Project Quarter 2

Upper South and Appalachia Citizen Air Monitoring Project (USACAMP)

Appalachian Voices

Upper South and Appalachia Citizen Air Monitoring Project (USACAMP)

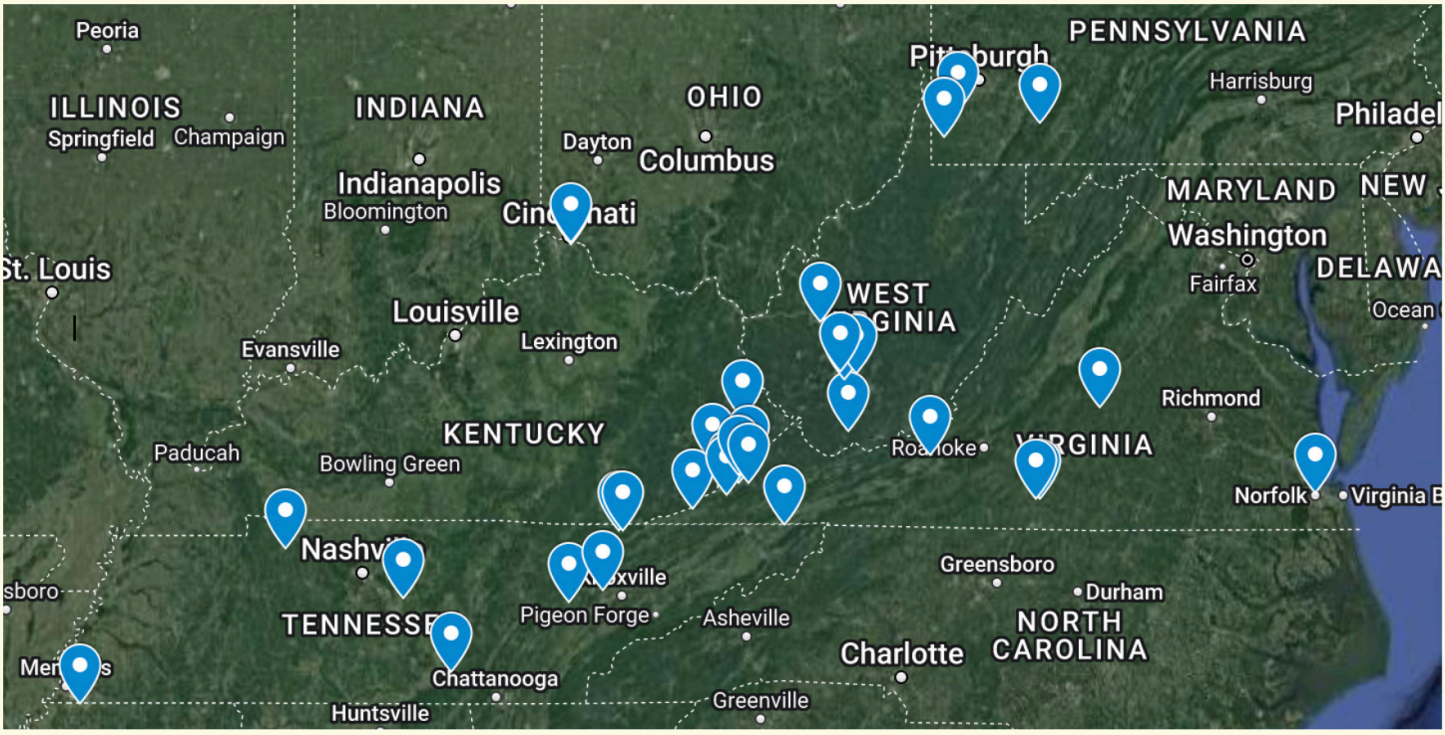
June 2024

In pursuit of a better understanding of air quality within our region, we are pleased to present the second quarterly report of the Upper South and Appalachia Citizen Air Monitoring Project (USACAMP). Funded by an Environmental Protection Agency Enhanced Air Quality Monitoring for Communities grant, USACAMP focuses on the collection and analysis of air quality data through the use of PurpleAir monitors and a few other electronic monitoring devices.

This initiative engages communities within portions of Kentucky, Pennsylvania, Tennessee, Virginia and West Virginia, deploying these devices to facilitate the collection and dissemination of air quality data (see map below). The objective is to engage community members in a dialogue around public health decision-making and policy formulation, contributing to a healthier environment across the region. All of our reports and associated data will be made available on the USACAMP webpage.

The primary focus of the project is particulate matter, a mix of solid and liquid particles suspended in the air that includes a variety of substances such as smoke, soot, dust and other pollutants. Within regulatory frameworks, particulate matter is categorized by size into two main groups: PM10 (coarse particulates) and PM2.5 (fine particulates). Exposure to these particulates is implicated in a myriad of cardiovascular and pulmonary ailments, including asthma, lung cancer and heart disease, and has the potential to worsen pre-existing health conditions.

Community Partner Locations



Particularly vulnerable demographics, including children, the elderly and individuals with chronic health conditions, are at an elevated risk. PM2.5 is considered to pose a greater health risk than PM10 due to its ability to deeply penetrate the respiratory system and pass into the bloodstream.

While selecting monitoring locations for USACAMP, we focused on vulnerable and disadvantaged communities across five states, where individuals or community organizations had expressed concern over air quality. Research indicates that communities of color and those from lower socioeconomic backgrounds are disproportionately exposed to high levels of particulate matter, making them more likely to experience the detrimental health effects associated with this exposure.

PurpleAir monitors function by drawing ambient air through laser-based sensors that detect the size of particulate matter. These particulates cause scattering of the laser light, which is measured by the sensor to estimate the air's particulate matter concentration. The devices use algorithms to adjust for environmental variables such as temperature, humidity and air pressure, which could influence measurements.

These internet-connected monitors allow for the uploading of real-time data to the PurpleAir website, making this information accessible to the public.

Corrected PM2.5 = 0.38 × PA + 2.94

Where PA represents the PM2.5 measurement directly obtained from the PurpleAir® monitor.

Peer-reviewed research has shown that PurpleAir monitors may overestimate PM2.5 measurements. USACAMP has adopted a correction equation developed by Barkjohn et al for this purpose. All PM2.5 data used in this report and available on the USACAMP website has undergone this correction.

Regulatory Landscape and USACAMP Calculations

The National Ambient Air Quality Standards (NAAQS), established by the EPA under the Clean Air Act, serve as benchmarks for controlling air pollution and safeguarding public health. These standards address six air pollutants, including particulate matter. State regulators devise state implementation plans, subject to EPA approval, outlining strategies to meet and maintain air quality compliance with the NAAQS.

For particulate matter regulation, the EPA enforces three distinct standards:

1. **The 24-hour PM10 standard is set at 150 µg/m³ (micrograms per cubic meter).** This is measured by compiling daily averages over three years and incorporating a formula to account for missing data. Monitoring equipment may malfunction from time to time, causing periods of missing data. All of this data is sorted and a tally is created every time a daily average exceeds 150 µg/m³. That tally is checked quarterly and summed to an annual tally. The annual tallies are added together over a three-year period and then divided by three to check for NAAQS compliance. The NAAQS allows for a total of one exceedance per year on average over three years before an area qualifies as being non-compliant with the standard.
2. **The 24-hour PM2.5 standard imposes a 35 µg/m³ limit.** This is calculated as a three-year average of the 98th percentile of daily averages. This process sorts a year's data from lowest to highest, excluding the top 2% of values each year. If a complete annual record exists, the eighth highest value is selected. This procedure is replicated for three consecutive years, with the resulting values averaged to determine attainment or exceedence of the standard. Additional formulas address missing data scenarios.
3. **The annual PM2.5 standard has recently changed from 12 µg/m³ to a more restrictive 9 µg/m³.** Compliance with this standard is determined by

calculating daily averages, using these daily figures to calculate quarterly averages, and then using these quarterly figures to calculate an annual average. This is repeated each year over a three-year period, and the resulting three-year average is considered to be the annual average for each of those three years.

The exact methodologies can be found in the Code of Federal Regulations.

Given that these standards necessitate three years of data for calculation, it is not possible to directly evaluate USACAMP data against NAAQS methodologies on a quarterly basis. However, this report provides metrics, graphs, and charts employing calculations akin to those utilized for NAAQS, enabling community partners to deduce potential chronic or acute particulate matter exposure concerns within their communities, and to gauge air quality relative to NAAQS benchmarks in the short term. One-page data summaries for each USACAMP PurpleAir monitor can be found in Appendix A to this report. These summaries include:

1. For the PM10 24-hour average, a gauge illustrating the highest daily average per quarter, a line graph illustrating daily averages over time, and a table showing the number of times the standard was exceeded in the quarter.

2. For the PM2.5 annual average, a gauge illustrating the quarterly average concentration (which serves as a preliminary step towards the annual average calculation), and a gauge illustrating the annual average to date.

3. For the PM2.5 24-hour average, a gauge reporting the quarter's second-highest daily average (mirroring the methodology for the PM2.5 24-hour standard discussed above), and a line graph illustrating daily averages over time.

*Please note that on February 7, 2024, the EPA announced it would be lowering the annual average NAAQS for PM2.5 from 12 to 9 $\mu g/m^3$. According to the EPA, the new standard is projected to yield substantial net public health benefits, potentially reaching $46 billion by 2032. The EPA estimates that by the year 2032, the benefits will encompass the prevention of up to 4,500 premature deaths, the avoidance of 800,000 instances of asthma symptoms, and the reduction of 290,000 lost workdays that year. The shift to a more stringent annual average standard of 9 $\mu g/m^3$ aligns with evolving scientific understanding of the health impacts of PM2.5. This adjustment, based on extensive research and public health advocacy, aims to enhance protection against the myriad health risks associated with fine particulate matter exposure, from respiratory and cardiovascular diseases to broader systemic effects. The move was applauded by public health and environmental organizations, including Appalachian Voices, though experts had recommended an even stricter limit. For reference, the World Health Organization recommends an annual average limit of 5 $\mu g/m^3$ for PM2.5.

The EPA began rolling out the new, stronger annual NAAQS for PM2.5 in May, but pending legal challenges and legislation may disrupt the rule's implementation. For USACAMP data, we will compare quarterly and annual average PM2.5 concentrations against the 9 $\mu g/m^3$ benchmark.

PurpleAir Community Data

None of the sensors that collected sufficient data to be included in this quarter's report showed any daily or quarterly averages indicative of a trend toward non-compliance with the NAAQS for particulate matter. Because of this, we have not included any community spotlight reports for particulate matter in this quarter's report.

Photo: Michael Swensen for EarthJustice

Community Spotlight: HOPE for Bristol

Bristol, TN / VA

Community Partner: HOPE for Bristol

HOPE for Bristol formed in 2021 and is a small but dedicated nonprofit organization committed to addressing the environmental and health issues posed by a landfill in Bristol, Virginia. The organization emerged from the community's concerns about the adverse effects of the landfill on air quality, public health, and overall quality of life. Residents experience a range of issues, from foul odors and respiratory problems to fears about long-term health impacts.

HOPE for Bristol engages in advocacy, education, and community organizing to combat the landfill's negative impacts. The organization works resolutely to raise awareness about the environmental hazards associated with the landfill, providing a platform for affected residents to voice their concerns and experiences.

Aligned with these efforts, USACAMP collaborates with HOPE for Bristol and other project partners to monitor additional compounds beyond particulate matter. HOPE for Bristol, through the use of SENSIT RAMPs located in Bristol, Tennessee, (monitor 1144) and Bristol, Virginia, (monitor 1145), track volatile organic compounds (VOCs), carbon monoxide (CO), ammonia (NH3), sulfur dioxide (SO2), and hydrogen sulfide (H2S). They record data approximately every minute for each of these gasses through the use of electrochemical sensors, or in the case of VOCs, a photo-ionization detector. The device also measures metrics of weather, such as wind speed and direction, and temperature. This comprehensive monitoring supports ongoing efforts to understand and address the environmental challenges faced by the Bristol community.

The levels of carbon monoxide and sulfur dioxide collected by these SENSIT RAMPs are evaluated against the NAAQS to ensure compliance. Ammonia concentrations are assessed in reference to the Occupational Safety and Health Administration (OSHA) workplace exposure standards. The hydrogen sulfide measurements are analyzed against the relevant standards set by the Mine Safety and Health Administration (MSHA). A description of the measured gasses and table of relevant standards is included below.

- **Volatile organic compounds (VOCs)** are a category of organic chemicals characterized by high vapor pressures at room temperature; these compounds easily transition into gaseous states under normal atmospheric conditions. Being a category of gasses, they can not be directly compared to any one standard. For the purpose of this project, the performance of the SENSIT RAMP VOC sensor is specifically compared to OSHA's exposure limits for benzene.
- **Carbon Monoxide (CO)** is a colorless, odorless gas produced by burning fossil fuels. It is harmful because it can prevent the blood from carrying oxygen to cells, tissues, and organs.
- **Ammonia (NH3)** is a colorless gas with a pungent odor, commonly used in industrial and cleaning products. It is a common toxicant that originates from wastes, fertilizers, and natural processes.
- **Sulfur Dioxide (SO2)** is a gas produced by industrial processes, especially the burning of fossil fuels containing sulfur. It can cause respiratory problems and contribute to the formation of acid rain.
- **Hydrogen Sulfide (H2S)** is a colorless gas known for its characteristic foul odor of rotten eggs. It is toxic and can cause respiratory distress and other health issues at high concentrations.

Chemical Concentration Limits

Ammonia	NH_3	OSHA sets a permissible exposure limit (PEL) of 50 parts per million (ppm) as an 8-hour time-weighted average (TWA).
Volatile organic compounds	VOCs (benzene)	OSHA sets a PEL for benzene of 1 ppm as an 8-hour time-weighted average (TWA).
Sulfur dioxide	SO_2	The EPA NAAQS for SO2 specifies that the highest observed 1-hour SO2 concentration should not exceed 75 parts per billion (ppb) more than once per year.
Carbon monoxide	CO	The EPA NAAQS limits CO to 9 ppm over an 8-hour period and 35 ppm over a 1-hour period.
Hydrogen sulfide	H_2S	MSHA imposes a ceiling of 20 ppm to prevent chronic effects, and a short-term exposure limit (STEL) of 50 ppm for up to 10 minutes to allow for brief peak exposures without severe health risks.

All SENSIT RAMP data was compared against the relevant standards. No exceedances were indicated for any of the parameters measured. The table and graphs below show the highest concentrations detected by each of the SENSIT RAMP devices, utilizing calculations as described in the regulations. Sulfur dioxide is shown with the second-highest max value for the quarter, as the regulations require the highest values to be excluded from calculations.

SENSIT RAMP Data

SENSIT RAMP #1144	Value	Standard
CO highest 1-hour average concentration	1.31 ppm	35 ppm
CO highest 8-hour average concentration	0.49 ppm	9 ppm
Highest measured H2S concentration (1 minute intervals)	0.47 ppm	20 ppm ceiling and 50 ppm over 10 minutes
VOC highest 8-hour time-weighted average	0.07 ppm	1 ppm over 8 hours, or 5 ppm over 15 minutes - (Benzene)
NH3 highest 8-hour time-weighted average	0.77 ppm	50 ppm
SO2 -highest daily average for the quarter	50.9995 ppb	75 ppb, 1-hour annual

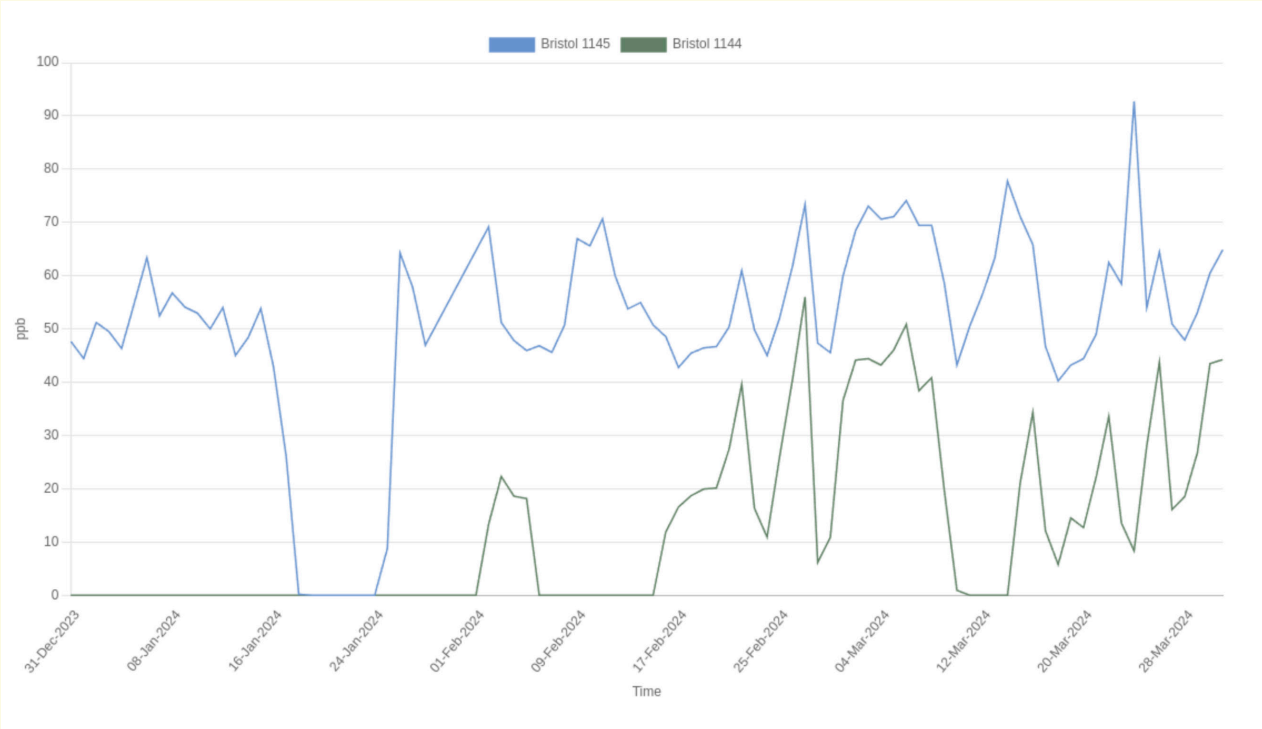
SENSIT RAMP #1145	Value	Standard
CO highest 1-hour average concentration	0.50 ppm	35 ppm
CO highest 8-hour average concentration	0.46 ppm	9 ppm
Highest measured H2S concentration, 1 minute intervals)	0.14 ppm	20 ppm ceiling and 50 ppm over 10 minutes
VOC highest 8-hour time-weighted average	0.19 ppm	1 ppm over 8 hours, or 5 ppm over 15 minutes - (Benzene)
NH3 highest 8-hour time-weighted average	0.62 ppm	50 ppm
SO2 -highest daily average for the quarter	100.42 ppb*	75 ppb, 1-hour annual

* *This datapoint, while over the exceedance value, will likely end up being dropped as more data is collected due to the way sulfur dioxide values are calculated and sorted.*

HOPE plans to continue to monitor air quality in the neighborhoods adjacent to the Bristol landfill, and collect additional data utilizing a passive air sampling method called sorbent tube testing. Data from that testing will also be made available on our website as it is gathered.

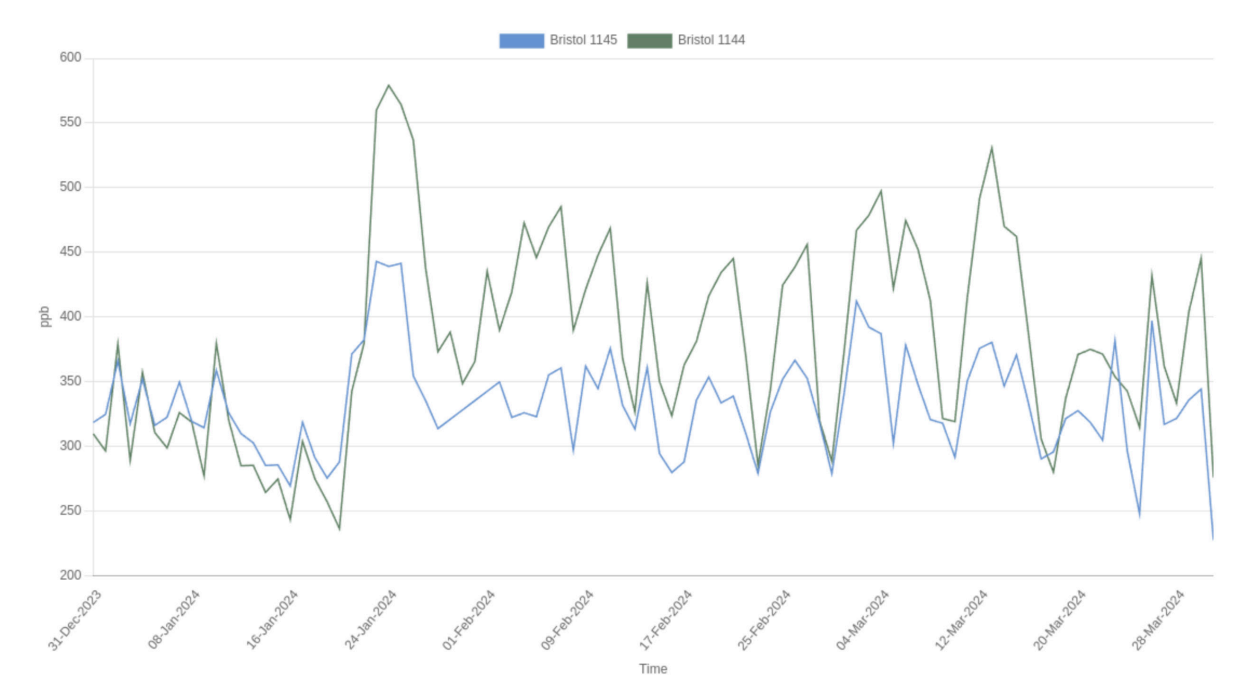
Graphs of data from the SENSIT RAMPs are shown below:

Volatile Organic Compounds: Bristol Virginia and Tennessee

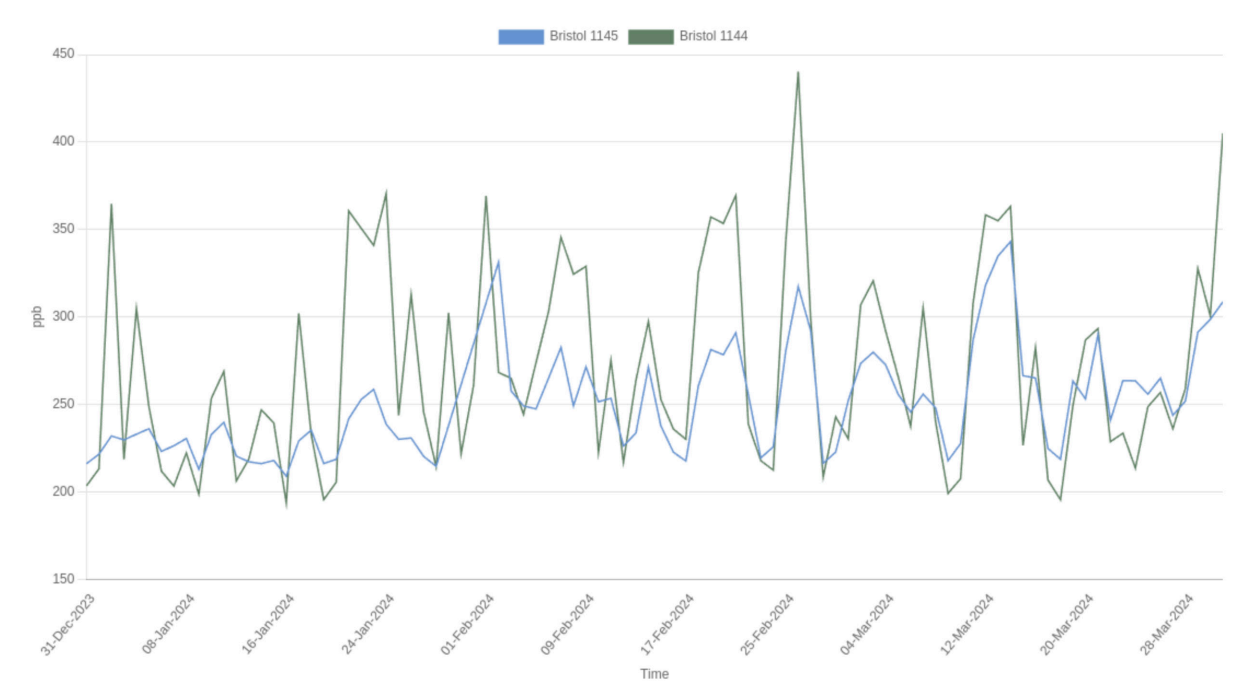


SENSIT RAMP monitors.

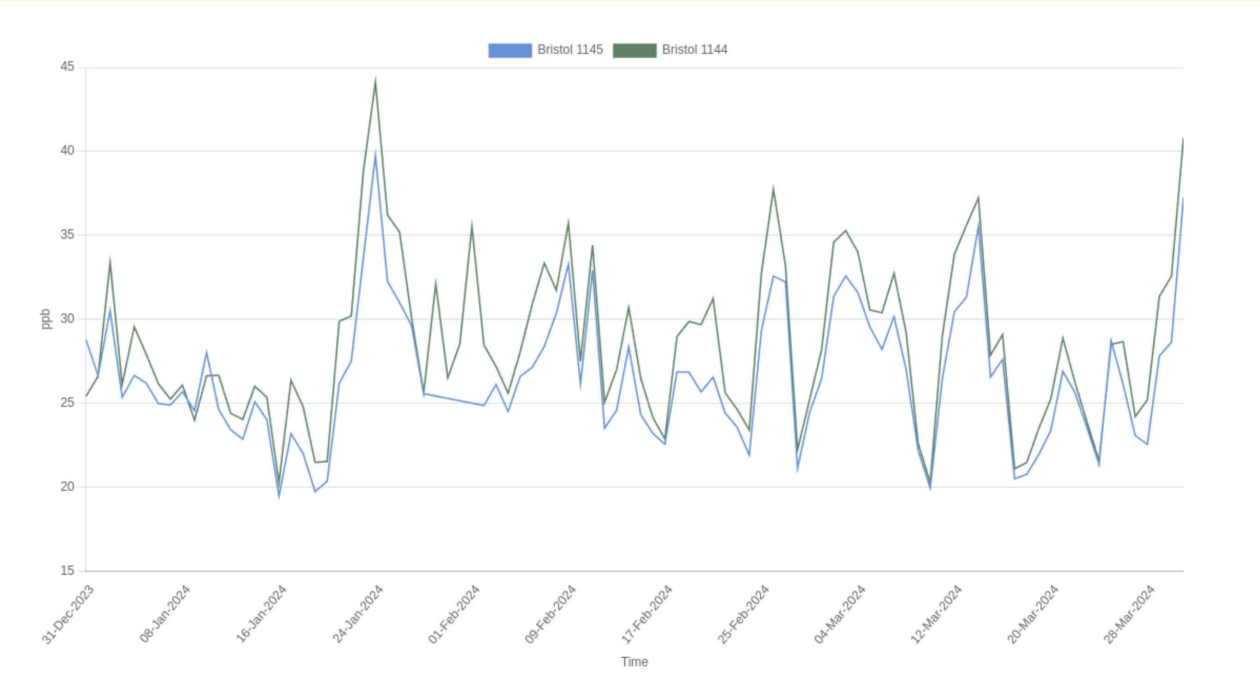
Ammonia: Bristol Virginia and Tennessee



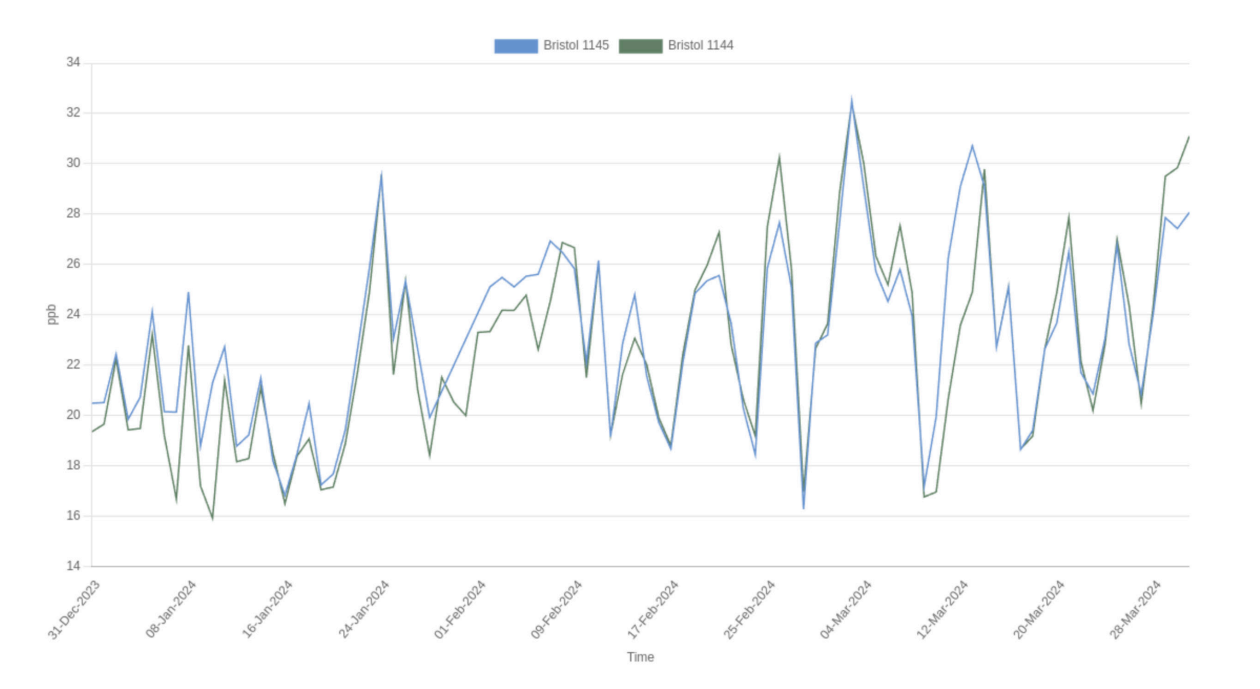
Carbon Monoxide: Bristol Virginia and Tennessee



Sulfur Dioxide: Bristol Virginia and Tennessee



Hydrogen Sulfide: Bristol Virginia and Tennessee



Future Outlook and Next Steps

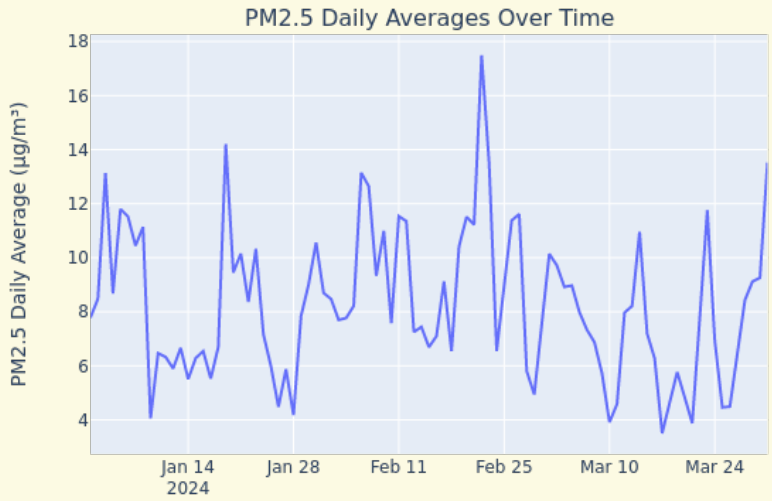
USACAMP plans to continue its investigations into all of the communities where we have monitors placed and share any significant findings in future reports and during annual webinars. Next quarter, we hope to incorporate data from another SENSIT device being deployed near Virginia Tech and direct measurements from our sorbent tube testing, as well as share new PurpleAir monitor data with the public. We expect to have all the project monitors deployed by the next report.

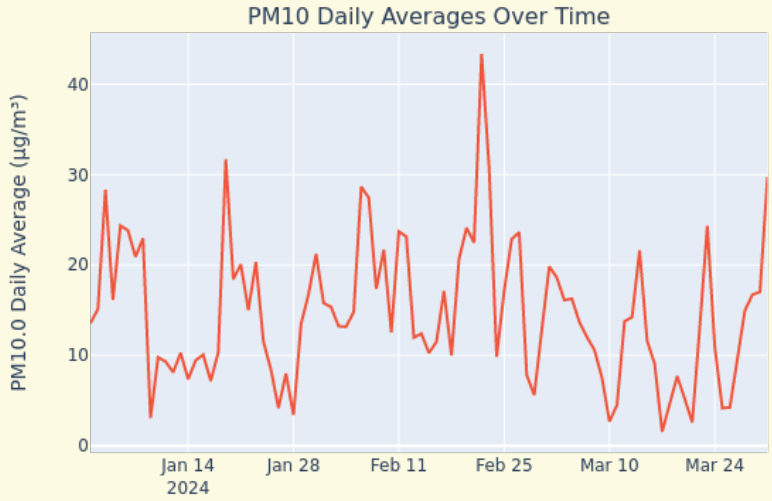
The primary objective of this project is to encourage meaningful discussions about air quality within and among communities. If you have any questions regarding this report, please feel free to contact Willie Dodson at willie@appvoices.org or Matt Hepler at matt.hepler@appvoices.org.

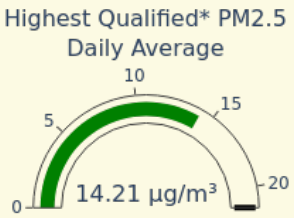
Appendix

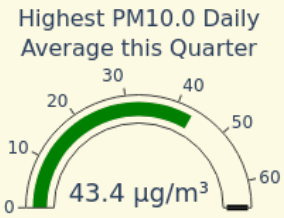
Q1 2024 Report for: PurpleAir device AV-13-7DE7
Kentuckians for the Commonwealth, Covington, Kenton County, KY

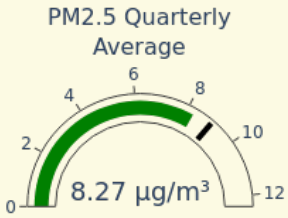
2024-01-01 to 2024-03-31

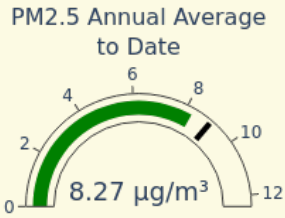












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

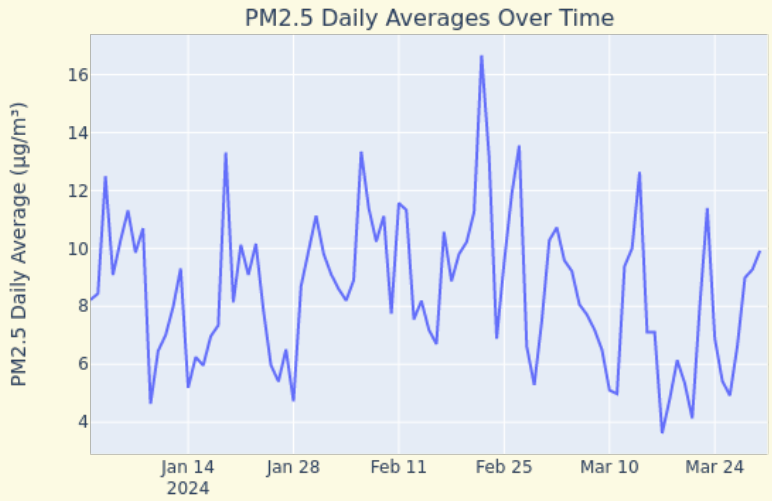
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

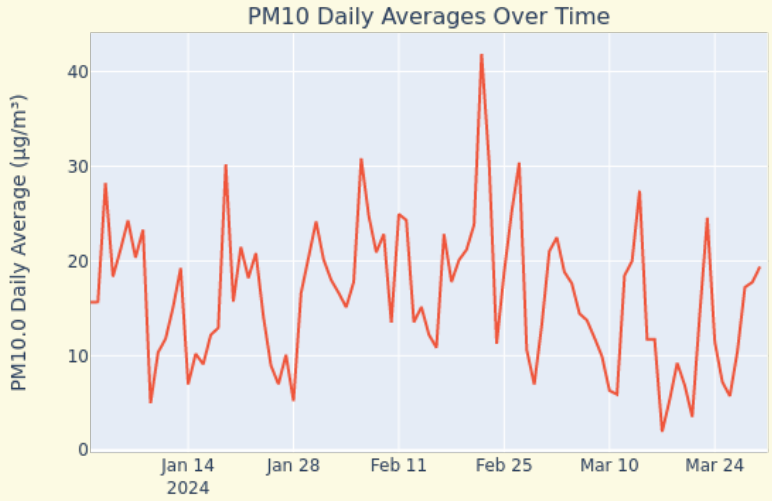
**to go into effect May 6, 2024

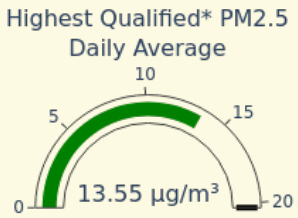
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

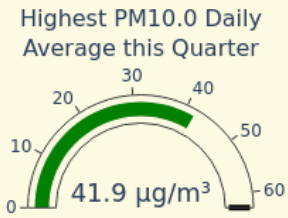
Q1 2024 Report for: PurpleAir device AV-14-987
---, ---, Kenton County, KY

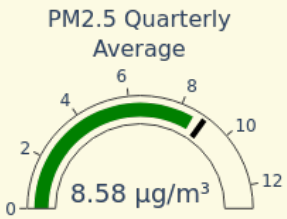
2024-01-01 to 2024-03-31

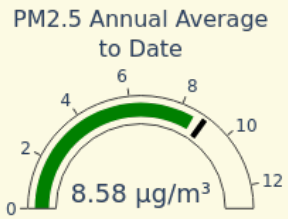












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No days exceeded daily EPA standard

National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

**to go into effect May 6, 2024

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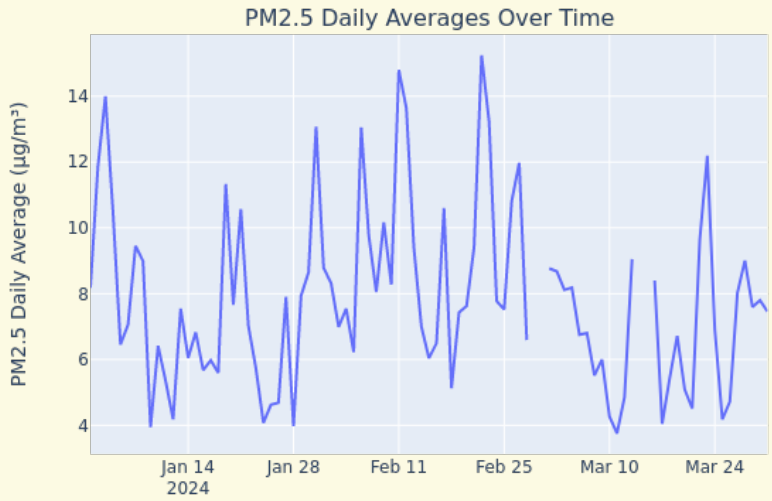
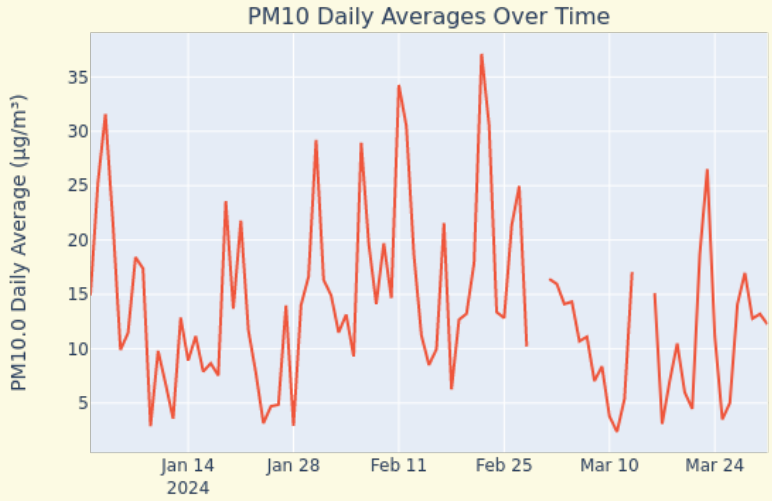
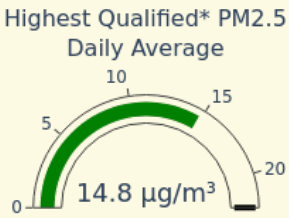
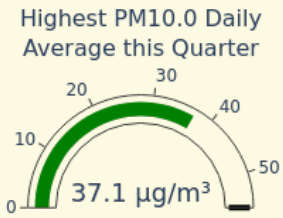
Q1 2024 Report for: PurpleAir device AV-40-F73B
Kentuckians for the Commonwealth, Winchester, Clark County, KY

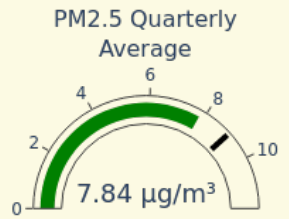
2024-01-01 to 2024-03-31

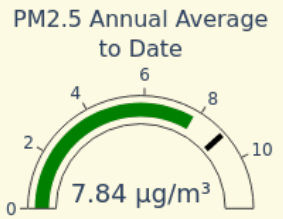












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**to go into effect May 6, 2024

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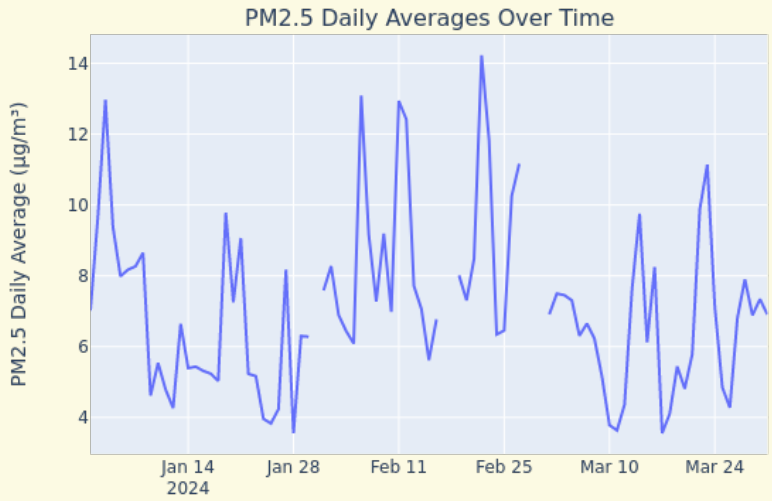
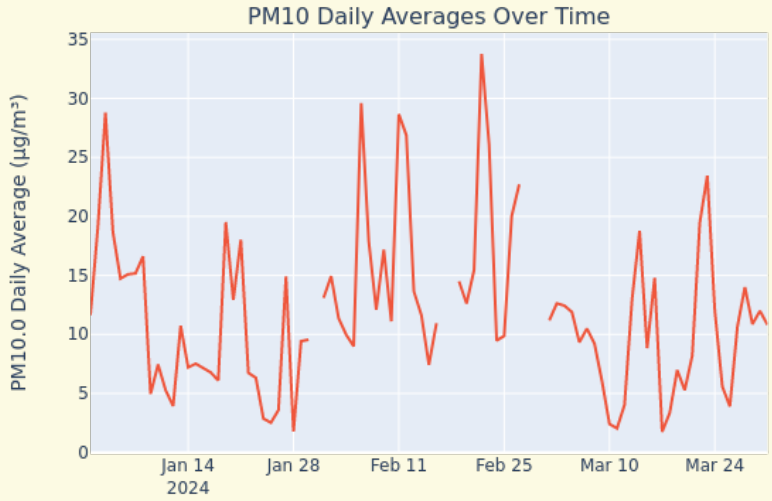
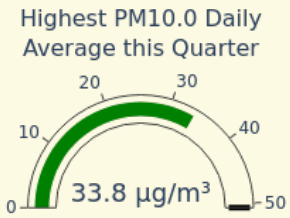
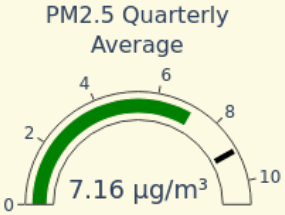
Q1 2024 Report for: PurpleAir device AV-22-4C62
Kentuckians for the Commonwealth, Winchester, Clark County, KY

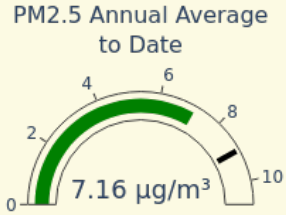
2024-01-01 to 2024-03-31











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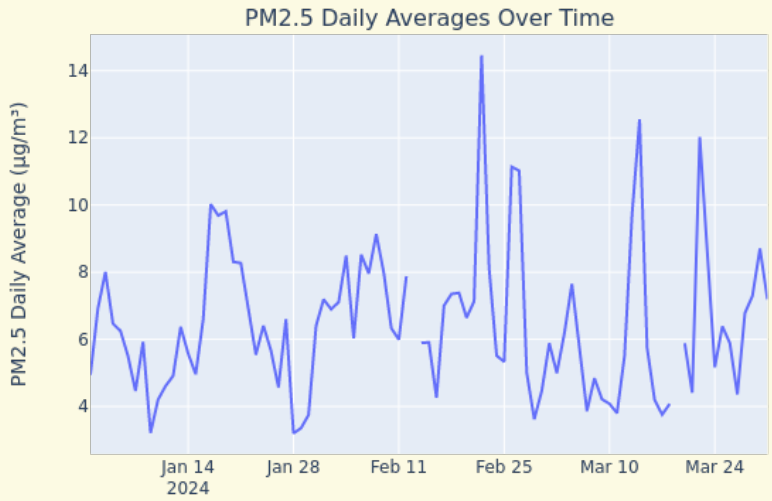
PM10 24 Hour average - 150 µg/m³

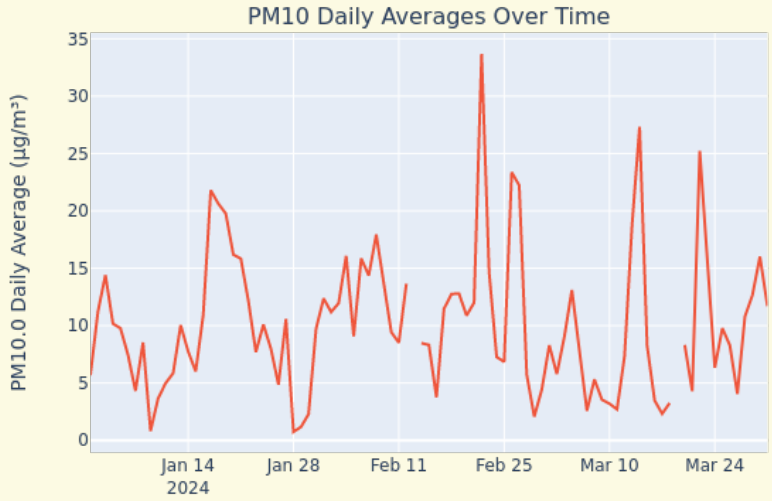
**to go into effect May 6, 2024

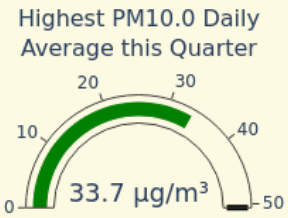
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

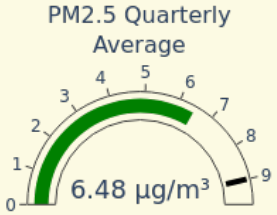
Q1 2024 Report for: PurpleAir device AV-26-387
Kentuckians for the Commonwealth, Langley, Floyd County, KY

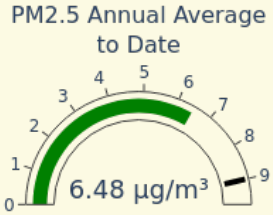
2024-01-01 to 2024-03-31











Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

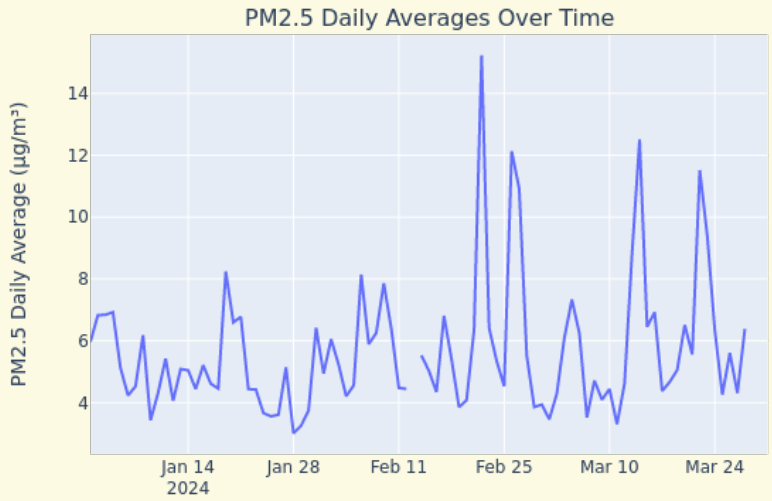
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

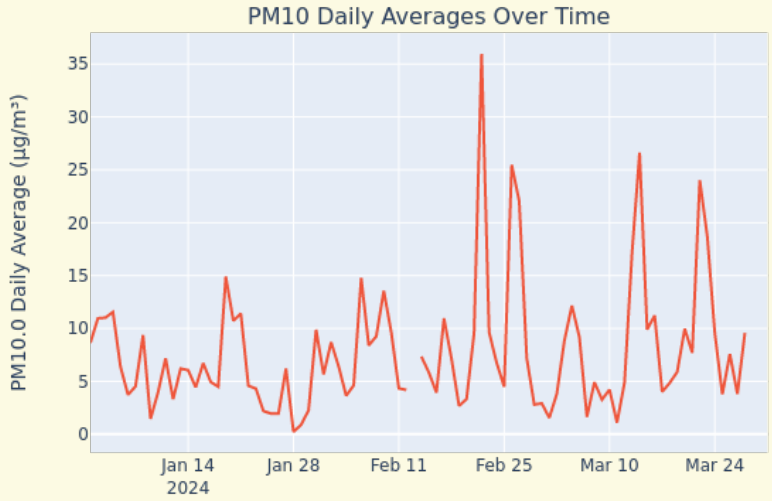
**to go into effect May 6, 2024

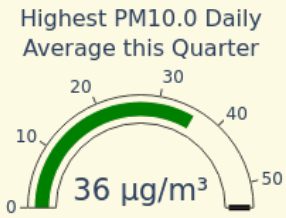
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

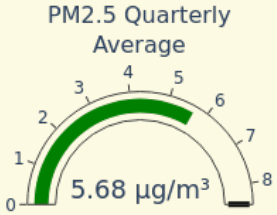
Q1 2024 Report for: PurpleAir device AV-27-F783
Kentuckians for the Commonwealth, Deane, Letcher County, KY

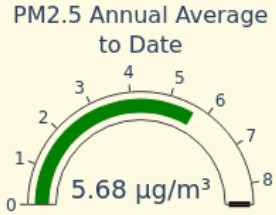
2024-01-01 to 2024-03-31











Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

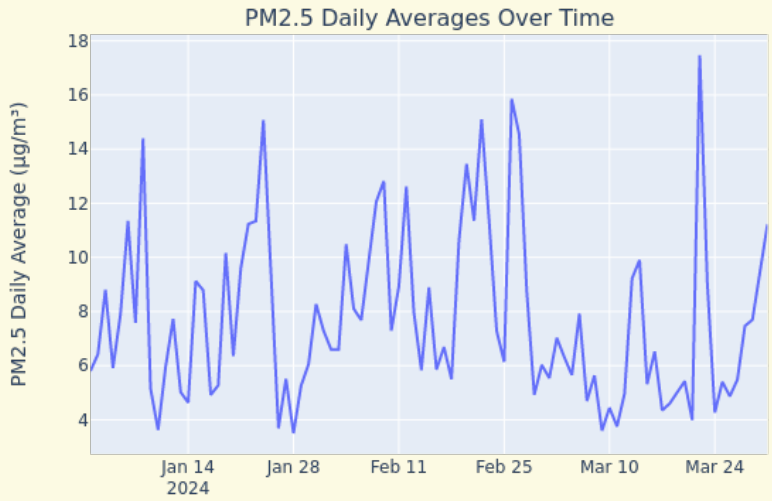
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

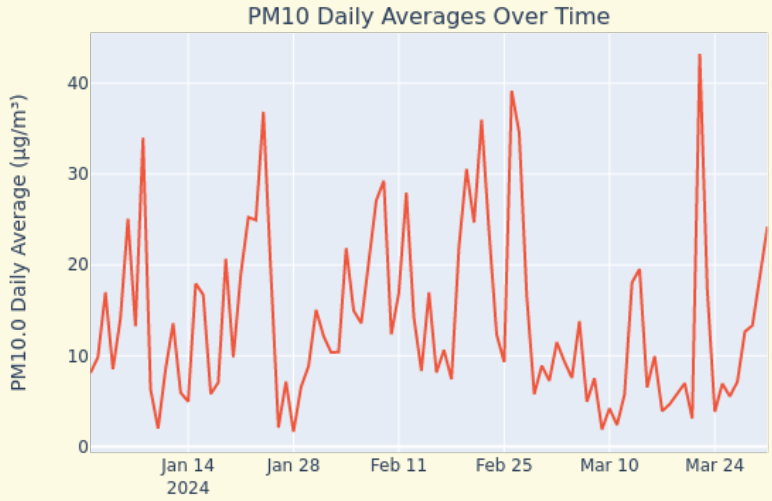
**to go into effect May 6, 2024

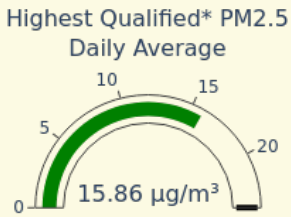
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

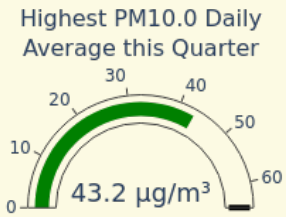
Q1 2024 Report for: PurpleAir device AV-10-51DF
Mountain Watershed Association, Donegal Township, Westmoreland County, PA

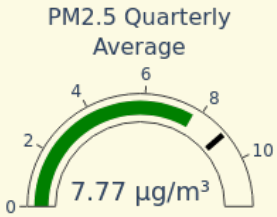
2024-01-01 to 2024-03-31

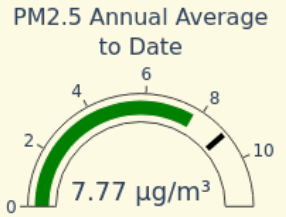












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

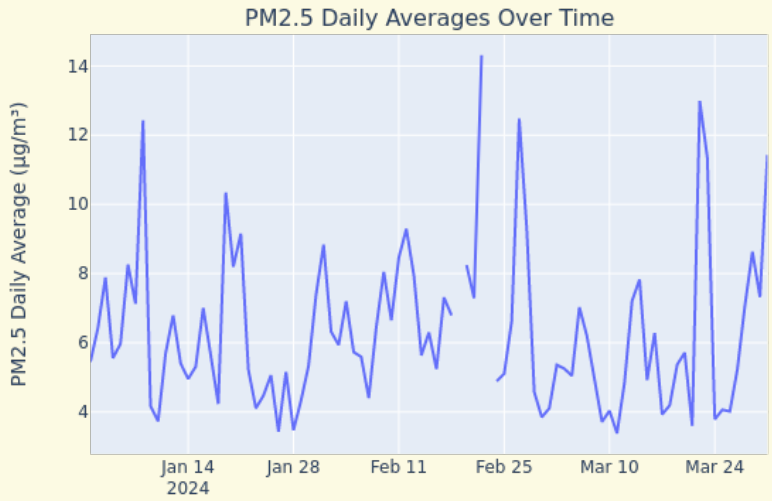
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

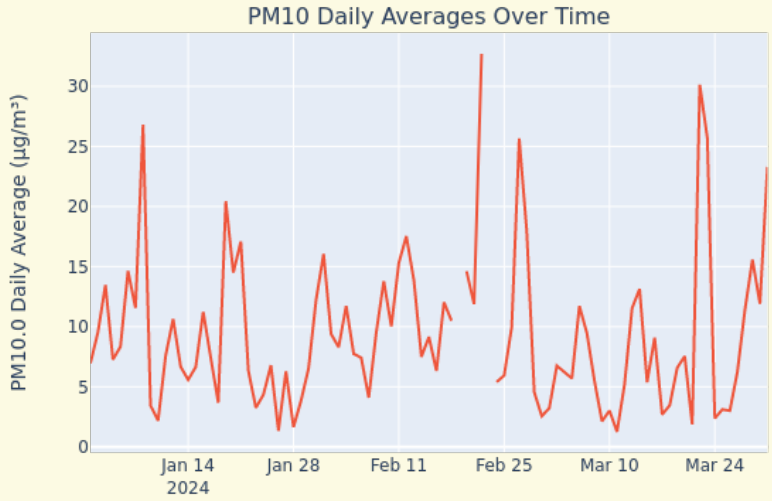
**to go into effect May 6, 2024

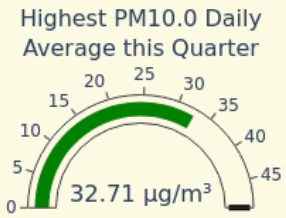
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

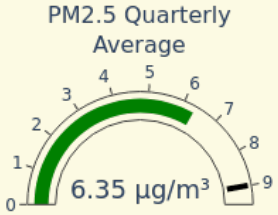
Q1 2024 Report for: PurpleAir device AV-12-9EAC
Center for Coalfield Justice, Wayensburg, Greene County, PA

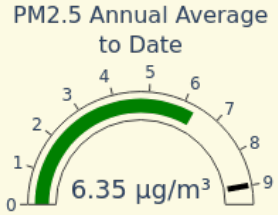
2024-01-01 to 2024-03-31











Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

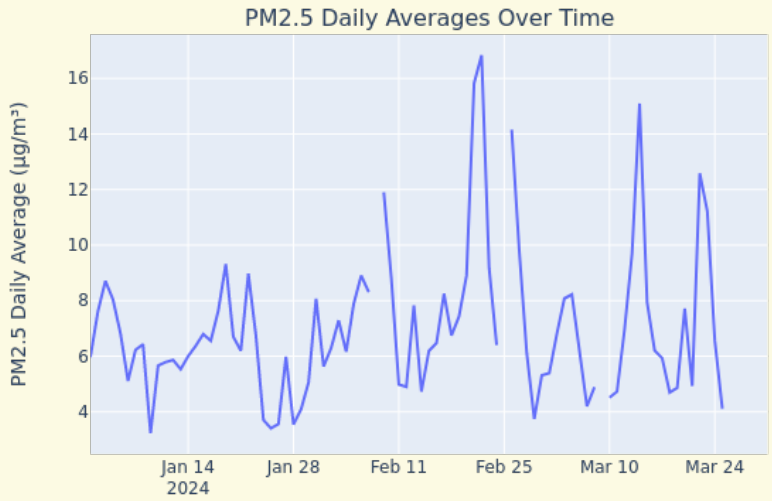
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

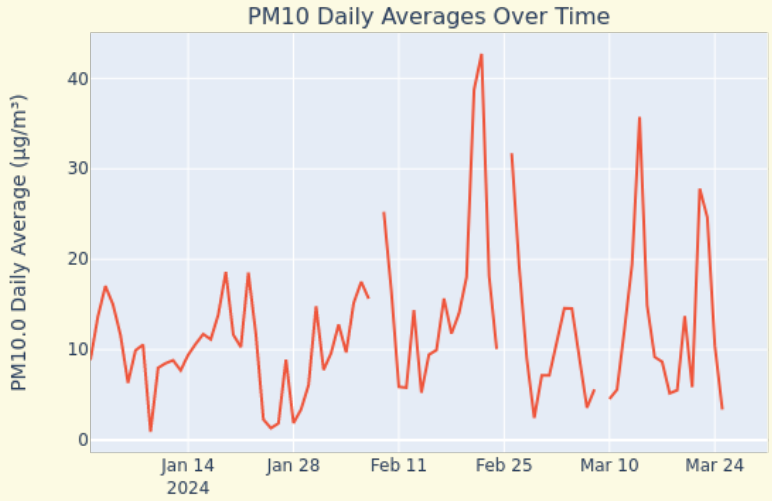
**to go into effect May 6, 2024

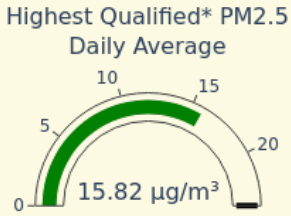
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

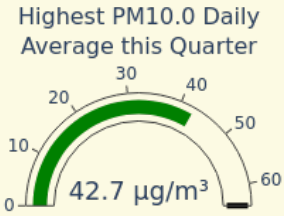
Q1 2024 Report for: PurpleAir device AV-23-079
Clearfolk Community Institute, White Oak, Campbell County, TN

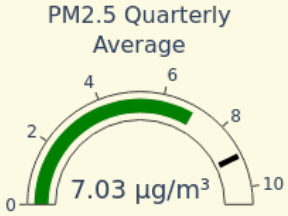
2024-01-01 to 2024-03-31

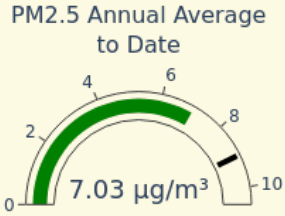












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

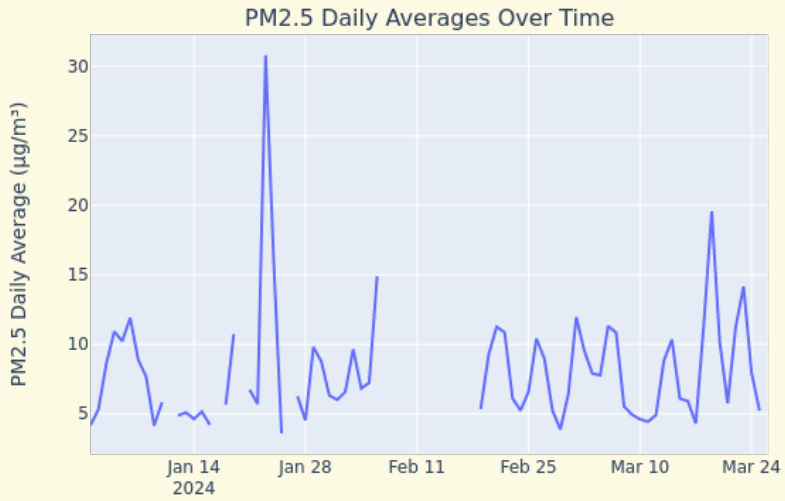
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

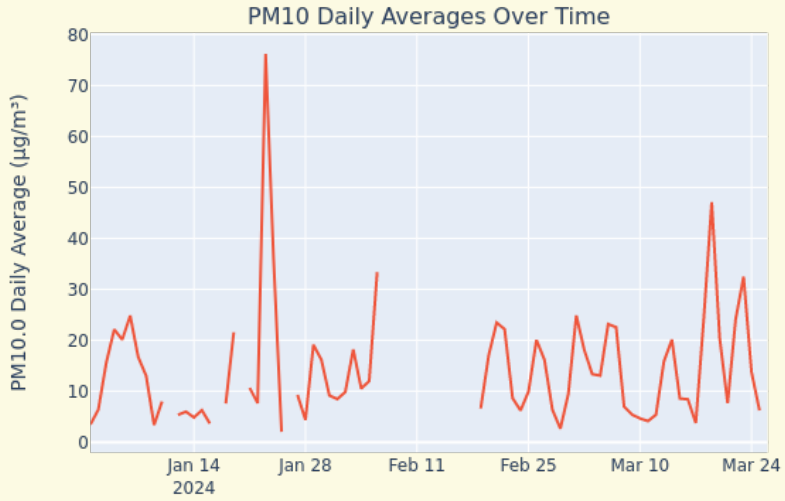
**to go into effect May 6, 2024

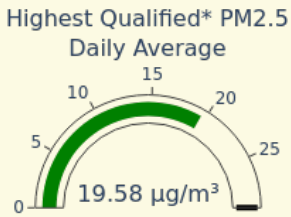
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

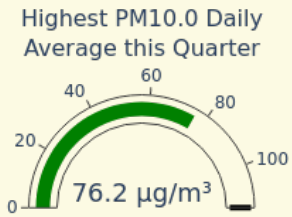
Q1 2024 Report for: PurpleAir device AV-29-F9ED
Appalachian Voices, Cumberland City, Montgomery County, TN

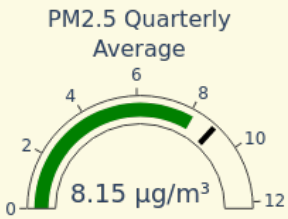
2024-01-01 to 2024-03-26

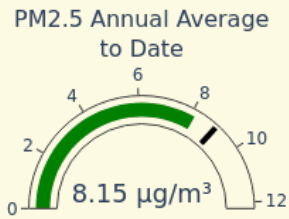












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

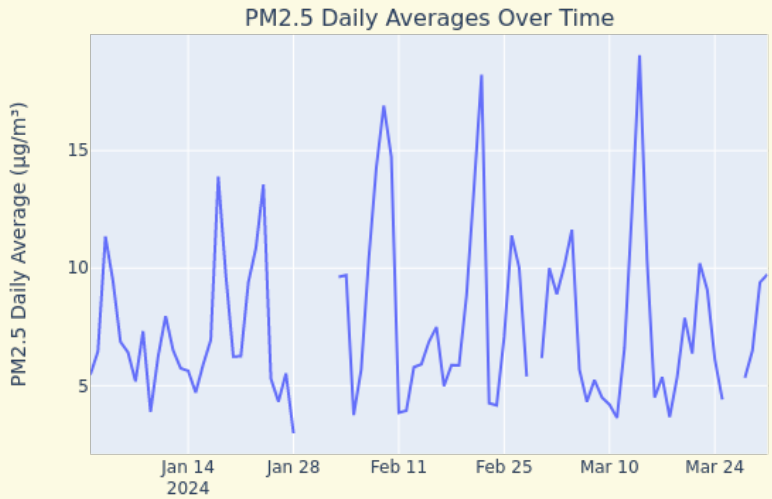
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

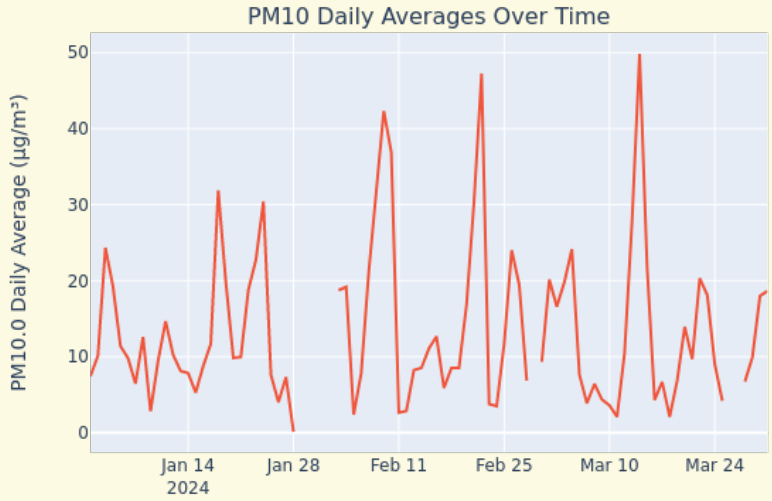
**to go into effect May 6, 2024

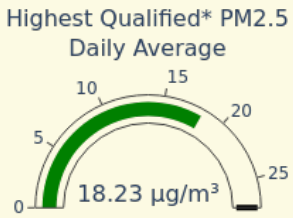
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

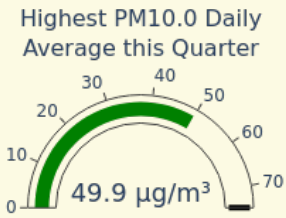
Q1 2024 Report for: PurpleAir device AV-30-ADB
Appalachian Voices, Kingston, Roane County, TN

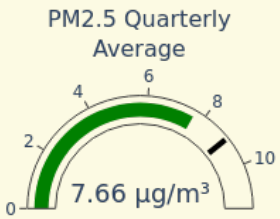
2024-01-01 to 2024-03-31

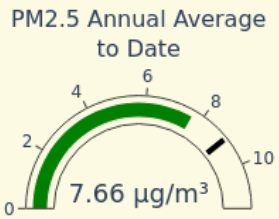












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

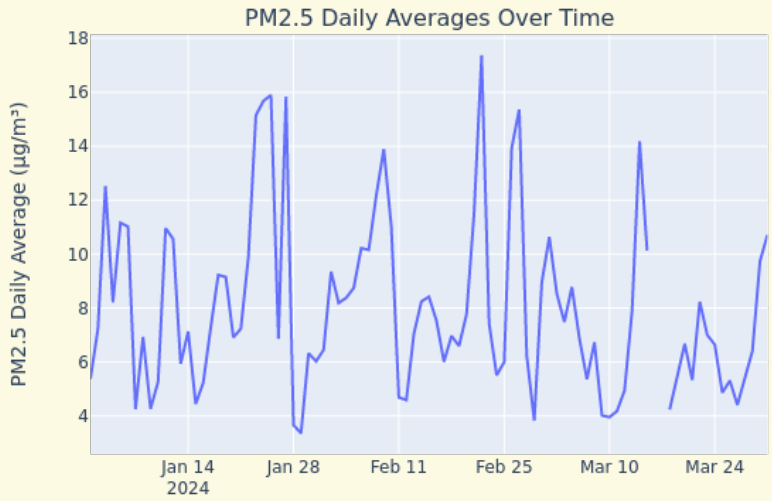
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

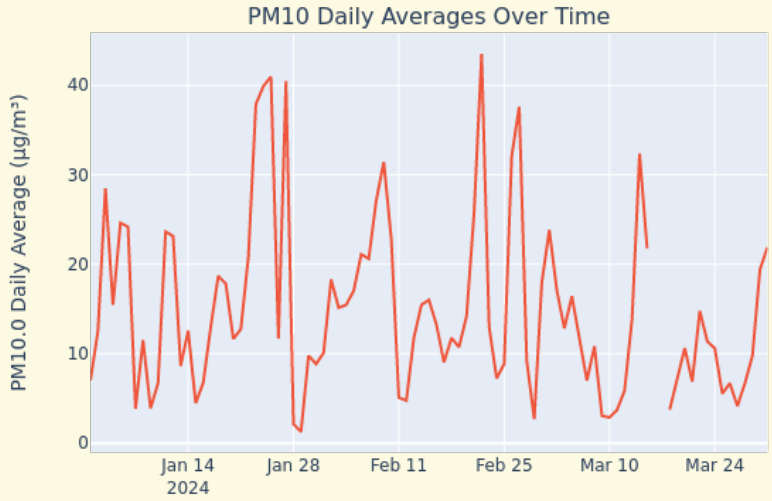
**to go into effect May 6, 2024

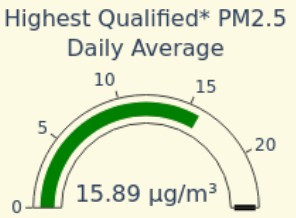
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

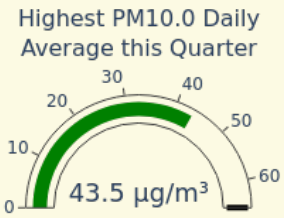
Q1 2024 Report for: PurpleAir device AV-2-53E1
Southern Appalachian Mountain Stewards, St Charles, Lee County, VA

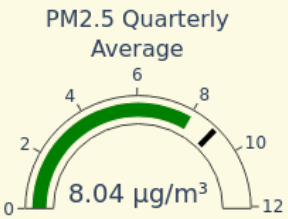
2024-01-01 to 2024-03-31

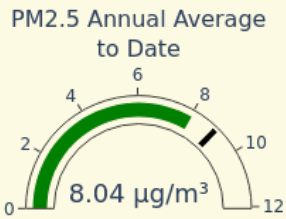












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

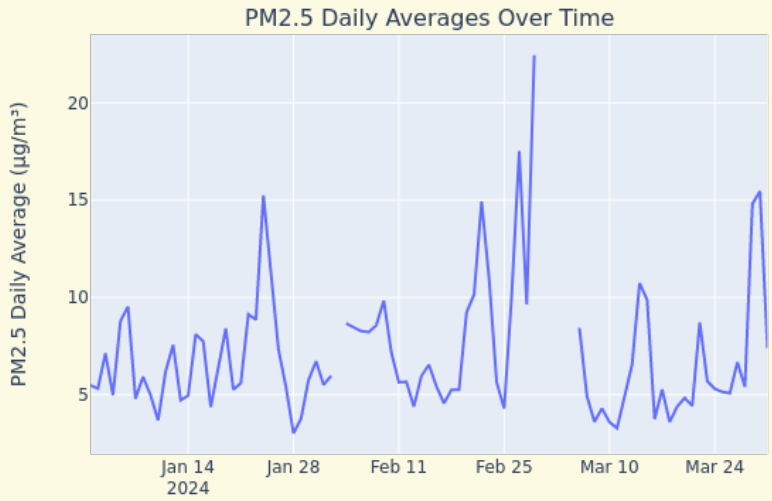
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

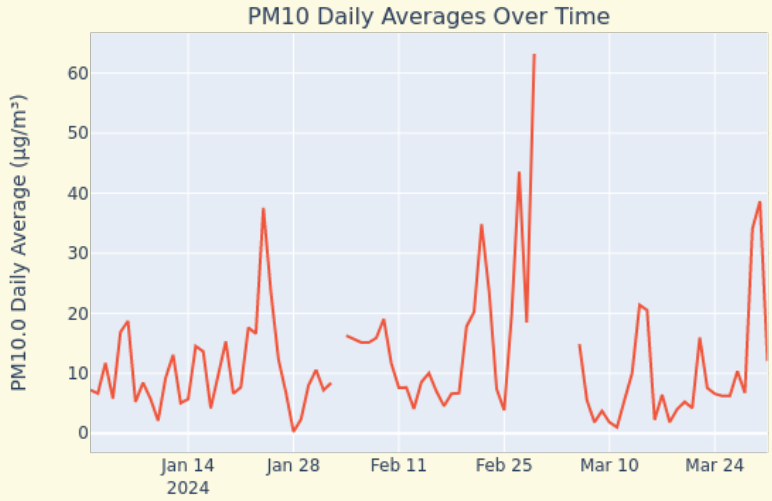
**to go into effect May 6, 2024

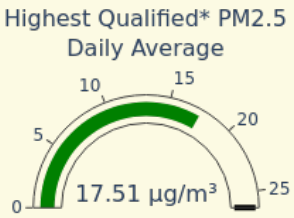
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

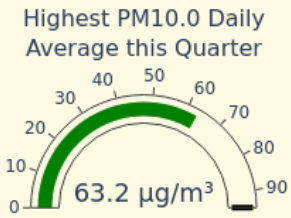
Q1 2024 Report for: PurpleAir device AV-4-512E
Virginia Tech, Elliston, Montgomery County, VA

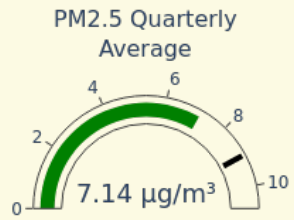
2024-01-01 to 2024-03-31

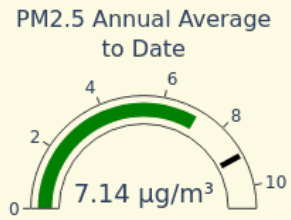












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

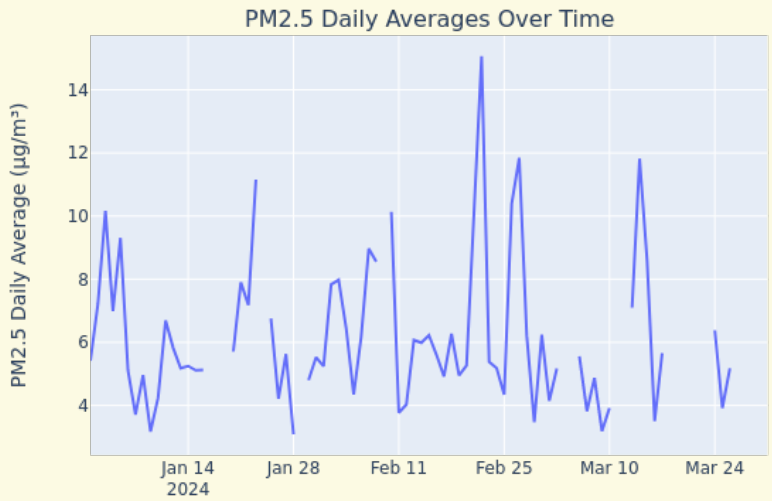
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

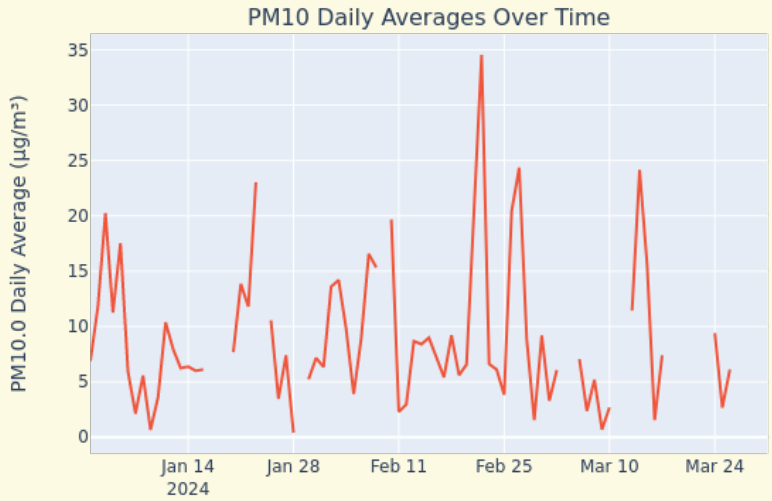
**to go into effect May 6, 2024

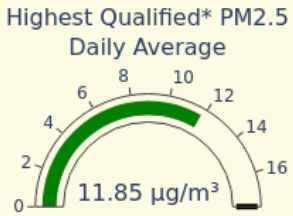
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

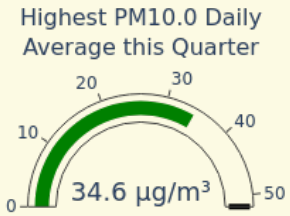
Q1 2024 Report for: PurpleAir device AV-16-9999
Southern Appalachian Mountain Stewards, Big Stone Gap, Wise County, VA

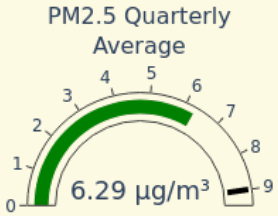
2024-01-01 to 2024-03-31

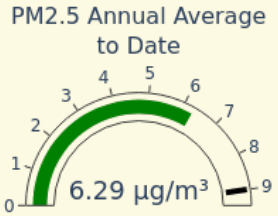












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

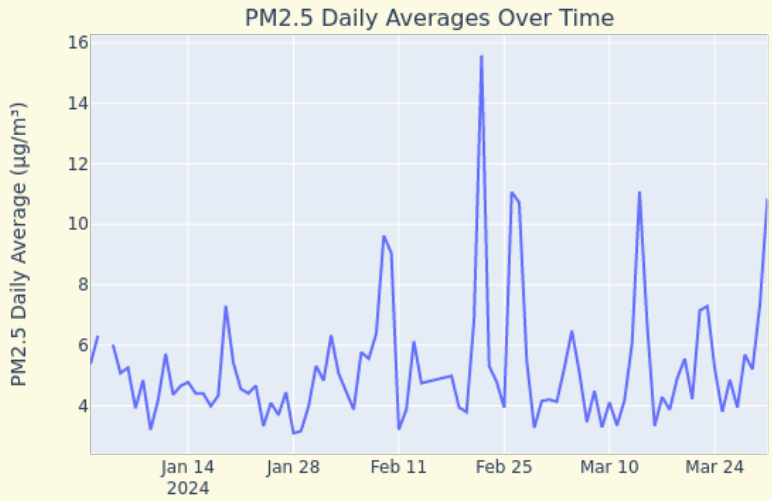
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

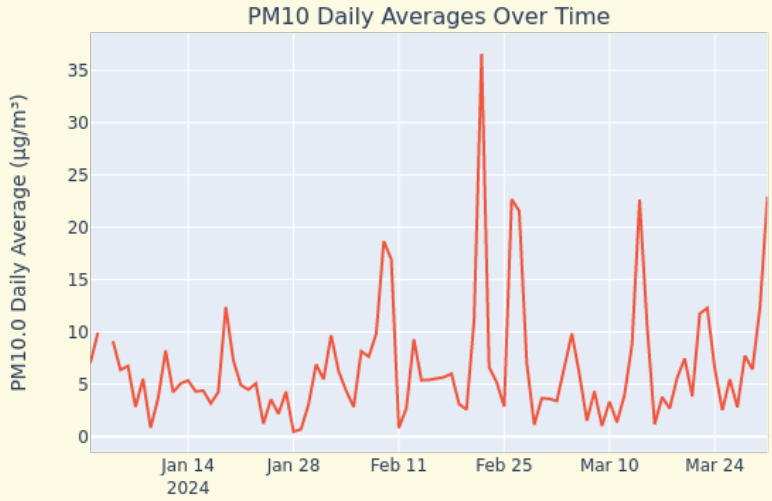
**to go into effect May 6, 2024

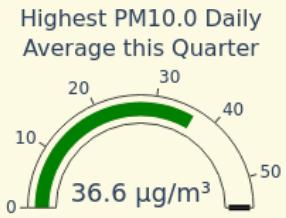
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

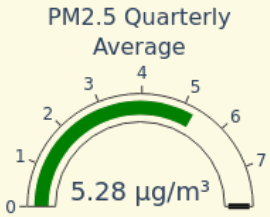
Q1 2024 Report for: PurpleAir device AV-17-51E7
Southern Appalachian Mountain Stewards, Appalachia, Wise County, VA

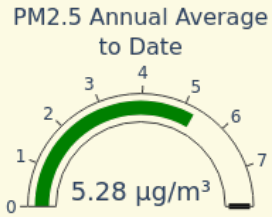
2024-01-01 to 2024-03-31











Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

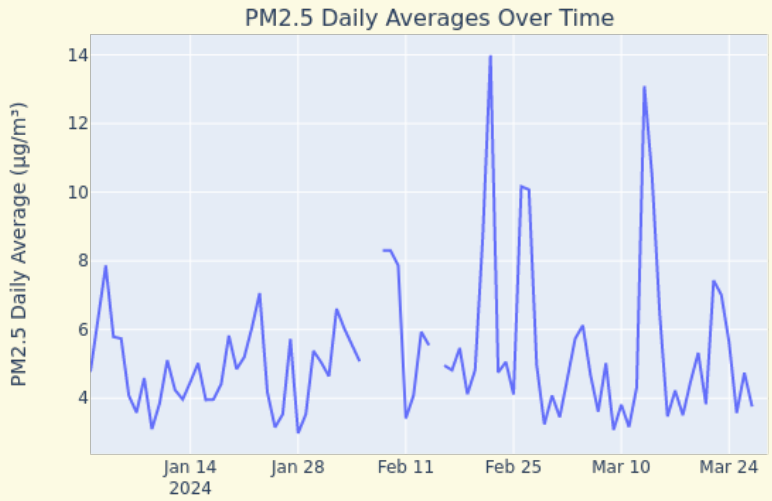
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

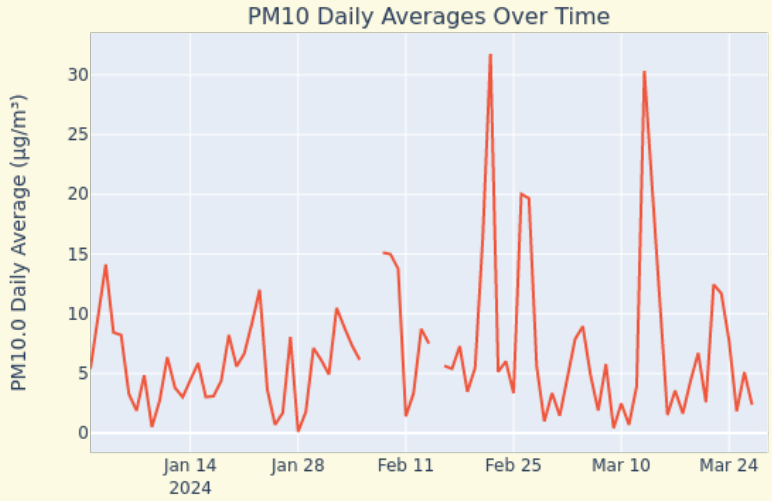
**to go into effect May 6, 2024

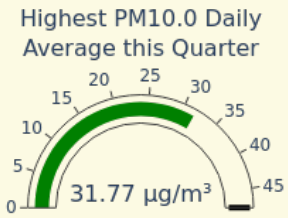
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

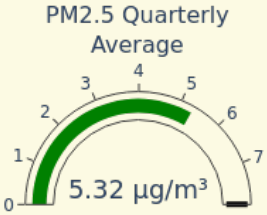
Q1 2024 Report for: PurpleAir device AV-18-4A9
University of Virginia at Wise, Stephens, Wise County, VA

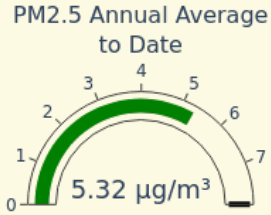
2024-01-01 to 2024-03-29











Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

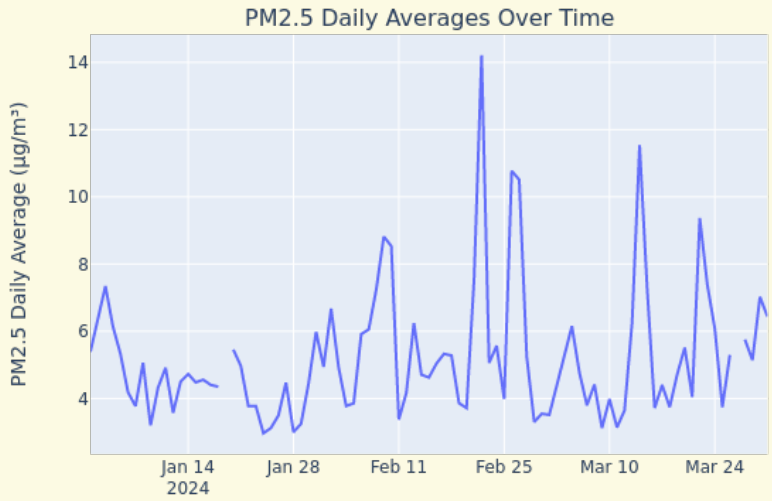
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

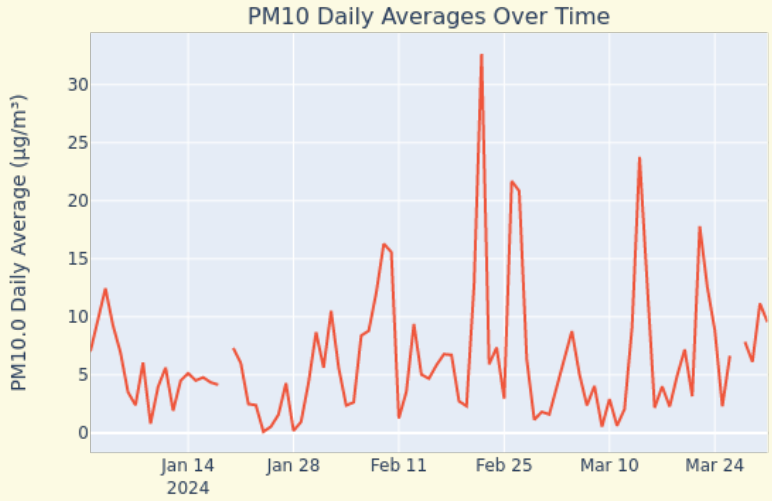
**to go into effect May 6, 2024

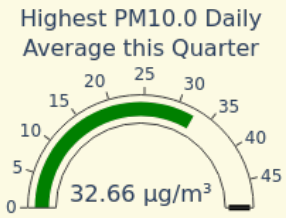
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

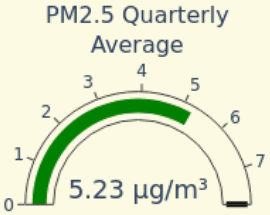
Q1 2024 Report for: PurpleAir device AV-19-4A9
University of Virginia at Wise, Wise, Wise County, VA

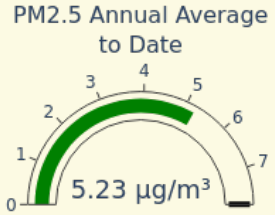
2024-01-01 to 2024-03-31











Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

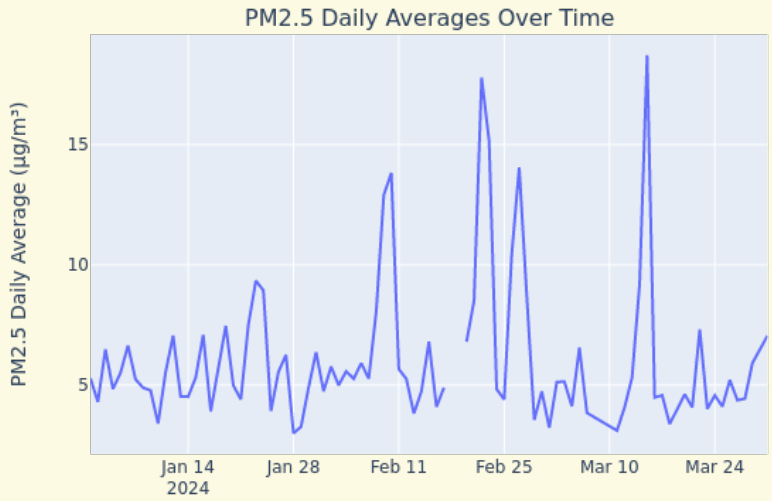
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

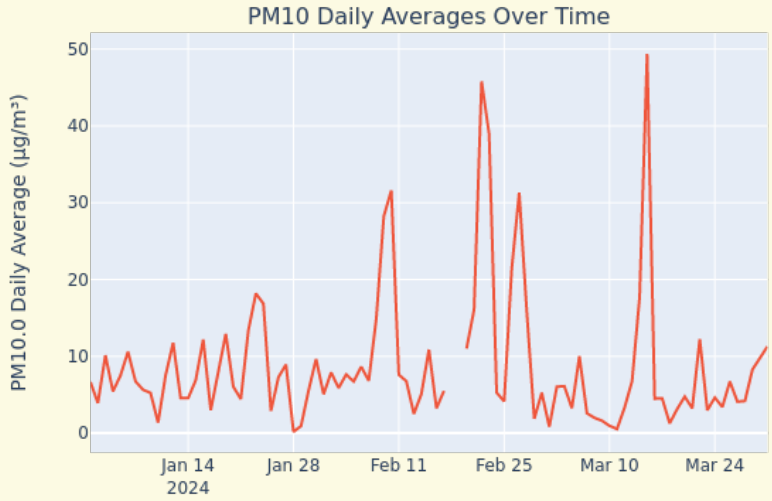
**to go into effect May 6, 2024

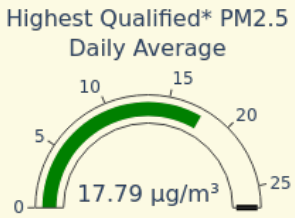
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

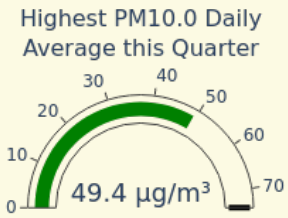
Q1 2024 Report for: PurpleAir device AV-31-8635
Pittsylvani County NAACP, Chatham, Pittsylvania County, VA

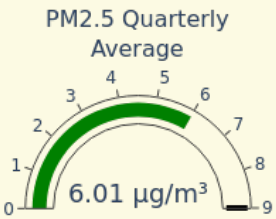
2024-01-01 to 2024-03-31

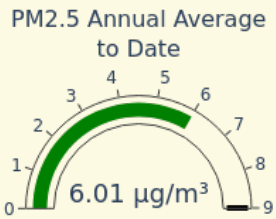












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

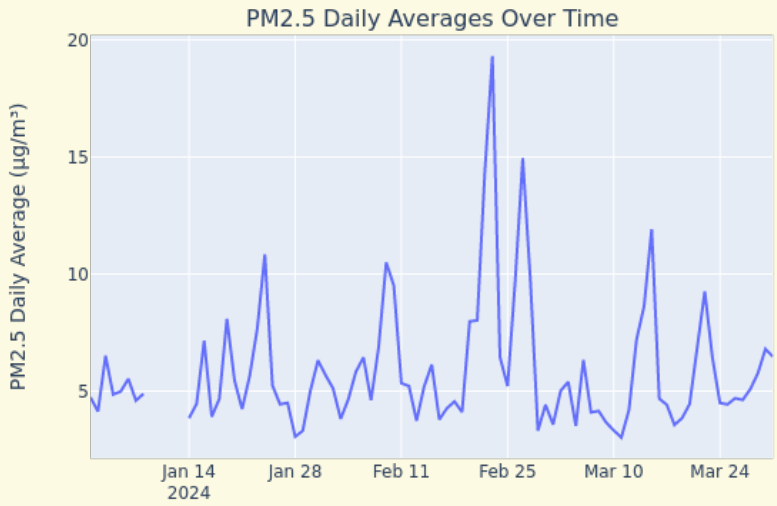
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

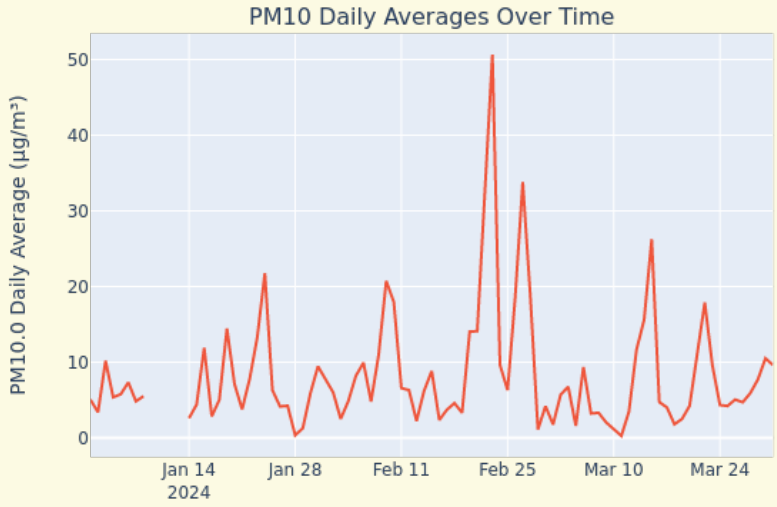
**to go into effect May 6, 2024

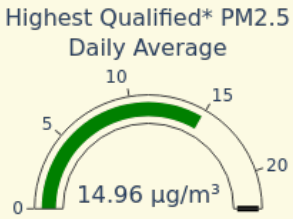
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

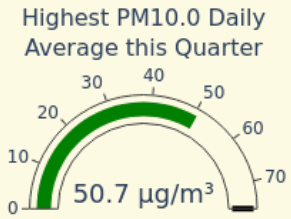
Q1 2024 Report for: PurpleAir device AV-39-F7FE
Friends of Buckingham, Buckingham, Buckingham County, VA

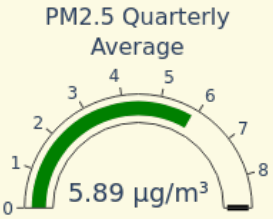
2024-01-01 to 2024-03-31

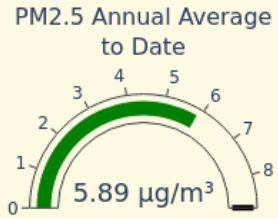












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

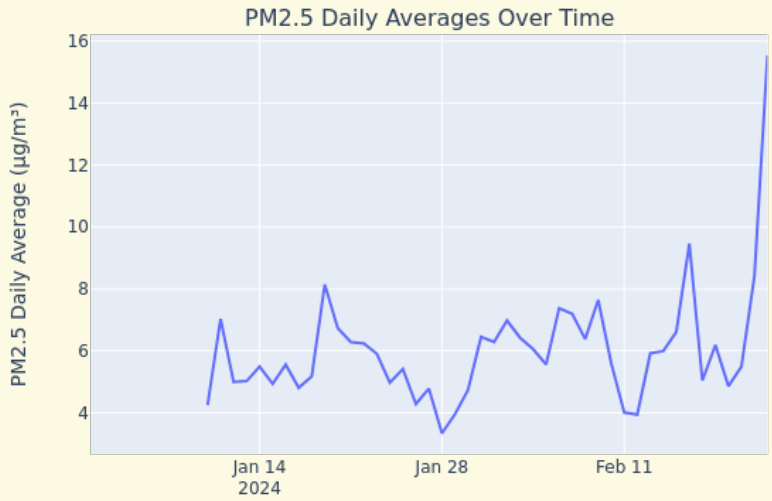
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

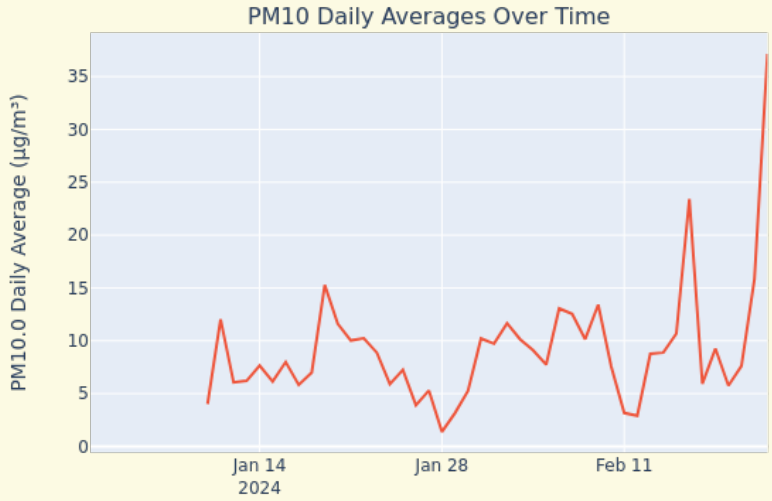
**to go into effect May 6, 2024

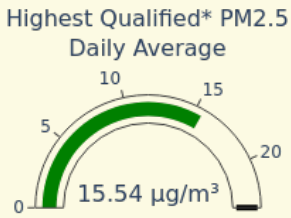
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

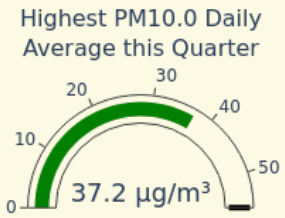
Q1 2024 Report for: PurpleAir device AV-3-7DD5
Appalachian Mountain Flows, Keystone, McDowell County, WV

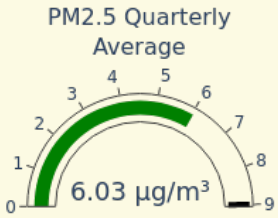
2024-01-01 to 2024-02-22

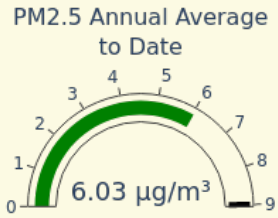












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

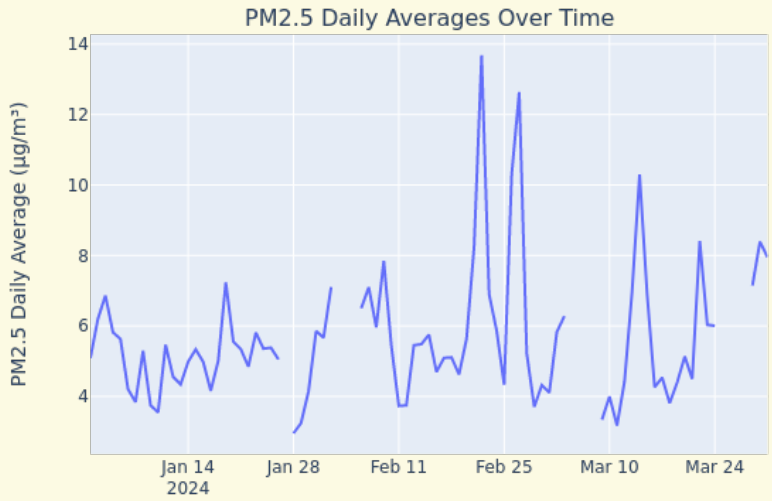
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

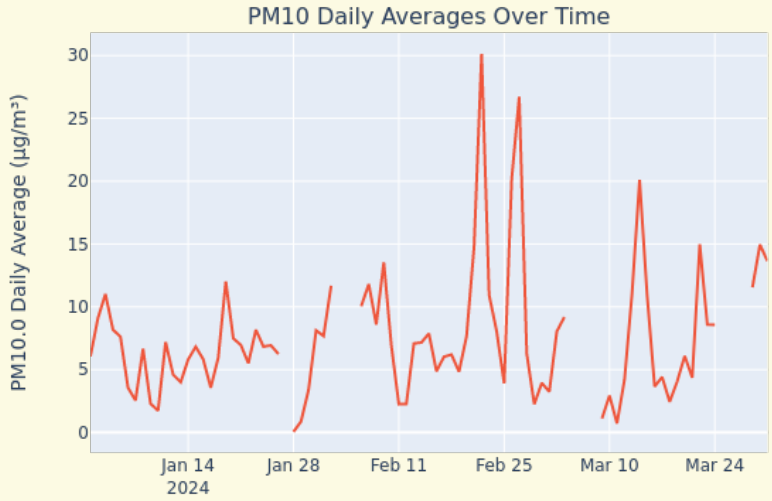
**to go into effect May 6, 2024

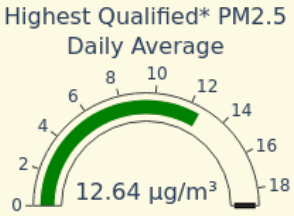
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

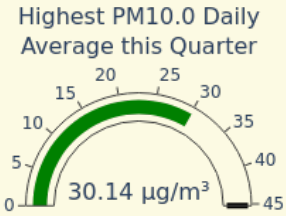
Q1 2024 Report for: PurpleAir device AV-20-1C53
Appalachian Voices, Northfork, McDowell County, WV

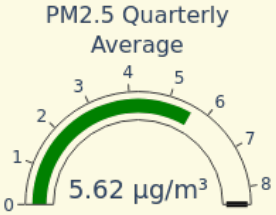
2024-01-01 to 2024-03-31

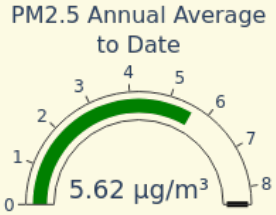












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

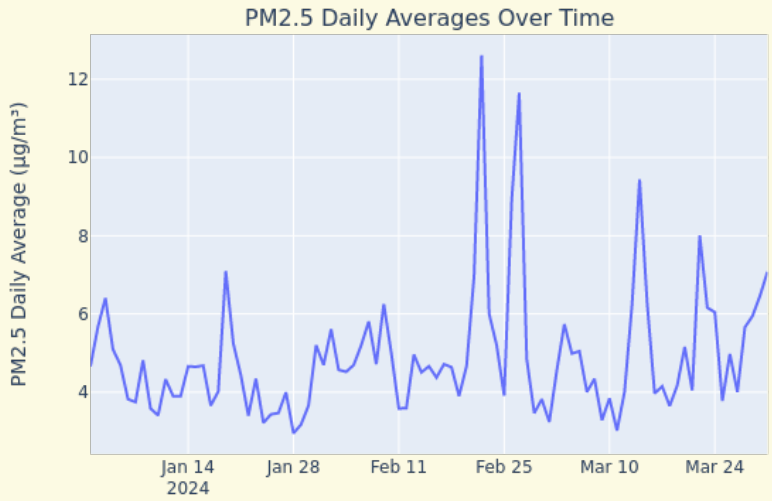
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

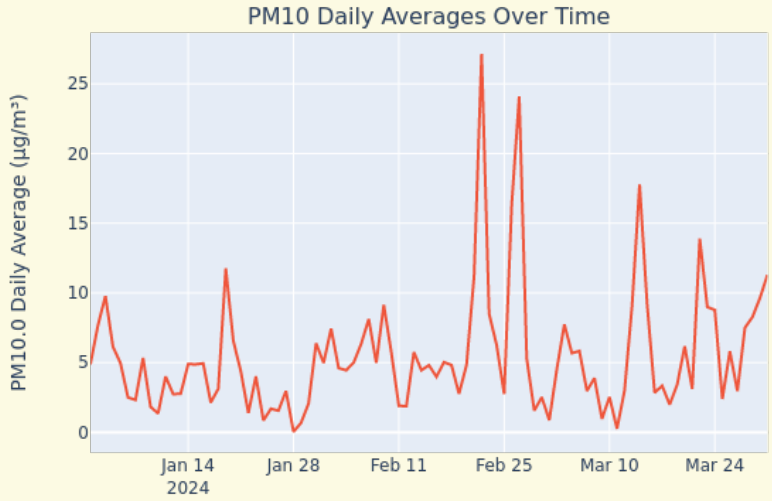
**to go into effect May 6, 2024

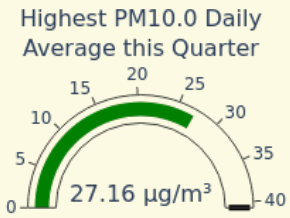
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

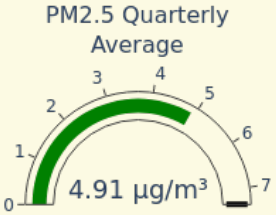
Q1 2024 Report for: PurpleAir device AV-21-79E1
Appalachian Voices, Elkhorn, McDowell County, WV

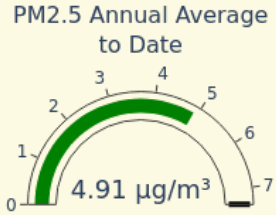
2024-01-01 to 2024-03-31











Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

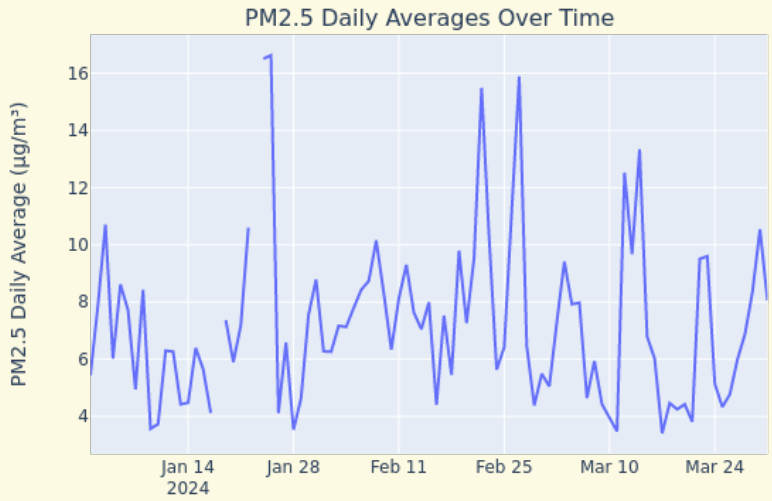
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

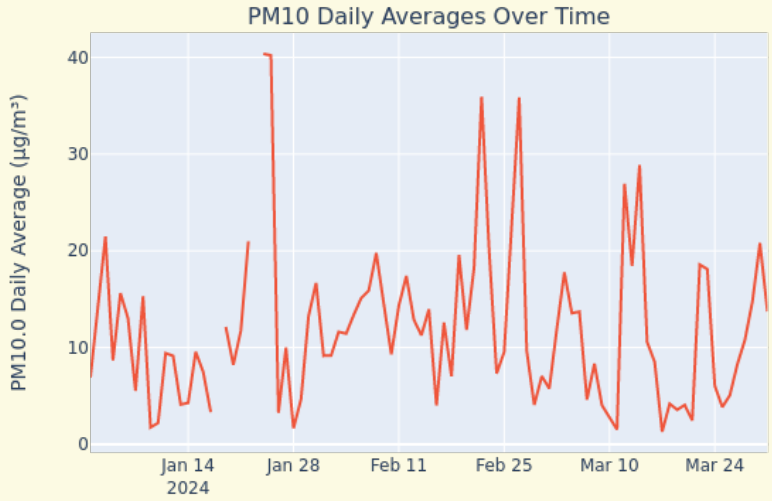
**to go into effect May 6, 2024

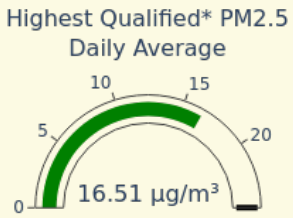
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

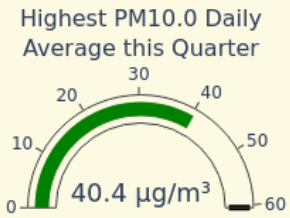
Q1 2024 Report for: PurpleAir device AV-24-F6AB
Institute West Dunbar Pinewood Sub area Planning Committee, Institute, Kanawha County, W

2024-01-01 to 2024-03-31









Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

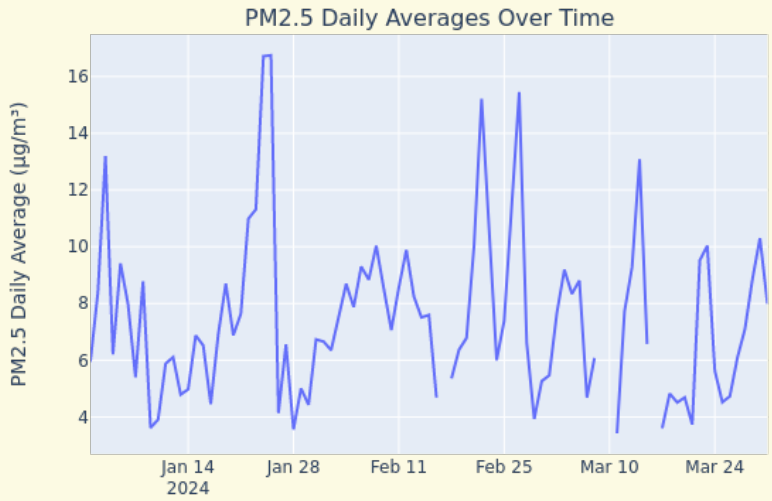
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

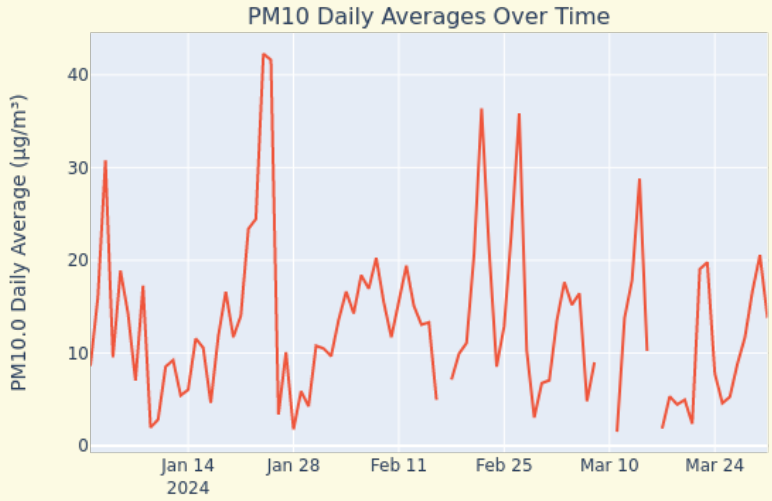
**to go into effect May 6, 2024

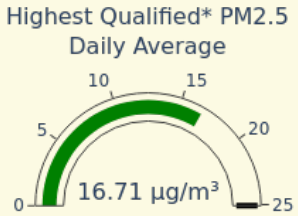
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

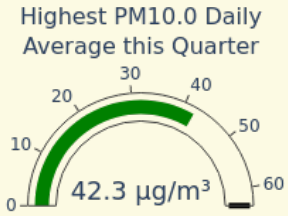
Q1 2024 Report for: PurpleAir device AV-36-B7A7
Institute West Dunbar Pinewood Sub area Planning Committee, Institute, Kanawha County, W

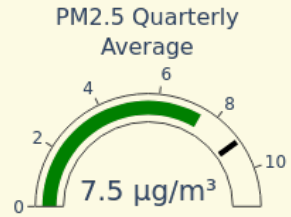
2024-01-01 to 2024-03-31

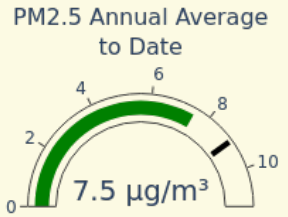












Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

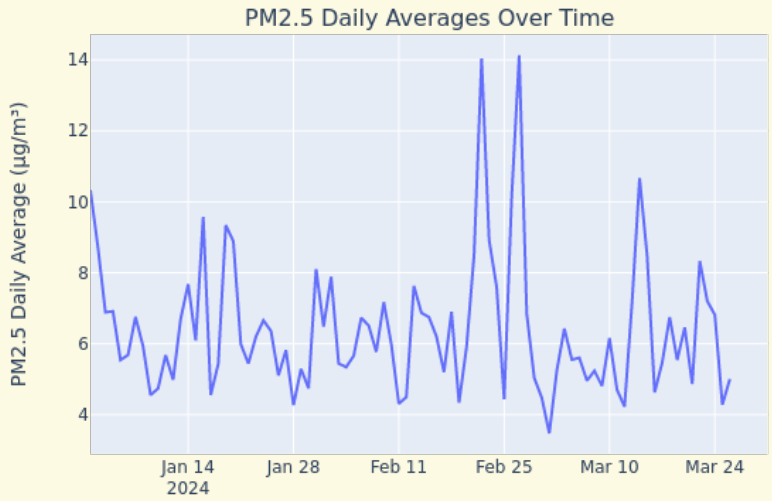
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

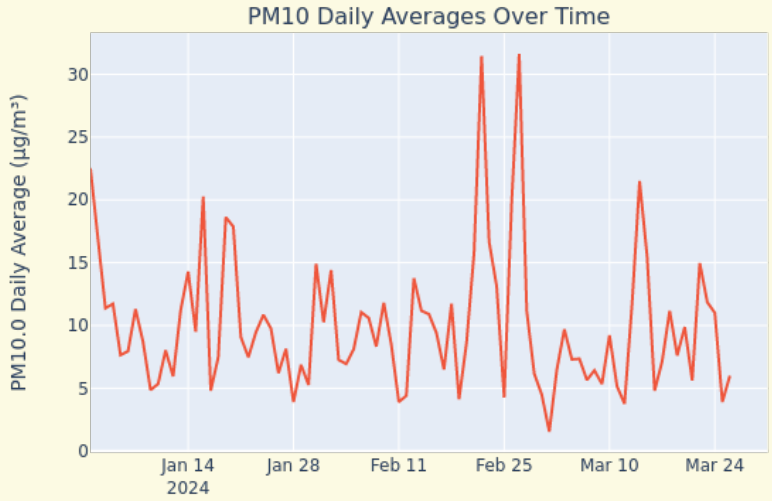
**to go into effect May 6, 2024

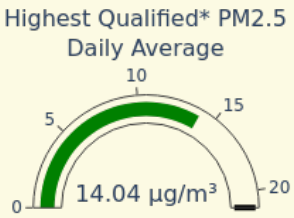
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

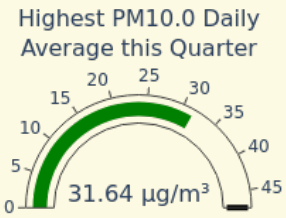
Q1 2024 Report for: PurpleAir device AV-41-4e8a
Appalachian Voices, Eckman, McDowell County, WV

2024-01-01 to 2024-03-31









Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

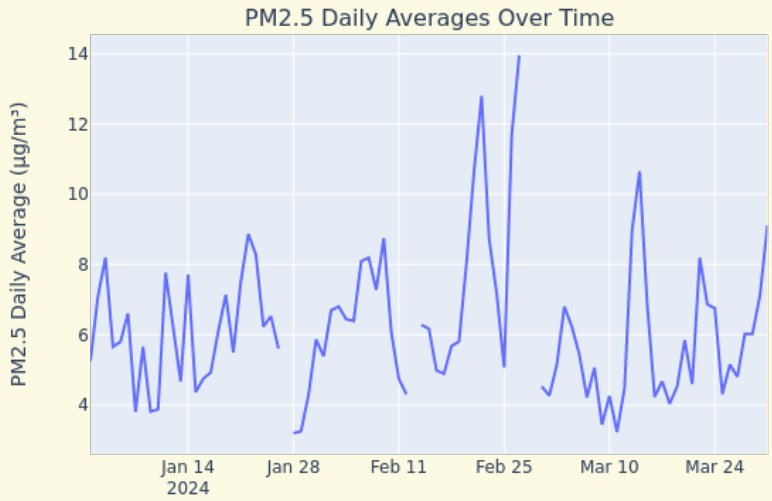
National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

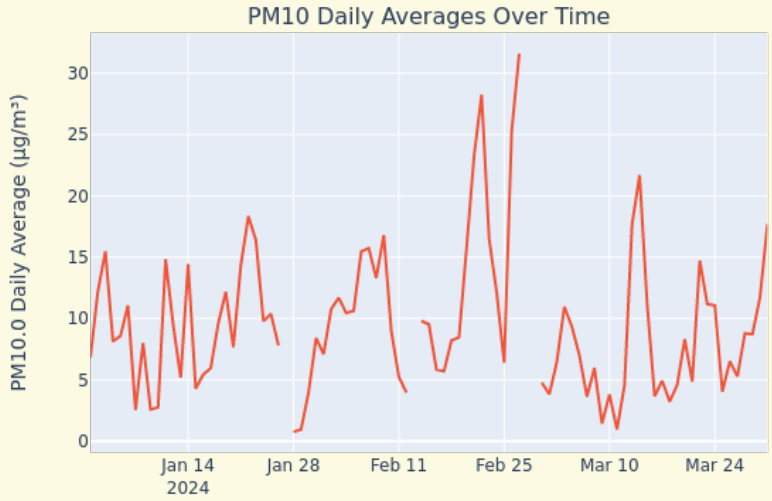
**to go into effect May 6, 2024

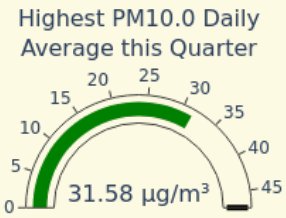
* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

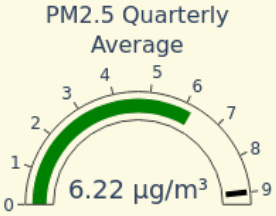
Q1 2024 Report for: PurpleAir device AV-42-b07b
Appalachian Voices, Gary, McDowell County, WV

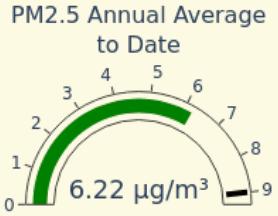
2024-01-01 to 2024-03-31











Dates with Air Quality Exceedances

Days where PM2.5 Concentration Exceeded Standards	Days where PM10.0 Concentration Exceeded Standards

No days exceeded daily EPA standard

National Ambient Air Quality Standards:
PM2.5 annual average - 9 µg/m³ **
PM2.5 24 hour average - 35 µg/m³
PM10 24 Hour average - 150 µg/m³

**to go into effect May 6, 2024

* "Qualified" means the second highest PM2.5 Daily Average for quarterly National Ambient Air Quality Standards (NAAQS) calculations, and the 8th highest value for annual calculations. This 98th percentile calculation means PM2.5 Daily Averages may exceed 35 µg/m³ a few times per year without exceeding the standard.

The following monitors received insufficient data to include in this quarter's report:

AV-1, Barnardsville, NC (test monitor, no longer receiving data)

AV-6, Eunice, Raleigh County, WV

AV-7, Naoma, Raleigh County, WV

AV-8, Naoma, Raleigh County, WV

AV-11, Unspecified, Lackawanna County, PA

AV-15, Covington, Kenton County, KY

AV-32, Dunbar, Kanawha County, WV

AV-33, Eagan, Caliborne County, TN

AV-38, Institute, Kanawha County, WV

AV-50, Unspecified, Grundy County, TN

AV-53, Unspecified, Wise County, VA

AV-52, Unspecified, Boone County, WV

AV-54, Unspecified, Raleigh County, WV

AV-60, Unspecified, Sullivan County, TN