

Introduction to the Clean Air Act

Environmental Law Institute Summer School Program

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HOGAN &
HARTSON

- Particulate Matter (PM)
 - Sources
 - Health Effects
 - Environmental Effects



- Carbon Monoxide (CO)
 - Sources
 - Health Effects
 - Environmental Effects



- Nitrogen Oxides (NO_x) / Ozone
 - Sources
 - Health Effects
 - Environmental Effects



Introduction to Air Pollution: Health Effects

- Sulfur Dioxide (SO_2)
 - Sources
 - Health Effects
 - Environmental Effects



Introduction to Air Pollution: Health Effects

- Lead
 - Sources
 - Health Effects
 - Environmental Effects



National Ambient Air Quality Standards (NAAQS)

- National numerical air quality standard for each “criteria pollutant” (designated in CAA § 107) adequate to protect public health and allowing an adequate margin of safety.
- Consideration of uncertain science is required, but costs of control may not be considered.
- CAA § 109

National Ambient Air Quality Standards (NAAQS)

- Expressed in $\mu\text{g}/\text{m}^3$
- Primary vs. Secondary NAAQS
- To have been met nationwide by 1975
- Attainment/Maintenance vs. Nonattainment
- To be reviewed every five years

Achieving NAAQS through Air Quality Planning

- The basic geographical unit of air pollution control is the Air Quality Control Region (AQCR) (CAA § 107)
- Each state is to develop a State Implementation Plan (SIP) designed so that each AQCR attains and maintains the federally-set NAAQS (CAA § 110)

Achieving NAAQS through Air Quality Planning

- The states submit their SIPs to EPA for approval.
- If the SIP meets the Section 110 requirements, EPA approves it.
- If the SIP fails to meet the Section 110 requirements, EPA may approve it in part, or reject it and create a Federal Implementation Plan (FIP)

Achieving NAAQS through Air Quality Planning: Section 110

- Enforceable emission limitations or other control measures, and schedules for compliance
- Collect air quality data
- Enforcement provisions
- Prohibits sources from contributing to nonattainment or interfering with maintenance of NAAQS
- Source emission monitoring and reporting
- Periodically revise SIP

Nonattainment: Ozone

- Marginal nonattainment (§ 182(a)): Emission inventory; RACT; new source review; reformulated gasoline opt-in
- Moderate nonattainment (§ 182(b)): 15% reduction in emissions; Stage II vapor recovery; basic I&M; NSR offset ratio
- Serious nonattainment (§ 182(c)): Enhanced I&M; clean-fuel vehicle program; vapor recovery; transportation controls; reformulated gasoline
- Severe/Extreme (§ 182(d-e)): Enhanced offsets; reduced vehicle miles traveled; new technologies

Prevention of Significant Deterioration (PSD)

- Applies to attainment areas
- AQCR designated as Class I, Class II, or Class III
- Designed to maintain attainment status by setting an “increment” above the current ambient concentrations of criteria pollutants that can be “consumed” by new emissions
- Requires preconstruction review of new/modified sources

NAAQS: You and what army?



- Failure to submit an approvable SIP or failure to implement an approved SIP can result in:
 - Federal highway funding restrictions
 - Creation of a FIP and federal control of AQCR
 - Increased offsets (to be discussed later) to 2:1
 - EPA refusal to approve construction permits

Review of Air Quality Planning

- Section 108: List criteria pollutants
- Section 109: Set NAAQS for criteria pollutants
- Section 107: Designate AQCRs
- Section 110: Creation and adoption of SIPs
- Sections 160-169: Attainment area requirements
- Sections 171-193: Nonattainment area requirements

The Big Picture

Title I	Air Quality Planning; Air Toxics; New Source Performance Standards; Enforcement; Nonattainment; PSD
Title II	Mobile Sources
Title III	General Provisions
Title IV	Noise Pollution
Title IV-A	Acid Rain Program
Title V	Operating Permits
Title VI	Stratospheric Ozone Protection

Stationary Source Case Study— Coal-fired Power Plant



Programmatic Overview

- New Source Performance Standards
- New Source Review (PSD/NAA NSR)
- Hazardous Air Pollutants
- Title V Permitting
- Acid Rain Program

New Source Performance Standards (“NSPS”)

- New, reconstructed, or modified stationary sources must install “best adequately demonstrated technology” (BADT) (CAA § 111)
- The best time for installation of controls is at a new or modified unit
- Control technology is defined on a **categorical** basis
- The categorical requirements for new pulverized coal-fired power plants are set forth in 40 C.F.R. Part 60, Subpart Da:
 - SO₂: 90% removal efficiency and 1.2 #/MMBtu (flue gas desulfurization, or “scrubber”)
 - NO_x: 0.70 #/MMBtu (low-NO_x burners/combustion management)
 - PM: 0.051 #/MMBtu (electrostatic precipitator)

New Source Review—PSD

- New or modified sources must obtain a **preconstruction** permit
- Best Available Control Technology (“BACT”), selected on a top-down case-by-case basis, must be installed
 - SO₂: 0.09 #/MMBtu
 - NO_x: 0.067 #/MMBtu
 - PM: 0.012 #/MMBtu
- Ambient air quality impact analysis (Class I, Class II, visibility)
- Netting

Expert Tip:

1990 PSD Draft Workshop Manual

New Source Review—NAA NSR

- New or modified sources must obtain a **preconstruction** permit
- Lowest Achievable Control Technology (“LAER”), selected on a top-down case-by-case basis, must be installed:
 - SO₂: 0.09 #/MMBtu or lower
 - NO_x: 0.067 #/MMBtu or lower
 - PM: 0.012 #/MMBtu or lower
- Ambient air quality impact analysis (Class I, Class II, visibility)
- Offsets

Expert Tip:

RACT/BACT/LAER Clearinghouse

<http://cfpub.epa.gov/RBLC>

New Source Permitting: When Is a New Source “New?”

- NSPS
 - Reconstruction (50%) *or*
 - Physical change, plus
 - Increase in hourly emission rate
- NSR
 - Physical change (RMRR exemption)
 - Significant net emissions increase
- Leading cases
 - Ohio Edison; Duke Energy; Alabama Power; SIGECO; Cinergy Corp.
- Reform efforts underway (NSR I, II, III, and IV)

Expert Tip:

Hopelessly confused

MACT Program

- Section 112 added in 1990 Amendments
- Separate from air quality planning
- New and existing major sources for hazardous air pollutants (10/25 tpy) must install Maximum Achievable Control Technology (“MACT”)
- Control technology is defined on a **categorical** basis

Title V Permitting

- A comprehensive operating permitting program for significant stationary sources
- Old program included multiple (possibly inconsistent) permits
- Goals
 - Easier enforcement
 - Consistency with other media programs
 - “One-stop” source of requirements

Title V Permitting

- Covered sources
 - Acid Rain Program sources
 - Major stationary sources
 - Major sources of HAPs
 - Sources subject to state HAP regulation
 - NSPS sources
 - PSD sources

Acid Rain Program

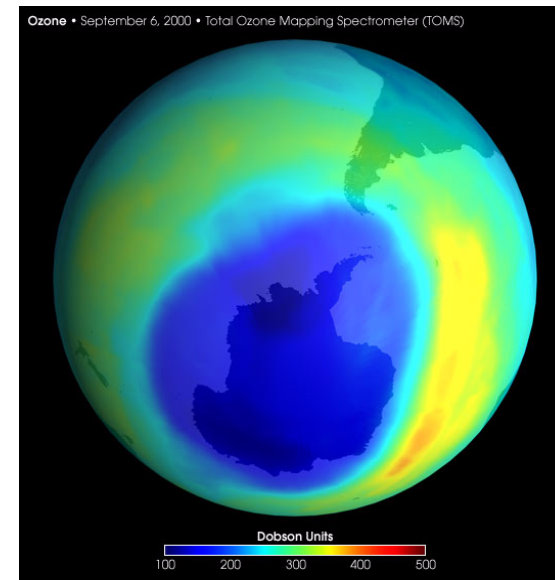
- Innovative Market-Based Regulatory Program
 - Caps nationwide emissions of SO₂ and NO_x at ten million and two million tons, respectively, below 1980 levels.
 - Sources are distributed a limited number of “allowances” that authorize the emission of one ton of SO₂
 - NO_x is controlled through required technology

Acid Rain Program

- Fossil-fuel fired utility units are the primary affected sources.
- Affected sources must hold one allowance for each ton of SO₂ emitted.
 - If the source emits fewer tons than allowances it holds, it may sell the excess.
 - If a source emits more tons than allowances it holds, it must purchase additional allowances.
- Significantly altered by the Clean Air Interstate Rule to reduce nationwide caps in 23 states and the District by 2015 to 2.5 million tpy SO₂ and 1.3 million tpy NO_x.

Stratospheric Ozone

- Interactions between chlorofluorocarbons, stratospheric ozone, and high-energy solar radiation result in elimination of ozone.
- This process is assisted by slow chemical reactions in the extreme polar cold.
- Class I production phase-out (2002); Class II (2030)
- Use and disposal restrictions



Climate Change

- Waxman-Markey (HR 2454) proposes a new Title VII
- Cap-and-trade program for GHGs
- Covered entities
- Offset program (domestic and international)
- Reduced deforestation
- GHG NSPS
- Market Oversight (FERC and CFTC)

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