New Pathways to Clean Air

Tracey Holloway
Professor, University of Wisconsin—Madison
Deputy Leader, NASA Air Quality Applied Sciences Team

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Comparison of Growth Areas and Emissions, 1980-2014

- Gross Domestic Product: 147%
- Vehicle Miles Traveled: 97%
- Population: 41%
- Energy Consumption: 26%
- CO₂ Emissions: 17%
- Aggregate Emissions (Six Common Pollutants): -63%

Image: EPA
Asthma, Weather

Reactive Chemicals
Cities & States

Shorter life expectancy

Asthma,

1970 CAA
NAAQS

Technology Solutions
Ozone, NO\textsuperscript{+}, SO\textsubscript{2}, PM\textsubscript{2.5}

Global
IR-absorbing

Warmer planet

Weather

Seasons change

CO\textsubscript{2}, CH\textsubscript{4}, N\textsubscript{2}O

No "end of pipe" solutions
From NASA’s Aura Satellite: Nitrogen Dioxide (NO₂) Pollution

Map of the United States showing the distribution of Nitrogen Dioxide (NO₂) pollution in 2010. The map uses a color gradient to indicate levels of pollution, with blue representing low levels and red representing high levels. Notable cities like Los Angeles and New York are marked on the map.
# National Ambient Air Quality Standards (NAAQS)

The [Clean Air Act](https://www.epa.gov/air/clean-air-act), which was last amended in 1990, requires EPA to set [National Ambient Air Quality Standards](https://www.epa.gov/air/national-ambient-air-quality-standards) (40 CFR part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act identifies two types of national ambient air quality standards. **Primary standards** provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. **Secondary standards** provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

EPA has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. They are listed below. Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu g/m^3$).

<table>
<thead>
<tr>
<th>Pollutant [final rule cite]</th>
<th>Primary/Secondary</th>
<th>Averaging Time</th>
<th>Level</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide [76 FR 54294, Aug 31, 2011]</td>
<td>primary</td>
<td>8-hour</td>
<td>9 ppm</td>
<td>Not to be exceeded more than once per year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-hour</td>
<td>35 ppm</td>
<td></td>
</tr>
<tr>
<td>Lead [73 FR 66964, Nov 12, 2008]</td>
<td>primary and secondary</td>
<td>Rolling 3 month average</td>
<td>0.15 $\mu g/m^3$ (1)</td>
<td>Not to be exceeded</td>
</tr>
<tr>
<td>Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]</td>
<td>primary</td>
<td>1-hour</td>
<td>100 ppb</td>
<td>98th percentile, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>primary and secondary</td>
<td>Annual</td>
<td>53 ppb (2)</td>
<td>Annual Mean</td>
</tr>
<tr>
<td>Ozone [73 FR 16436, Mar 27, 2008]</td>
<td>primary and secondary</td>
<td>8-hour</td>
<td>0.075 ppm (3)</td>
<td>Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>primary</td>
<td>Annual</td>
<td>12 $\mu g/m^3$</td>
<td>annual mean, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>secondary</td>
<td>Annual</td>
<td>15 $\mu g/m^3$</td>
<td>annual mean, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>primary and secondary</td>
<td>24-hour</td>
<td>35 $\mu g/m^3$</td>
<td>98th percentile, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>PM$_{2.5}$</td>
<td>primary and secondary</td>
<td>24-hour</td>
<td>150 $\mu g/m^3$</td>
</tr>
<tr>
<td></td>
<td>PM$_{10}$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]</td>
<td>primary</td>
<td>1-hour</td>
<td>75 ppb (4)</td>
<td>99th percentile of 1-hour daily maximum concentrations, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>secondary</td>
<td>3-hour</td>
<td>0.5 ppm</td>
<td>Not to be exceeded more than once per year</td>
</tr>
</tbody>
</table>

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as of October 2011
Feingold Says Johnson's Criticisms Of Clean Power Plan Are Off-Base

Johnson Has Said Plan Will Hamper Economic Growth

Monday, March 7, 2016, 7:00am
By Chuck Quirmbach

U.S. Supreme Court Blocks Obama's Clean Power Plan

An unusual 5-4 decision halts the federal effort to curb carbon dioxide emissions from power plants while the court battle continues

By ANDREW C. REVKIN
MARCH 6, 2016 1:27 PM  50 Comm
United States CO$_2$ (2013)

- Electricity: 31%
- Transportation: 27%
- Industry: 21%
- Commercial & Residential: 12%
- Agriculture: 9%

What’s next for air quality in the United States?

September 24, 2015 / UGEC Viewpoints

Tracey Holloway
University of Wisconsin, USA

tinyurl.org/TraceyUGEC
Thank you!

Twitter @tracey_holloway
Email taholloway@wisc.edu