The Clean Air Act

History, Overview and Structure

James “Skip” Spensley
Spensley & Associates
The Caveman

Mummified bodies from the Paleolithic era
Ancient Rome
1306 King Edward I

1873 London 268 deaths

1909 Glasgow 1,000 deaths
1952 London
United States

1881 Chicago & Cincinnati

1939 St. Louis

1928 New York City

Late 1940’s in L.A.

1970 Denver
Donora, Pennsylvania

The 1948 Donora Smog

Major federal clean air laws became a legacy of this environmental disaster that focused national attention on air pollution. In late October of 1948, a heavy fog blanketed this valley, and as the days passed, the fog became a thick, acrid smog that left about 20 people dead and thousands ill. Not until October 31 did the Donora Zinc Works shut down its furnaces—just hours before rain finally dispersed the smog.

Donora 20 deaths
Our Federal System of Laws

• Apply nationally
• Supremacy over state & local laws
• Empowers and funds state & local authorities
• Limitations on federal power:
  – Federalism
  – Due Process
  – Equal Protection
  – Prohibition on Takings
  – Administrative Procedures Act
Role of Federal Government

**Legislative Branch**
Enacts the Laws
Makes overall policy

**Executive Branch**
Promulgates the regulations
Makes program policy

**Judicial Branch**
Interprets the law & regulations
Tailors policy to specific cases
Legislative Branch: U.S. Congress
Congressional Committees
Environmental Responsibilities

U.S. House of Representatives
- Agriculture Committee: FIFRA, Biofuels
- Commerce Committee: CAA, TSCA, NEPA
- Science Committee: Environmental R&D
- Ways & Means Committee: Environmental Tax incentives
- Natural Resources Committee: ESA, F&WCA
- Public Works Committee: CWA, 1899 Refuse Act

U.S. Senate
- Agriculture Committee: FIFRA, Biofuels, Pesticides
- Environment Committee: CAA, TSCA, NEPA, RCRA, CERCLA, SDWA
- Science Committee: Environmental R&D
Legislative Processing

• Bill passed by Congress
• Reported in the *Congressional Record*
• Signed by President
• Reported as
  – Statutes-at-Large e.g. 83 Stat. 852 (1969)
  – Public Law e.g. P.L. 91-190
  – Slip laws
• *United States Code* e.g. 42 U.S.C. § 4321 et seq
Executive Branch Implementing Writing Regulations

Administrative Procedures Act governs

- Agency proposal as draft regulation
- Notice published in the *Federal Register*
- Comments requested and received
- Final regulation published in *FR*
- Reported in *Code of Federal Regulations*
  e.g. 40 C.F.R. §1500 et seq.
Executive Branch
Environmental Responsibilities

President

White House Office
- Overall Policy

Council on Environmental Quality
- Environmental Policy

Environmental Protection Agency
- CAA, CWA, RCRA, CERCLA, TSCA

Office of Management and Budget
- Environmental Budget

Department of Health
- Health policy

Department of Justice
- Environmental Litigation

Department of State
- Environmental treaties

Department of Interior
- ESA, F&WCA

Department of Agriculture
- FIFRA

Department of Commerce
- ESA, MMPA

Department of Defense
- CWA - COE

Department of Energy
- Nuclear mat’ls
Judicial Branch (Federal)
Early Responses to Air Pollution

- **Avoidance** – zoning of industrial properties
- **Nuisance lawsuits**
  - Private
  - Public
- **Award of damages or injunctions**
- **Local/State control laws & fines**
- **DEATH by order of the KING**
Earth Day 1970

The New York Times

Millions Join Earth Day Observances Across the Nation

ON THE PLANET EARTH, September, 1969
The unanimous Declaration of the Environmental State of America

The effluent society

R.I.P. 1940 A.D.
Congressional Attention

The Environmental Decade

Beyond Earth Day: Fulfilling the Promise

Air Pollution Kills
Breathing is Dangerous to Your Health

Proposition No. 1
Clean Air, Pure Water, Healthy Land

Union Calendar No. 502

The Environmental Decade
(Action Proposals for the 1970's)

Twenty-Fourth Report
by the Committee on Government Operations

May 13, 1979—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed
U.S. Government Printing Office
Washington, D.C.
Clean Air Act

• Most complex environmental statute
  – Relies upon the scientific understanding of the causes and effects of air pollution.
  – Melds past state attempts and different legal approaches of 50 states to controlling air pollution.
  – Depends upon cooperation among all levels of government and among the states.
  – Doesn’t conform to governmental boundaries.
  – Relies on continuously changing technology.
3 kinds of Environmental Standards

- Water quality standards
- Air Ambient standards (NAAQS)
- Land Disposal Standards
- Emission Standards
- Technology control Standards
- Technology Standards

[Diagram showing the relationship between the different types of standards]
Federal Legislation

- 1955 – Air Pollution Control Act
- 1960 – Motor Vehicle Exhaust Study Act
- 1963 – The Clean Air Act of 1963
- 1965 – Motor Vehicle Air Pollution Control Act
- 1967 – The Air Quality Act
- 1977 – The Clean Air Act Amendments 1977
- 1990 – The Clean Air Act Amendments 1990

1 History of Air Pollution Legislation in the United States, Arthur C. Stern
Clean Air Act Context

• Creation of Environmental Protection Agency
  – By Reorganization Plan #3 proposed by President Nixon
  – Consolidated three federal departments
    • Interior, HEW and FDA

• Philosophy of early environmental legislation
  – Shift from resources protection to “Environmentalism”
  – Relied on Command & Control, not market forces
  – Use of “health-based” ambient standards

• Federal Government role v. State Responsibilities
  – Fed set standards, specified requirements and policies
  – Required States to develop the plan (SIP) to achieve
CAA Structure

- TITLE I - PROGRAMS AND ACTIVITIES
  - Part A: Air Quality and Emission Limitations
    - Section 107 - Air Quality Control Regions
    - Section 108 - Air Quality Criteria & Control
    - Section 109 - Ambient Air Quality Standards
    - Section 110 - State Implementation Plans
    - Section 111 - Stationary Source Standards
    - Section 112 - Hazardous Air Pollutants
    - Section 113 - Federal Enforcement

- TITLE II - Mobile Source Standards
- TITLE III – General Provisions
- TITLE IV – Acid Deposition Control
- TITLE V - Operating Permits
- TITLE VI – Stratospheric Ozone

President Nixon signing CAA
CAI Pollutants

Criteria Pollutants

<table>
<thead>
<tr>
<th>Attainment</th>
<th>Non-attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Sources</td>
<td>RACT</td>
</tr>
<tr>
<td>New Major Sources Major Modifications</td>
<td>RACT</td>
</tr>
</tbody>
</table>

Control Technology Requirements

Hazardous Air Pollutants

NESHAPS (40 C.F.R. Part 61)

- Arsenic
- Asbestos
- Benzene
- Beryllium
- Coke Ovens
- Mercury
- Vinyl Chloride
- Radionuclides

189 HAPs from 1990 Amendments

Source categories listed
MACT standards promulgated
Residual risk study $1 \times 10^{-6}$
Criteria Pollutants
Commonly found air pollutants

- Sulfur Oxides ($SO_2$)
- Particulate Matter ($PM_{10}$, $PM_{2.5}$)
- Carbon Monoxide (CO)
- Ozone (Photochemical Oxidants)
- Nitrogen Dioxide ($NO_x$)
- Lead
Setting Ambient Standards

- EPA & States established 247 Air Quality Control Regions based on State boundaries and air basins.
- EPA provided Air Quality Criteria for Major Pollutants and Control Technology Information.
- EPA adopts National Ambient Air Quality Standards (NAAQS).
- States prepare State Implementation Plans (SIPs) to achieve NAAQS.
- EPA reviews and revises State Implementation Plans (SIPs) – can adopt a Federal Plan if needed.
- EPA oversees and States enforce SIPs.
SIP Content Requirements

• Achieve attainment of NAAQS by deadline
• Establish enforceable Emission Limitations, Schedules of Compliance and other Controls
• Set Monitoring and Reporting Requirements
• Enforcement, Permit Programs, Preconstruction Review and Operational Controls
• Ensure Non-interference with other State Plans
• Provide Adequate Administrative Resources
• Implement Motor Vehicle Inspections and Testing
• Intergovernmental Consultation & Public Notification
• Schedule for Periodic Revisions
• Collect permit Fees
SIP Compliance Strategies

- Permits and Preconstruction Review
- Stationary Source Limitations
- Vehicle Emission Limitations and Inspections
- Local Transportation Controls (RAQC reports)
- Indirect Source Regulation (State only)
- Sanding and Sweeping Programs
- Area source limitations and incentives
CAA Applicability

- **Emissions: > 100 tpy**
  - Federal CAA and State limits
- **Emissions: 5 - 100 tpy**
  - State only limits (but may have fed limits if ozone is a problem)
- **Emissions: < 5 tpy**
  - No State or Federal limits

Tpy: Tons per year
Technology Control Requirements

<table>
<thead>
<tr>
<th>EXISTING SOURCES</th>
<th>NEW SOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATTAINTMENT AREA</td>
<td>RACT (Reasonably Available Control Technology)</td>
</tr>
<tr>
<td>NONATTAINMENT AREA</td>
<td>RACT</td>
</tr>
</tbody>
</table>
CAA Programs for Criteria Pollutants

- New Source Performance Standards (NSPS)
- Attainment Program for Non-Attainment areas
- Prevention of Significant Determination (PSD) program for Attainment areas

New Source Review (NSR)
New Source Performance Standards

Apply to specific listed industries
(40 C.F.R. PART 60, examples)

Fossil-fuel fired steam generators
Electric utility steam generating units
Industrial-commercial steam generating units
Incinerators
Portland Cement plants
Nitric acid plants
Sulfuric acid plants
Asphalt concrete plants
Petroleum refineries
Volatile organic liquid storage vessels
Attainment Program
Permit Conditions for Non-Attainment Areas

• Net Reduction and Reasonable Further Progress
• Lowest Achievable Emission Rate (LAER)
• All Other Sources in Compliance
• Non-interference with SIP Implementation
• Analysis of Alternatives
Prevention of Significant Deterioration

• Program that applies to **Attainment areas and unclassified areas.**

• The **PSD program goals** are:
  – Avoid new non-attainment areas by ensuring economic growth in harmony with existing clean air;
  – protect public health and welfare from any adverse effects;
  – preserve and enhance the air quality in national parks and other areas of special natural recreational, scenic, or historic value.
PSD Area Classifications

• **CLASS I AREAS**
  – National Parks
  – National Wilderness Areas
  – National Monuments

• **CLASS II AREAS**
  • Everywhere else

• **CLASS III AREAS**
  • Specially Designated Industrial Development Areas
PSD Program Source Categories

(40 C.F.R. Section 52.21)

- Fossil fuel-fired steam electric plants >250 mmBTU/hr
- Coal cleaning plants
- Kraft pulp mills
- Primary zinc smelters
- Iron and steel mill plants
- Primary aluminum ore reduction plants
- Primary copper smelters
- Municipal incinerators >250 tons of refuse per day
- Hydrofluoric acid plants
- Nitric acid plants
- Petroleum refineries
PSD Construction Requirements

• Permit issued
• Proper Review of Permit Conducted, Required Analysis Performed and Public Comment Allowed
• Demonstration that Emissions Won’t Exceed Increment, NAAQS or other Applicable Requirement
• Use of Best Available Control Technology
• Special Class I Provisions Complied With
• Analysis of Impacts of Related Growth
• Agreement to Conduct Monitoring to Assess Impact of Emissions
Hazardous Air Pollutants

• Prior to 1990 Amendments, Section 112 required listing potential HAPs and performing a risk analysis prior to control

• In 20 years, only eight NESHAPs were promulgated.
  – Arsenic -Asbestos
  – Benzene -Beryllium
  – Mercury -Radionuclides
  – Vinyl chloride - Coke oven emissions
Listing of HAPs

- Listed 190 new HAPs (187)
- Directed EPA to list source categories
- Applies to Major Sources
  - > 10 TPY for any one HAP
  - > 25 TPY for combination of HAPs
- Application of “MACT”
- Residual risk > 1 x 10^{-6}
MACT Strategies

• “MACT” is the maximum achievable control technology
  – Work practice standards
  – Design, equipment, work practice or operational standards
  – Strategies include:
    – Reduce volume
    – Substitute materials
    – Closed systems
    – Collect, capture or treat emissions
    – Certification & training of facility operators
    – Combination of above
MACT Source Categories
(Examples)

• Dry Cleaning
• Aerospace Industry
• Wood Furniture
• Petro Refineries
• Magnetic Tapes
• Coke Ovens
• Polymers and Resins
• Commercial Sterilizers
• Gasoline Distribution
• Oil and Gas Operations
• Rubber tire manufacture

• Printing and Publishing Industry
• Off-Site Waste/Recovery Ops
• Chromium Electroplating Operations
• Hazardous Organic NESHAP
• Marine Vessel Loading Operations
• Hazardous Waste Combustion
• Halogenated Solvent Cleaning
• Secondary Lead Smelters
• Wood furniture
TITLE V: Operating Permits

- TITLE IV: ACID RAIN
- EXISTING SIP PROGRAM
- TITLE I: NONATTAINMENT
- TITLE VII: ENFORCEMENT
- TITLE III: AIR TOXICS
- STATE PERMIT PROGRAM
TITLE V Permit Contents

• Each permit must include:
  – Applicable emission limitations and standards;
  – Monitoring, recordkeeping & reporting requirements;
  – A severability clause;
  – a statement that the permit may be modified, revoked, etc. for cause; and
  – a provision to insure the source pays fees.

• The permit must “specifically designate (those provisions) as not being federally enforceable...e.g. any terms and conditions.. not required under the Act” (State-only requirements)
Acid Deposition Control

• 10 Million tons SOx reduction by 2000
  – First 5 Million by 1995 (Phase I)
• 2 Million tons reduction of NOx from projected Year 2000 levels
• 110 Specific Utility Plants identified Phase I
• Nationwide reduction in Phase II
• Emission allowance trading to reduce costs and provide for future growth
• Clean Coal Technology encouraged
Stratospheric Ozone Protection

• 1990 Amendments established a program for the phase-out of ozone depleting substances (ODSs) generally responsive to the Montreal Protocol.

• Two classes of substances were defined:
  - Class I substances - chlorofluorocarbons (CFCs), halons, carbon tetrachloride, methyl chloroform
  - Class II substances - hydrochlorofluorocarbons (HCFCs)

• Beginning in 1991, it is unlawful for any person to produce any Class I substance in an annual quantity greater than percentages specified in the Act.
  - Exceptions are provided for “essential uses” e.g. methyl bromide for agricultural purposes.
Stratospheric Ozone Protection

• Beginning in 2000, all production of Class I substances was prohibited with certain exceptions.
• A complete phase-out of the use and production of Class II substances is required by 2030.
• Pursuant to regulations (40 C.F.R. Part 82), the production of all CFCs, methyl chloroform and carbon tetrachloride were eliminated on January 1, 1996.
• For HCFCs, a phase-out schedule on a compound-specific basis runs from 2003 to 2030.
Strong Enforcement Provisions

- Enhanced criminal enforcement
  - Longer prison terms
  - Higher fines
- Easier commencement of civil actions
- Administrative penalties
  - On the spot fines up to $5,000
- Enhanced authority to prevent criminal violators from receiving federal awards
Typical State Permitting Scheme

All emission sources

Sources requiring APENs

Sources requiring State Permits

Sources requiring Federal Operating Permit

Exempt Sources

General Permits

Sources > 5 TPY in nonattainment

Sources > 1 TPY in nonattainment

Sources > 100 TPY

Sources limiting < 100 TPY

Sources using general permits

Exempt sources listed as insignificant

Sources > 100 TPY

Sources limiting < 100 TPY
Climate Change

- **Massachusetts v. EPA** Supreme Court decision in 2007
- On June 2, 2014, EPA, under President Obama's Climate Action Plan, proposed a commonsense plan to cut carbon pollution from existing power plants (Clean Power Plan).
- June, 2014 Supreme Court in *Utility Air Regulatory Group v. EPA*, recognized EPA’s power to regulate greenhouse gas emissions but placed limits on the program already in place.
- On **February 9, the Supreme Court** put a hold on President Obama’s plan to regulate CO₂ emissions from power plants pending the outcome of legal challenge by more than two dozen states.
CAA Future?

Toxic emissions

• EPA estimates that almost 14 million people in more than 60 urban locations have lifetime cancer risks greater than 100 in a million.

• Elevated risks are often found in the largest urban areas where there are multiple emission sources, communities near industrial facilities, and/or areas near large roadways or transportation facilities.

• As directed by Congress, EPA has completed emissions standards for all 174 major source categories, and 68 categories of small area sources representing 90 percent of emissions of 30 priority pollutants for urban areas.
Closing

• A few Famous quotes

• Views of our Presidential hopefuls

Thank you!
James “Skip” Spensley
JWSpensley@gmail.com