



National Academy of Sciences: Air Quality Management in the United States

MWAOC Technical Advisory Committee
March 12, 2004

Overview

- Successes and Failures of the Air Quality Management Process
- Vision for Change
- Recommended First Steps

The AQ Management Process



Setting Air Quality Standards



Preparing a SIP



Implementing Mobile/Nonroad Source Controls



Implementing Stationary/Area Source Controls



Monitoring Practices

Setting Standards



Standards provide good targets for planners, and have been updated when science has dictated

BUT

- Pollutant-specific standards encourage focus on one pollutant at a time
- There is no safe threshold for exposure to some pollutants
- Current secondary standards do not protect crops and ecosystems
- Indoor air quality and environmental justice largely ignored

Preparing a SIP



The SIP process has resulted in a general decrease in harmful pollution, and attainment of standards in some areas

BUT

- Many regions have not attained
- Bureaucratic requirements, not progress/performance assessments
- Attainment demonstrations rely upon uncertain modeling
- A separate SIP is needed for each pollutant
- No provision for multi-state or airshed-wide SIPs

Mobile/Non-Road Controls



National regulations have achieved significant emission reductions from passenger cars and light trucks

BUT

- Difficult to monitor, predict and regulate in-use vehicle emissions.
- Heavy duty trucks and nonroad vehicles are largely unregulated.
- Technology-specific fuel regulations make adjustments difficult (MTBE)
- Growth in VMT and vehicle trips offsets emission reductions

Stationary/Area Controls



National regulations have achieved significant emission reductions from existing stationary sources

BUT

- Output-based standards discourage efficiency, enable emission growth
- Many older facilities have minimal controls due to grandfathering
- Area sources hard to quantify, therefore hard to control
- Single-pollutant cap and trade programs increase control costs and decrease efficiency

Monitoring Practices

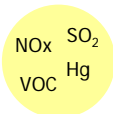


Emission monitoring has documented reductions in pollutant concentrations and has helped confirm the health benefits of emission reductions

BUT

- Monitors are concentrated in urban sites
- No programs to monitor hazardous air pollutants
- Data accessibility is limited
- No comprehensive, quantitative program to track emissions and trends
- Monitors cannot reliably report ecosystem effects

The Broad Vision



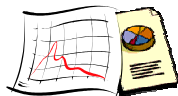
Multi-Pollutant Approach



Air Shed-Based Approach



Assess Risks and Uncertainties



Emphasize Results over Process

Specific Recommendations

Strengthen capacity to assess risk and track progress

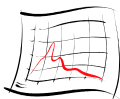
Expanded EPA role for multi-state emission controls

Transform SIP into an air quality management plan

Integrate programs for criteria pollutants and HAPs

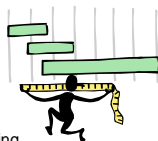
Enhance protection of ecosystem and public welfare

Assess Risk and Track Progress



• Improve emissions tracking by investing in new monitoring techniques, validating and improving emission models, linking model output with ambient monitor readings.

- Increase number and distribution of monitors in rural, agricultural and remote forest areas.
- Develop shared modeling resources by supporting regional modeling centers
- Thoroughly evaluate models, including their uncertainty, before requiring use for SIP planning.



Expand Multi-State Control Measures

Expand EPA's role in:

- controlling high-emitting sectors
- regulating transport of criteria and hazardous air pollutants



- Reduce emissions from existing facilities/vehicles
- Seek input from state and local stakeholders on sectors of the economy needing additional controls
- Advocate technology-neutral emission standards and market-based regulatory approaches

Transform the SIP Process

- Focus on assessing effectiveness, not predicting it
- Implement collaborative review process:
assess actual vs. modeled emissions vs. air quality trends
- Accountability for monitor readings, not plan implementation
- Harmonize transportation and air quality planning horizons
- Make SIP an integrated multipollutant plan
- Encourage development of innovative pollution control methods



Read the Report

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