CLEARING THE AIR

District’s Air Quality Monitoring Program

Clearing the Air Workshop #2: May 25, 2021
Air Quality Program

Planning (Improvement Plans & Regulations)

Permitting

Compliance & Enforcement

Ambient Air Quality Goals

Air Emissions

Air Quality Monitoring
Why monitor ambient air quality?

- Public health protection
  - air quality levels vs. national standards
- Identify air pollution sources
- Develop air pollution controls
- Science and research
- Public outreach/Education
Why monitor…?

Air monitoring data applications:

- Attainment status and trends
- Health risk assessment and ecosystem impacts
- Develop/evaluate emission control strategies
- Source-receptor relationships
- Models development/evaluation

DOEE Authority and Limitations:

- Clean Air Act mandates
- Federal grant funded
What is the Focus?

**SIX pollutants monitored nationwide:**

1. Carbon Monoxide (CO)
2. Sulfur Dioxide (SO2)
3. Nitrogen Dioxide (NO2)
4. Particulate Matter (PM10 & PM2.5)
5. Ground-Level Ozone (O3)
6. Lead (Pb)

EPA established National Ambient Air Quality Standards for these SIX “criteria” air pollutants.
When did air monitoring begin in District?

- 14 cities dust-fall measurement study 1931-1933
- 10 cities SO2 & ozone study 1953-1954
- National Air Sampling Network 1953-1959
- Continuous Air Monitoring Program 1962/1963-
  - First continuous measurement program- ozone, SO2, NO2, NO, CO, total oxidants, total hydrocarbons
  - 7 cities- DC, New Orleans, Chicago, Philadelphia, Cincinnati, San Francisco, and Los Angeles

District’s CAMP station
What do we have in District’s Monitoring Program?

- **Criteria air pollutant network**
  - Continuous real-time measurements for Five pollutants- CO, SO2, NO2, O3 and PM25 & PM10
  - Must use federal methods and analyzers

- **Specialized networks (research grade)**
  - Ozone precursor pollutants
  - PM2.5 chemical species
  - Air toxics - National Air Toxics Trends Station
  - National Core (trace-level CO & SO2, PMcoarse)
  - Near-road exposure
  - Meteorology

Round the year 24/7 measurements
Where are District’s Monitoring Stations?

District’s Air Monitoring Network in 2010

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Street Address</th>
<th>Location Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Terrace School</td>
<td>405 Anacostia Ave, NE</td>
<td>Urban / EJ Community</td>
</tr>
<tr>
<td>McMillan Reservoir</td>
<td>2500 First St NW</td>
<td>Urban</td>
</tr>
<tr>
<td>Takoma School</td>
<td>Piney Branch Rd NW</td>
<td>Urban</td>
</tr>
<tr>
<td>Verizon-Downtown</td>
<td>L St &amp; 21\textsuperscript{st} St NW</td>
<td>Urban</td>
</tr>
<tr>
<td>Haines Point NPS</td>
<td>1100 Ohio Dr. NW</td>
<td>Urban</td>
</tr>
</tbody>
</table>
Where are District’s Monitoring Stations?

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Street Address</th>
<th>Location Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Terrace Education Center</td>
<td>405 Anacostia Ave NE</td>
<td>Urban / EJ community</td>
</tr>
<tr>
<td>I-295 Near-Road Station</td>
<td>Benning Rd NE @ I-295 On-ramp</td>
<td>Urban / EJ community</td>
</tr>
<tr>
<td>King Greenleaf Rec Center</td>
<td>201 N St SW</td>
<td>Urban / EJ community</td>
</tr>
<tr>
<td>McMillan Reservoir</td>
<td>2500 First St NW</td>
<td>Urban</td>
</tr>
<tr>
<td>Takoma Rec Center</td>
<td>301 Van Buren St NW</td>
<td>Urban</td>
</tr>
</tbody>
</table>

District’s Air Monitoring Network in 2020
Air Monitoring Stations
Air Monitoring Stations
Air Monitoring Stations
Where to find Air Quality Data?

District’s ambient air data in public databases

Real-time Data:

- EPA’s AirNow- [https://www.airnow.gov/](https://www.airnow.gov/)

Quality Assured Data:

- EPA’s AirData- [https://www.epa.gov/outdoor-air-quality-data](https://www.epa.gov/outdoor-air-quality-data)
Where to find data…

Daily AQI Values in 1980
District of Columbia County, DC

- Good (<= 50 AQI) 120 days
- Moderate (51-100 AQI) 159 days
- Unhealthy for Sensitive Groups (101-150 AQI) 53 days
- Unhealthy (151-200 AQI) 25 days
- Very Unhealthy (201-300 AQI) 9 days
- Hazardous (>=301 AQI) 0 days

Source: U.S. EPA AirData <https://www.epa.gov/air-data>
Generated: May 13, 2021
Where to find data...

Daily AQI Values in 2000
District of Columbia County, DC

Source: U.S. EPA AirData [https://www.epa.gov/air-data]
Generated: May 13, 2021
Where to find data...

Daily AQI Values in 2019
District of Columbia County, DC

Source: U.S. EPA AirData <https://www.epa.gov/air-data>
Generated: May 13, 2021
Where to find data...

Daily AQI Values, 1996 to 2020
District of Columbia County, DC

AQI Category
- Good (<= 50 AQI)
- Moderate (51-100 AQI)
- Unhealthy for Sensitive Groups (101-150 AQI)
- Unhealthy (151-200 AQI)
- Very Unhealthy (201-300 AQI)
- Hazardous (>=301 AQI)

Source: U.S. EPA AirData <https://www.epa.gov/air-data>
Generated: May 11, 2021
Note: The PM2.5 monitoring network was phased in between 1999 and 2001 in most areas. Earlier years in this plot do not include PM2.5 data.
# National Ambient Air Quality Standards (NAAQS)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>NAAQS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>70 ppb</td>
</tr>
<tr>
<td>PM2.5</td>
<td>35 µg/m³ &amp; 12 µg/m³</td>
</tr>
<tr>
<td>PM10</td>
<td>150 µg/m³</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>35 ppm &amp; 9 ppm</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>100 ppb &amp; 53 ppb</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>75 ppb</td>
</tr>
<tr>
<td>Lead</td>
<td>0.15 µg/m³</td>
</tr>
</tbody>
</table>

Source: [https://www.epa.gov/criteria-air-pollutants/naaqs-table](https://www.epa.gov/criteria-air-pollutants/naaqs-table)
District’s Air Quality vs. NAAQS

- Carbon monoxide, CO
- Nitrogen dioxide, NO2
- Sulfur dioxide, SO2
- Lead, Pb
- Particulate Matter (PM10 & PM2.5)
- Ozone, O3
District’s Air Quality Status...

National Ambient Air Quality Standard

- Ground-Level Ozone: 103%
- Fine Particulate Matter: 79%
- Carbon Monoxide: 21%
- Nitrogen Dioxide: 52%
- Sulfur Dioxide: 7%
Questions?

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