

FACT SHEET

Ambient Air Quality Monitoring in Virginia

What is ambient air quality and why does matter?

- Ambient air quality encompasses the overall air quality in our surroundings.
- Air pollution adversely affects human health, wellbeing, outdoor experiences, plants, wildlife, and ecosystems, including water and land resources.
- Protecting ambient air quality is crucial as it safeguards all other environmental resources.

What impacts ambient air quality?

- Both naturally occurring substances, like pollen, and man-made substances, such as vehicle emissions.
- Sources of air pollution are typically categorized as mobile or stationary.
- Geography can also affect ambient air quality. Some pollutants may even react differently depending on terrain, temperatures, or humidity levels. Wind can also move pollution from one place to another.



Stationary source emissions

Emissions from facilities that cannot move, like factories



Mobile source emissions

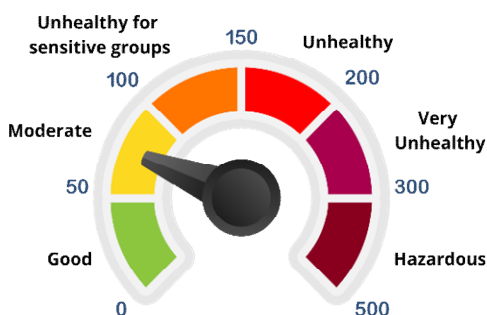
Emissions from sources that can move or be moved, like vehicles

What's DEQ's role in all of this?

- Six common air pollutants are regulated under the Clean Air Act (CAA). National Ambient Air Quality Standards (NAAQS) have been established for each of these pollutants:
 - Particulate matter (PM < 2.5 microns & PM < 10 microns)
 - Nitrogen oxides (NO₂)
 - Sulfur oxides (SO₂)
 - Lead (Pb)
 - Carbon monoxide (CO)
 - Ground-level ozone (O₃)
- DEQ monitors and manages six "criteria" pollutants in outdoor air, implementing the CAA by monitoring, maintaining records, tracking progress, and providing data for decisions. Programs like Air Check Virginia in Northern Virginia also contribute to air quality protection.
- Measurement of pollution enables DEQ to identify sources, assess problem areas, and strategize improvements.

What does DEQ do with its ambient air quality data?

- DEQ maintains federal reporting duties and official ambient air quality records for Virginia, utilizing the data for various agency decisions and air quality forecasts.
- Areas in Virginia exceeding NAAQS for any of the six criteria pollutants may be designated as "nonattainment" areas. DEQ then develops State Implementation Plans to reduce pollutants and return these areas to "attainment" status.



What is the Air Quality Index (AQI)?

- The AQI, developed by the EPA, uses color-coded categories to communicate daily air quality, helping people understand its impact on health and suggesting actions to reduce exposure.
- It ranges from green (good air quality with minimal risk) to maroon (hazardous conditions, especially during events like heavy wildfire smoke), guiding planning around daysP with poor air quality.

What's the difference between regulatory air monitors and air sensors?

- Regulatory air monitors and air sensors differ primarily by the method of measuring particulate matter, and the average time of data collected. Take a look below to see how the two compare.

Regulatory Air Monitors



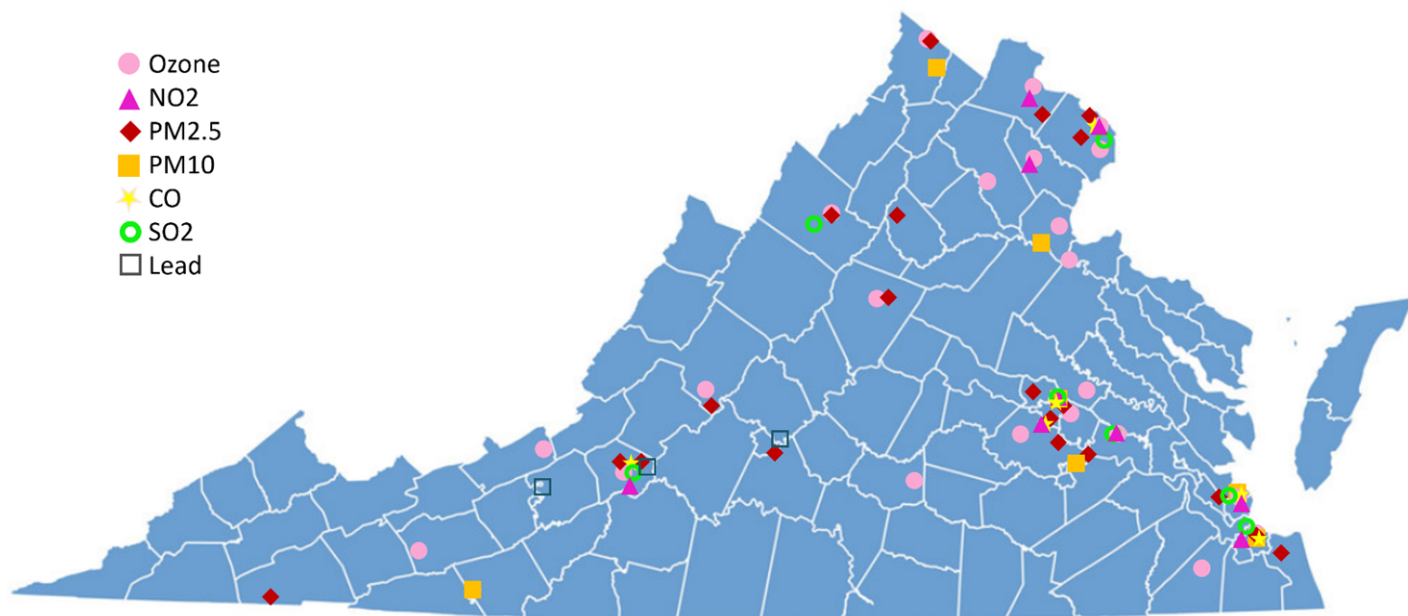
- Measure particulates by weight by pulling air through filters, which are then measured.
- Cost \$100,000s
- Very sensitive and accurate.
- Follow federal data collection and reporting protocols and are used for modeling, analysis, and planning programs.
- Used to measure regional-scale air quality.

PurpleAir Sensors



- Use lasers to count airborne particles.
- Cost \$230
- Less sensitive than regulatory air monitors but provide useful info on trends and local pollution conditions.

Air Monitors in Virginia



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