrograms per cubic meter

### **Total Organic Volatile Compounds (TVOCs):**

MCPS measures and records TVOC data to use during IAQ investigations but has not set any action thresholds. Although TVOC concentrations are used as a non-specific indicator of ventilation performance or efficiency, TVOCs are not a primary indicator of health impact. Currently, there are no regulatory guidelines or industry consensus on what TVOC thresholds should be. TVOC concentrations are interpreted in relation to and acted on based on known and or assumed indoor compounds. TVOC sensors sample for a wide spectrum of chemicals. Link to learn more about [Volatile Organic Compounds' Impact on Indoor Air Quality | US EPA](#)

## **1 - Temperature and Humidity:**

MCPS Setpoints (Resource Conservation Plan) Heating 70, cooling 76.

The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) guidelines recommend 68 F to 74 F in the winter and 72 F to 80 F in the summer. The ASHRAE guidelines recommend a relative humidity (RH) of 30 to 60 percent.

ANSI/ASHRAE 62.1 and 62.2 - [Standards 62.1 & 62.2](#) - current version for new buildings; older buildings have different standards

## 2 - Carbon Dioxide (CO<sub>2</sub>):

According to the ASHRAE [Design Guidance for Education Facilities, Version 2.0](#) if CO<sub>2</sub> levels exceed 1,100 - 2,000 ppm for more than 90 minutes, additional investigation is recommended.

## 3 - Particulate Matter (PM):

PM stands for particulate matter (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.

**PM 1.0** = very fine inhalable particles, with diameters that are generally 1.0 micrometers and smaller.

**PM 2.5** = fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.

**PM 10** = inhalable particles, with diameters that are generally 10 micrometers and smaller.

[Particulate Matter \(PM\) Basics | US EPA](#)

Traditional IAQ practice has been that indoor particulates should be lower than outdoor levels. The levels listed in the table are based on guidance for outdoor levels from the EPA. MCPS is notified as indicated, as a more conservative and precautionary approach to this health-based standard.

National Ambient Air Quality Standards - [NAAQS Table | US](#) (outdoor levels)

## 4 - Carbon Monoxide (CO):

Carbon Monoxide (CO): Carbon monoxide is a colorless, odorless gas. It results from incomplete combustion processes. Common sources of CO in schools are improperly vented furnaces, malfunctioning gas ranges, canned heat (e.g. a Sterno), or exhaust fumes that have been drawn back into the building. Worn or poorly adjusted and maintained combustion devices (e.g., boilers, furnaces), or a flue that is improperly sized, blocked, disconnected, or leaking, can be significant sources. Auto, truck, or bus exhaust from attached garages, nearby roads, or idling vehicles in parking areas can also be sources. Carbon monoxide at a high concentration is considered to be a serious health hazard.

CO is measured in select locations. MCPS bases its threshold on EPA, OSHA, and NIOSH recommendations. MCPS is notified as indicated in the table as a more conservative and precautionary approach to this health-based standard.

[Carbon Monoxide's Impact on Indoor Air Quality | US EPA](#)

[CARBON MONOXIDE | Occupational Safety and Health Administration](#)

[CDC - NIOSH Pocket Guide to Chemical Hazards - Carbon Monoxide](#)

## 5 - Ozone (O<sub>3</sub>):

Ozone is a reactive form of Oxygen. It is a strong oxidizer with deodorant and antiseptic properties. It is also a respiratory, ocular, and nasal irritant with a characteristic odor. Ozone is produced by the action of ultraviolet sunlight on oxygen. It can also be prepared in a laboratory setting.

- [Stratospheric ozone](#) protects living things from ultraviolet radiation from the sun.
- Ground-level ozone can trigger a [variety of health problems](#).

Ozone is measured in select locations. MCPS bases its threshold on EPA recommendations, and MCPS is notified as indicated in the table as a more conservative and precautionary approach to this health-based standard.

[Ground-level Ozone Pollution | US EPA](#)

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