Advisory Council on Clean Air Compliance Analysis

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1990 Clean Air Act Amendments (CAAA)

Required “Section 812 reports”

- Comprehensive analysis of impact on public health, economy, and environment of the US

Established Council to review & advise on

- Data
- Methods
- Findings (validity and utility)

Reports to Date

"Retrospective" (1970 – 1990, published 1997)

- Includes PM, O_3, CO, SO_2, NO_2, Pb
- Benefits dominated by PM (mortality, chronic bronchitis) & Pb (mortality, IQ loss)

"First prospective" (1990 – 2010, published 1999)

- Includes PM, O_3, SO_2, NO, NO_2, Pb, CFCs
- Benefits dominated by PM (mortality, chronic bronchitis) & visibility

"Second prospective" (1990 – 2020, to be published soon)

- Focus on PM, O_3
- Include CGE modeling of costs (& some benefits)

Findings

CAA benefits >>> costs

Retrospective (present value effects of CAA, 1970 – 1990)

- Benefits = $22 trillion (75% PM mortality, 5% Pb mortality)
- Costs = $500 billion

1st Prospective (annual effects of amendments, 2010)

- Benefits = $110 billion (90% PM mortality)
- Costs = $27 billion
- Plus stratospheric O_3 benefit = $25 billion, cost = $1.4 billion

2d Prospective (annual effects of amendments, 2020)

- Benefits = $2 trillion ($6,000 per capita) (90% PM , 5% O_3 mortality)
- Costs = $65 billion
- Including labor-force effects, CAAA increases GDP by 2020

Benefits of 812 Reports

Provide comprehensive assessment of the effects of a major law

- Useful for revising law and regulations
- Public accountability

"Learning laboratory"

- Setting for developing improved methods for evaluation that can be used in regulatory assessments
- Examples from 2d prospective report
  - Dynamic population modeling (changes in survival curve over time, not "lives saved" at a point in time)
  - Labor-force adjustments to CGE (computable general equilibrium) model
  - Case study of HAP (hazardous air pollutant) – benzene in Houston metropolitan area

Perspective on Methods

Benefits of reducing mortality from $PM_{2.5}$ (and O_3) well understood (though uncertain)

Other effects less well quantified

- Morbidity (valuation)
- Visibility (valuation)
- Agricultural & forestry productivity (case studies)
- Ecosystem and recreational effects (case studies)
- HAPs and other pollutants (case studies)

Some effort to disaggregate benefits & costs by emission source, economic sector, region, subpopulation, but limited

Council & Subcommittees

Chartered Council (16 members)

- economics, epidemiology, air quality modeling, ecology

Air Quality Modeling Subcommittee (8)

Ecological Effects Subcommittee (6)

Health Effects Subcommittee (8)

Total: 34 members

Review Process (2d Prospective)

EPA provided series of documents for review by Council or subcommittees

Draft analytic plan

Specific elements, such as

- Health endpoints, pollutants, & concentration-response functions
- Emissions and air quality modeling
- Uncertainty analysis

Draft final report(s)

- Analytic report, summary report
- Supporting reports (e.g., emissions, uncertainty analysis)

Next Project

Review draft report to Congress on the climate effects of black carbon emissions

- Sources
- Impacts on global and regional climate
- Utility and cost-effectiveness of mitigation options to reduce climatic & public-health effects

Requesting nominations to augment Council

More work on climate likely?

Council & SAB

Council, SAB, & CASAC address same issues, should recognize overlap

- Valuation of health (EEAC) & ecosystem effects (C-VPESS)
- Expert elicitation (EEAP)
- PM & O_3 health effects, concentration-response functions

EPA use of advice

- Very responsive in preparing 812 report
  - Occasional difficulties when Council contradicts its previous advice
- Effects on EPA research?