Overview of National Research Council Report

Air Quality Management in the United States

Presentation by
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CAAAC
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Statement of Task

- Develop scientific and technical recommendations for strengthening the nation's air quality management system with respect to the way it:
    - **identifies and incorporates important sources of exposure to humans and ecosystems and**
    - **integrates new understandings of human and ecosystem risks.**
- The committee will conduct a scientific and technical evaluation of the effectiveness of the major air quality provisions of the Clean Air Act and their implementation by federal, state, and local government agencies.
- Specifically the Committee will:
    - **Address scientific and technical aspects of the policies and programs intended to manage important air pollutants including, but not limited to, national ambient ("criteria") pollutants and air toxics.**
    - **Evaluate scientific and technical aspects of current approaches for health and environmental problem identification, regulatory standards development, air quality management plan development, plan implementation, and progress evaluation.**
    - **Stratospheric ozone protection and greenhouse gas emissions will not be included in the scope of the study, except in regard to strategies to control emissions from sources in tropospheric air quality control programs.**

Committee Membership

- **William Chameides (Chair), Georgia Institute of Technology.**
- **Daniel Greenbaum (Vice Chair), Health Effects Institute,**
- **Carmen Benkovitz, Brookhaven National Laboratory.**
- **Eula Bingham, College of Medicine at the University of Cincinnati.**
- **Michael Bradley, M.J. Bradley & Associates.**
- **Richard Burnett, Healthy Environments and Consumer Safety Branch of Health Canada**
- **Dallas Burtraw, Resources for the Future.**
- **Laurence Caretto, California State University, Northridge**
- **Costel Denson, University of Delaware.**
- **Charles Driscoll, Syracuse University.**
- **Jane Hall, California State University,**
- **Philip Hopke, Clarkson University**
- **Arnold Howitt, Kennedy School of Government, Harvard University,**
- **C. S. Kiang College of Environmental Sciences at Peking University in China.**
- **Beverly Law, Oregon State University.**
- **James Lents, University of California at Riverside.**
- **Denise Mauzerall, Princeton University.**
- **Thomas McGarity, University of Texas School of Law.**
- **Jana Milford, University of Colorado at Boulder.**
- **Michael Morris, North Central Texas Council of Governments.**
- **Spyros Pandis, Carnegie Mellon University.**
- **P. Barry Ryan, Emory University**
- **Adel Sarofim, University of Utah**
- **Sverre Vedal, National Jewish Medical and Research Center in Denver, Colorado**
- **Lauren Zeise, California Environmental Protection Agency**.

The Committee Process

- Ten meetings over two years
- “Field” meetings and briefings in:
    - Washington, DC
    - Denver, Colorado
    - Atlanta, Georgia
    - Los Angeles, California
- Committee member review and analysis
    - Experience with CAA implementation
    - Role of Science
    - Areas for improvement

Report Reviewers

- **William Agnew, General Motors (retired)**
- **Thomas Burke, Johns Hopkins University**
- **Paul Crutzen, Max Planck Institute for Chemistry**
- **Gregory Dana, Alliance of Automobile Manufacturers**
- **E. Donald Elliott, Paul, Hastings, Janofsky & Walker LLP**
- **David Hawkins, Natural Resources Defense Council**
- **Walter Heck, North Carolina State University**
- **Timothy Larson, University of Washington**
- **Leonard Levin, Electric Power Research Institute**
- **Arthur Marin, Northeast States for Coordinated Air Use Management**
- **Michael Myer, Georgia Institute of Technology**
- **Joseph Norbeck, University of California, Riverside**
- **John Seitz, Sonnenschein, Nath & Rosenthal, LLP**
- **Thomas Tietenberg, Colby College**
- **John Watson, Desert Research Institute**
- **Catherine Witherspoon, California Air Resources Board**
- **Terry Yosie, American Chemistry Council**

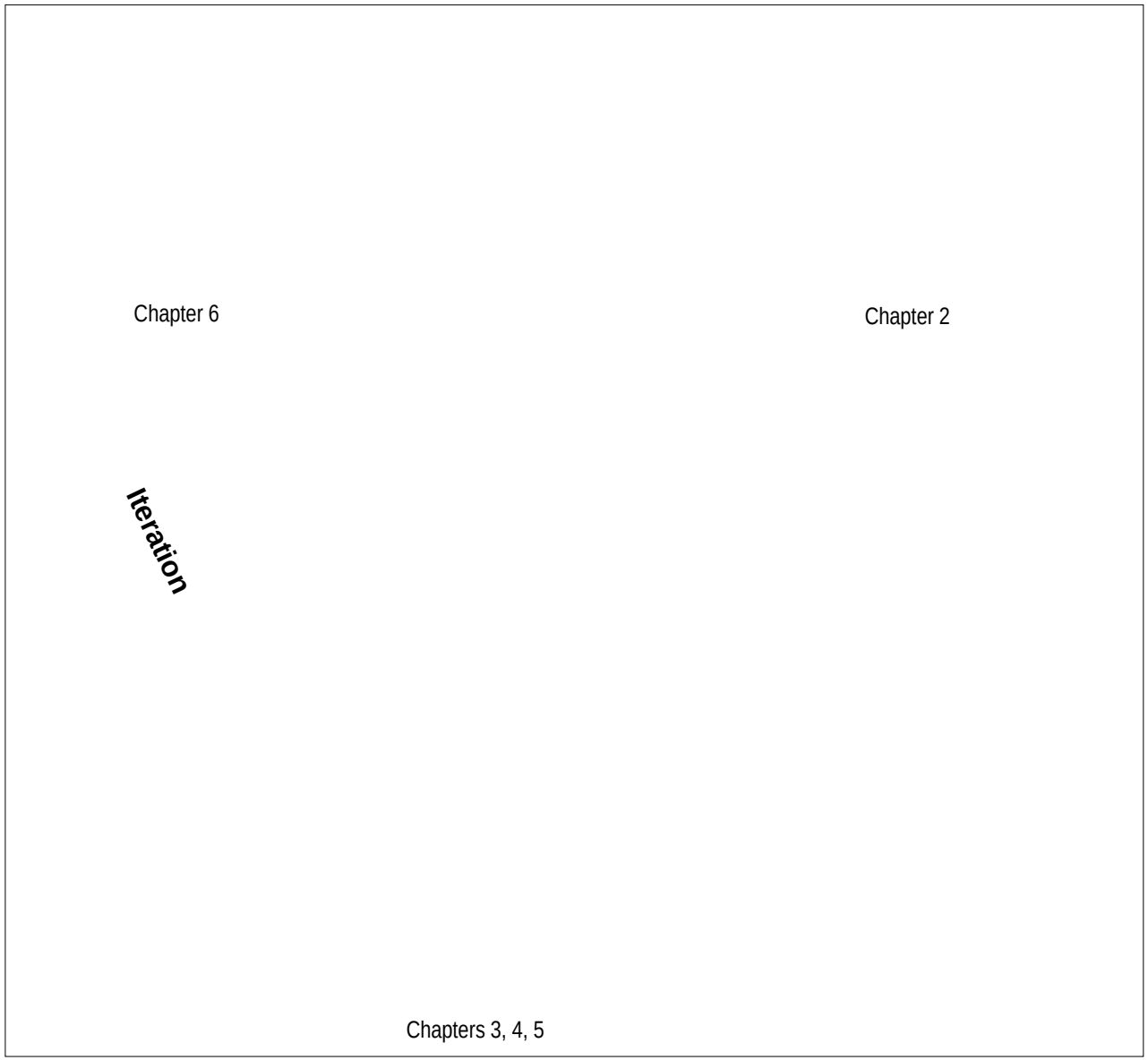
Key Points About Report

- Substantial progress has been made
- Major challenges ahead
- Five major interrelated recommendations to enhance air quality management
  - Recommendations aimed at steady evolution – not rapid transformation – toward meeting long-term objectives
- Implement with a mix of administrative, regulatory, and legislative actions
  - EPA to convene a panel of key participants for implementation of recommendations
  - While objectives are pursued, EPA should continue to make progress

Report Contents

- **Executive Summary**
- **Summary**
- **Chapter 1** Introduction
- **Chapter 2** Setting Goals and Standard
- **Chapter 3** Designing and Implementing Control Strategies Through The SIP Process
- **Chapter 4** Implementing Emission Controls on Mobile Sources
- **Chapter 5** Implementing Emission Controls on Stationary Sources
- **Chapter 6** Measuring the Progress and Assessing the Benefits of AQM
- **Chapter 7** Transforming the Nation's AQM System to Meet the Challenges

- **Appendix** Recommendations for Continuous Development and Implementation of Measurements to Determine Status and Trends in Ecosystem Exposure and Condition


Chapter 6
Chapter 2
Iteration
Chapters 3, 4, 5

There Has Been Much Progress

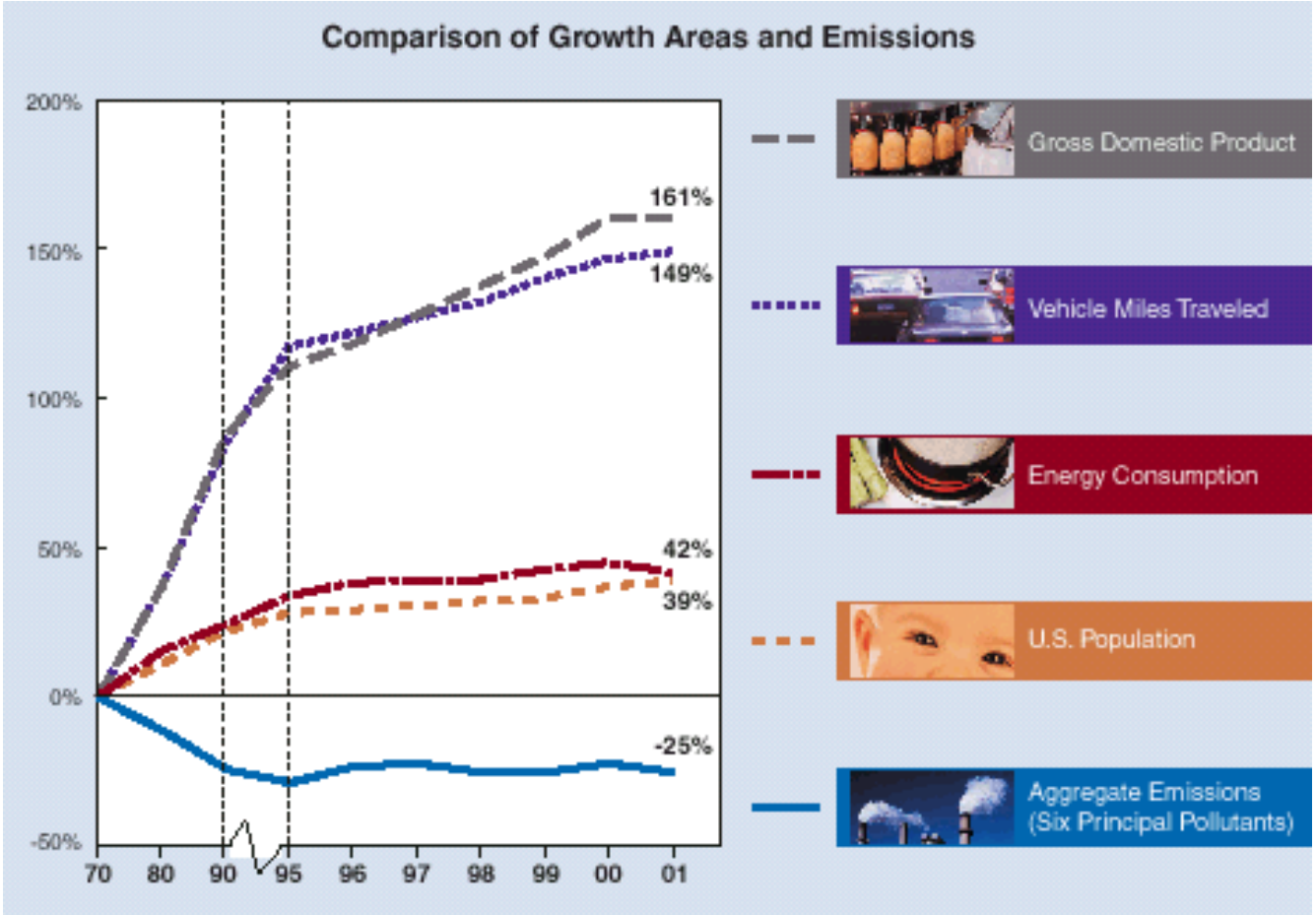


FIGURE 1-4 Comparison of growth areas and emission trends. Source: EPA 2002.

Current AQM Limitations

Despite substantial progress the Committee identified - in its comprehensive review of the Act - a number of limitations, for example:

- Inability to measure progress quantitatively to accurately confirm that goals are being met
- A single pollutant approach implemented through a cumbersome and often bureaucratic planning process
- Lack of focus on ecological effects (vs. health effects)
- Not certain that resources are being used to mitigate pollutants that pose the greatest risks

RECOMMENDATIONS FOR AN ENHANCED AQM SYSTEM

The Challenges Ahead

- Meeting NAAQS for O_3 and $PM_{2.5}$ and Reducing Regional Haze
- Designing and Implementing Controls for Hazardous Air Pollutants
- Protecting Human Health and Welfare in the Absence of a Threshold Exposure
- Ensuring Environmental Justice
- Assessing and Protecting Ecosystem Health
- Mitigating Intercontinental and Cross-Border Transport
- Maintaining AQM System Efficiency in the face of Changing Climate

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The Long-Term Objectives for AQM to Meet Future Challenges

AQM Should Strive To:

- Identify and Assess Most Significant Exposures, Risks, and Uncertainties
- Take an Integrated Multipollutant Approach to Mitigating Most Significant Risks
- Take an Airshed-Based Approach to Controlling Emissions
- Emphasize Results Over Process, Create Accountability, and Dynamically Adjust

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Recommended Changes to the AQM System

1. Strengthen Scientific and Technical Capacity
2. Expand National and Multistate Control Strategies
3. Transform the SIP Process
4. Develop Integrated Program for Criteria and Hazardous Air Pollutants
5. Enhance Protection of Ecosystems and Other Public Welfare

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Long-Term Objectives for AQM to Meet Future Challenges

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1. Strengthen Scientific and Technical Capacity

- Improve Emissions Tracking
- Enhance Air Pollution Monitoring
- Improve Modeling
- Enhance Exposure Assessment
- Improve Health and Welfare Assessment
- Track Implementation Costs
- Invest in Research and Human and Technical Resources

2. Expand National and Multistate Control Strategies

- Expand Federal Emission Controls
- Emphasize Technology-Neutral Standards
- Use Market-Based Approaches
- Reduce Existing-Sources Emissions
- Address Multistate Regional Transport

3. Transform the SIP Process

- Replace State Implementation Plan With Multipollutant Air Quality Management Plan
- Reform Planning and Implementation

3A. Replace SIP with Multipollutant AQMP

- Integrated Multipollutant Plan
- Inclusion of HAPs
- Greater Consideration of Hot Spots and Environmental Justice

3B. Reform Planning and Implementation

- Focus on Tracking and Assessing Performance
- Institute a Dynamic, Collaborative Review
- Encourage Innovative Strategies
- Retain and Improve Conformity Requirement
- Enhance Public Agency Performance and Accountability

4. Develop Integrated Program for Criteria and Hazardous Air Pollutants

- Set Priorities for Pollutants
- Institute Dynamic Review of Pollutant Classification
- List Potentially Dangerous but Unregulated Pollutants
- Address Multipollutants in Standard-Setting Process
- Enhance Assessment of Residual Risk Following MACT Implementation

5. Enhance Protection of Ecosystems and Public Welfare

- Conduct Review of Standards to Protect Public Welfare
- Develop Ecosystem Monitoring Networks
- Establish Acceptable Ecosystem Exposure Levels
- Promulgate Secondary Standards
- Track progress

In Sum

- The AQM system should strive to
  - Identify and Assess Most Significant Exposures, Risks, and Uncertainties
  - Take an Integrated Multipollutant Approach to Mitigating Most Significant Risks
  - Take and Airshed-Based Approach
  - Emphasize Results Over Process, Create Accountability, and Dynamically Adjust
- Achieving These Aims Cannot Be Done Overnight
  - Will Require a Staged Transition
  - Continue to Make Progress While in Transition