



2022 Air Quality Progress



Clean Air Partners – September 2023

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- Background
- Clean Air Progress
- 2023 Exceedance Days
- Questions/Discussion



2023 Clean Air Progress Report

A recap of air quality in Maryland for 2022

Maryland Department of the Environment April 18, 2023

AIR QUALITY BASICS



Air Quality in the Past

- Up until 2010, Maryland continued to experience numerous bad air quality events with ground-level ozone and particulate matter levels in the unhealthy range
 - 2005 MIT PM Study Maryland identified as the riskiest place to breathe the air east of the Mississippi
 - 2008 EPA designates the Baltimore area as the worst ozone area outside of California and Texas







Air Quality in the Present

 In recent years, Maryland has achieved the federal fine particle standard, as well as the 2008 ozone standard, and is moving towards achieving the more stringent 2015 ozone standard. In 2020 and 2022, Maryland recorded the fewest number of bad ozone days ever recorded in a year



2022 CLEAN AIR HIGHLIGHTS

"Maryland has been measuring and monitoring air pollution levels for over 30 years. I can now announce the State is, for the first time ever, measuring levels of air pollution that meet all ambient air quality standards in every part of Maryland."

-Serena McIlwain, Secretary of the Maryland Department of the Environment



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2002

2003

2004

2005

NAAQS

Clean Air Highlights

- For nearly 30 years, Maryland's air quality has dramatically improved
- Air quality policies and regulations have lowered levels of six common pollutants — particles, ozone, lead, carbon monoxide, nitrogen dioxide, and sulfur dioxide

In 2022, Maryland measured attainment of the federal standard for ground-level ozone for the first time in history. The state is now measuring levels of air pollution that meet all ambient air guality standards!





Maryland Bad Ozone Days

Exceedance Days





Ozone is Shrinking



Lower Ozone Levels and Significant Spatial Risk Reduction





Fine Particle Air Pollution Lower Levels Across the State





 The State has greatly reduced NO_x and SO₂ emissions by cleaning local coal-fired power plant emissions, and transported emissions have also significantly lessened



12

2023 Exceedance Days

2023 Maryland Air Quality – 20 Ozone Exceedances, 5 PM Exceedances

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2023 Exceedances

- 2023 has been an unusual year due to smoke trend lines are showing this as well
- 19 Ozone exceedances thus far
- Normally only have one PM exceedance in a year on New Years or 4th of July
 - In 2023 we have had 5 PM exceedances
- PM exceedance days due to the smoke
- Smoke, VOCs, and PM caused ozone exceedances as well
- Came down to communications during these unusual events
- Without the smoke influence, there would have likely been only 4-5 ozone exceedances



Ozone Episode

04/13/2023	75	
04/21/2023	73	
05/12/2023	72	_
06/01/2023	78	_
06/02/2023	87	
06/03/2023	74	_
06/07/2023	76	
06/11/2023	74	
06/15/2023	72	_
06/19/2023	71	_

- → Flint Hills, KS Fires & Eastern CONUS Fires
- Mexico & Southeast CONUS Fires
- Alberta & Saskatchewan, Canada Fires

– Nova Scotia, Canada & New Jersey Fires

Quebec, Canada Fires
 Quebec, Canada Fires &

Southeast US

- Aged Quebec, Canada Smoke
- Four Exceptional Event (EE) initial notifications already submitted to EPA

• Final EE applications will be assessed at the end of the season *PRELIMINARY DATA*







Picture taken by MDE meteorologist Joel Dreessen on June 8, 2023 at 7:52 am EDT from the Montgomery Park Offices in southeastern Baltimore City. The picture corresponds to the circle highlighted by the blue arrow. The hourly concentration was 179 μ g m⁻³. Note: EPA requires all observations in EST



View is to the south, towards the Bay. The Key Bridge would be visible 4 miles away, nearly where the blue arrow is pointing

179 µg m⁻³

The above image is an MDE $PM_{2.5}$ "Beta Attenuation Monitor" (BAM) sample tape from June 8, 2023. Each circle corresponds to a 1-hour sample spanning midnight to midnight on June 8 from the Lake Montebello site in downtown Baltimore. The filter collects what is in the air onto a filter for measurement, essentially illustrating what would end up in your lungs if breathing outside for an hour. The $PM_{2.5}$ standard is 35.4 µg m⁻³ as a 24-hour average. The hour highlighted measured 179 µg m⁻³.

PRELIMINARY DATA