Commanding Clean Air

The Clean Air Act of 1970 as a Model for U.S. Environmental Policy
Issues to Consider:

- When and how did air pollution get on the government agenda and how was this “problem” ultimately framed?
- How did the Clean Air Act of 1970 try to accomplish government environmental policy goals?
- Did the CAA 1970 reduce the problem(s)?
When and how did air pollution get on the government agenda?

- **Policy History**
  - Which government(s) & when?
  - What was federal government air pollution policy prior to 1970?
  - How did the Clean Air Act 1970 come to be?

- **Relative Roles of Science & Politics**
Clean Air Act 1970

- **Statutory Goal:**
  - ...to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population...
Clean Air Act 1970

- Provisions
  - EPA to set National Ambient Air Quality Standards (NAAQS)
    - $\text{SO}_2$, $\text{NO}_x$, CO, VOC, Pb, PM-10, O$_3$
  - EPA to set New Source Performance Standards (NSPS) – stationary sources
  - States to Devise Implementation Plans to Limit Emissions
  - EPA to set Mobile Source Emission Standards
National Air-Quality Standards

- Maximum permissible ambient air concentrations for 7 pollutants to be set by EPA
  - $\text{SO}_2$, $\text{NO}_x$, $\text{CO}$, VOC, Pb, PM-10, $\text{O}_3$
  - Primary Standards (human health)
  - Secondary Standards (aesthetics, damage to buildings, crops, water, etc.)
  - Health standards only – no consideration of Compliance Cost

- Must be met by 1975
Rule-Making in the Bureaucracy

Publication of Rules

- Witness Testimony
- Enabling Law
  - Interest Groups
  - Outside Experts
  - Agency Interests
  - Other Agencies
- Regulatory Hearing
- Staff Report on Proposed Rules
- Public Comment
- Agency Studies
- Court Rulings
- Events

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# National Air-Quality Standards

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<thead>
<tr>
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<th>Set by EPA</th>
<th>Max. Concentration</th>
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| **Particulates (tsp)**| Annual Geometric Mean 24-hour       | 75 µg/m³  
|                      |                                     | 260 µg/m³                |
| **SO₂**              | Annual Arithmetic Mean 24-hour       | 80 µg/m³  
|                      |                                     | 365 µg/m³                |
| **CO**               | 8-hour                              | 10 µg/m³  
|                      | 1-hour                              | 40 µg/m³                |
# National Air-Quality Standards

<table>
<thead>
<tr>
<th>Compound</th>
<th>Measurement Type</th>
<th>Maximum Concentration</th>
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<tbody>
<tr>
<td>NO₂</td>
<td>Annual Arithmetic Mean</td>
<td>100 µg/m³</td>
</tr>
<tr>
<td>O₃</td>
<td>Maximum Daily 1-hour Average</td>
<td>235 µg/m³</td>
</tr>
<tr>
<td>Pb</td>
<td>Maximum Quarterly Average</td>
<td>1.5 µg/m³</td>
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Set by EPA.
New Source Performance Standards (emissions)

- EPA standards set on industry-basis
- Costs of implementation considered
- Control-technique (technology) guidelines for existing sources
- State enforcement
State Implementation Plans

- **247 Air Quality Control Regions**
  - States have 1 year to designate attainment vs. non-attainment areas
  - Non-attainment areas
    - must meet CO & O₃ standards by 1975
    - Existing factories must retrofit with “reasonably available control technology”
    - Plant expansion requires best available control technology on existing similar plants
    - New plants must purchase offsets from existing plants for no net pollution emission increase
Mobile Emission Standards

- **Cars & Trucks**
- Only explicit air pollution limits written into the CAA
- 90% reduction in CO & VOC by 1975
- 90% reduction in NO\textsubscript{x} by 1976
- Why national standards rather than state standard setting?
Clean Air Act Mechanisms

- Command & Control
  - Regulation by Standard Setting & Enforcement
- Specificity
- Strict Deadlines
- Hammer Clauses
- Technology Forcing Provisions
- Citizen Engagement
  - Legal standing
  - Public hearings
CAA Amendments

  - To extend auto emissions standards
- 1977 Amendments
  - Extends auto emission deadline to 1980
  - Extends deadline for non-attainment areas to meet NAAQS to 1982
    - For cities with high CO/O₃ = 1987
  - All new coal power plants must use scrubbers
    - Eastern coal producers win concession
  - Makes Prevention of Significant Deterioration of Air Quality a Goal of CAA
1977 CAA Amendment: PSD

- Prevention of Significant Deterioration (PSD) regions
  - Class I:
    - National Parks, Wilderness areas, wildlife refuges, etc.
    - No decline in air quality allowed no matter how far below the NAAQS
  - Class II:
    - Modest decline in air quality allowed
  - Class III:
    - Up to NAAQS

- New Plants in PSD regions
  - Must use best available technology (BAT)
Did the CAA 1970 Work?

Impact on “…the quality of the Nation’s air resources…”
U.S. SO₂ Emissions

Thousands of Tons

Year

U.S. NO$_2$ Emissions

 Thousands of Tons

Year

U.S. VOC Emissions

Thousands of Tons

Year


0  5,000  10,000  15,000  20,000  25,000  30,000  35,000

U.S. CO Emissions

Thousands of Tons

Year

Trends in U.S. Ambient Air Quality

http://www.epa.gov/oar/aqtrnd01/
What About Health Effects?

- Asthma
- Respiratory Illness
- Missed Work Days (unhealthy air)
- Air pollution ➔ 60,000 heart-related deaths per year
  - Blood vessel constriction
Summary CAA 1970 & 1977

- Defined the Environmental Problem
  - Specific pollutants
- Mandated EPA to determine Specific Levels of Air Pollution Threat
  - Establish NAAQS
  - Establish safe levels for Toxics
- Mandated Action
  - Establish National Air Quality Control Regions / PSD
  - EPA to Establish Standards for Control Technology to limit Emissions
    - Stationary sources
    - Mobile sources
  - States + EPA to monitor and enforce standards under EPA guidance
- Enhance Government Response
  - Fixed deadlines
  - Hammer Clauses
  - Public Engagement in enforcement
    - hearings and legal standing