Section 812 Benzene Case Study: Overview

Jeneva Craig
Office of Policy Analysis and Review
Office of Air and Radiation
US EPA
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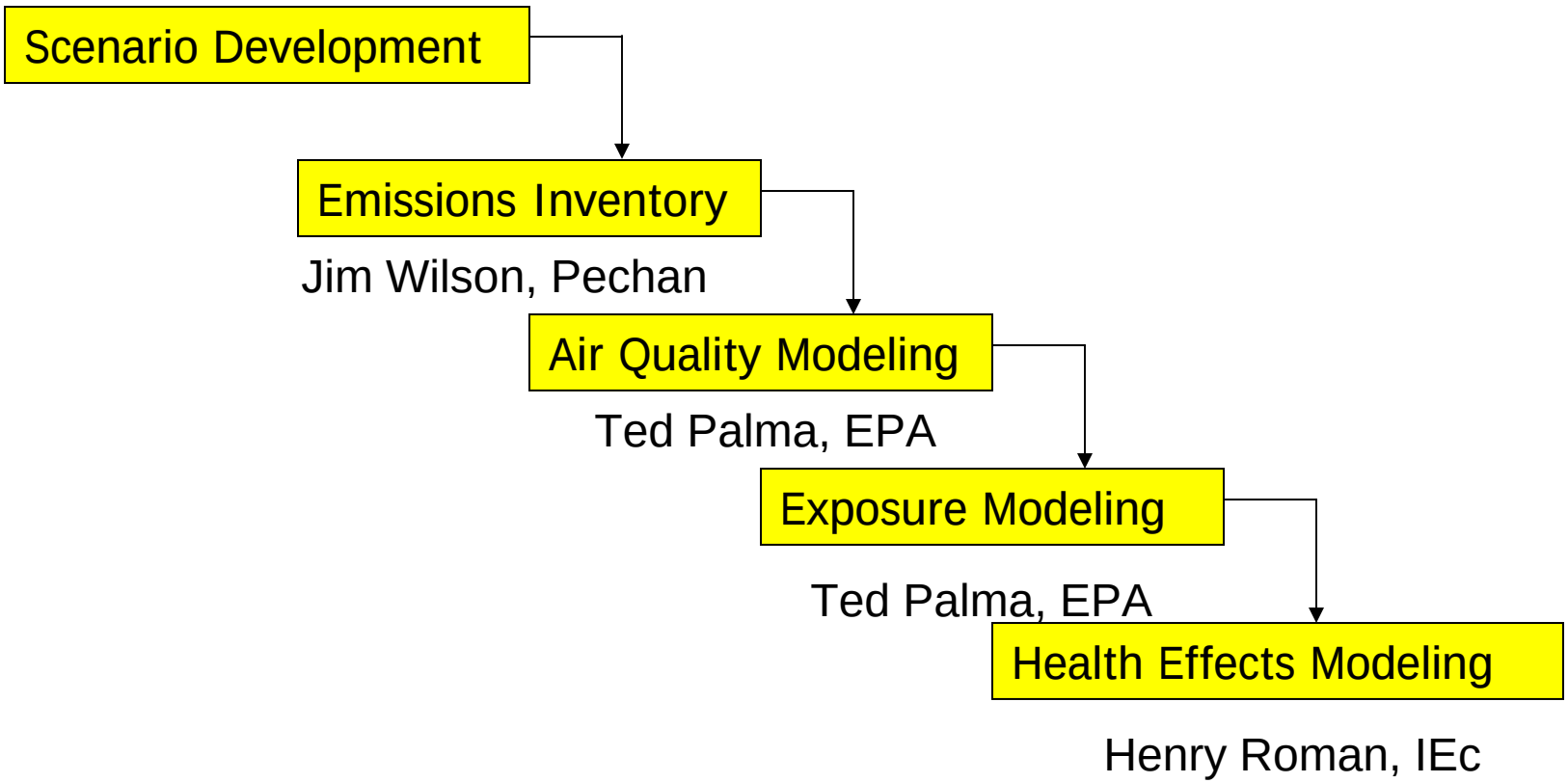
Analytical Steps in Case Study



Charge Question #1: General Review

- Data Choices and Characterizations of Results
- Methodological Choices
- Implications for Future Analyses

Background/Purpose of Analysis

- Section 812 of Clean Air Act requires EPA to evaluate costs and benefits of federal air programs
- Two previous 812 studies included limited analysis of air toxics
  - Retrospective: benefits from three Hazardous Air Pollutants (HAPs) criticized by Science Advisory Board (SAB) for overestimation
  - First Prospective: looked at costs only
- SAB recommended in June 2001 that report should include case study of benefits of control of a single, non-reactive, data-rich HAP such as benzene

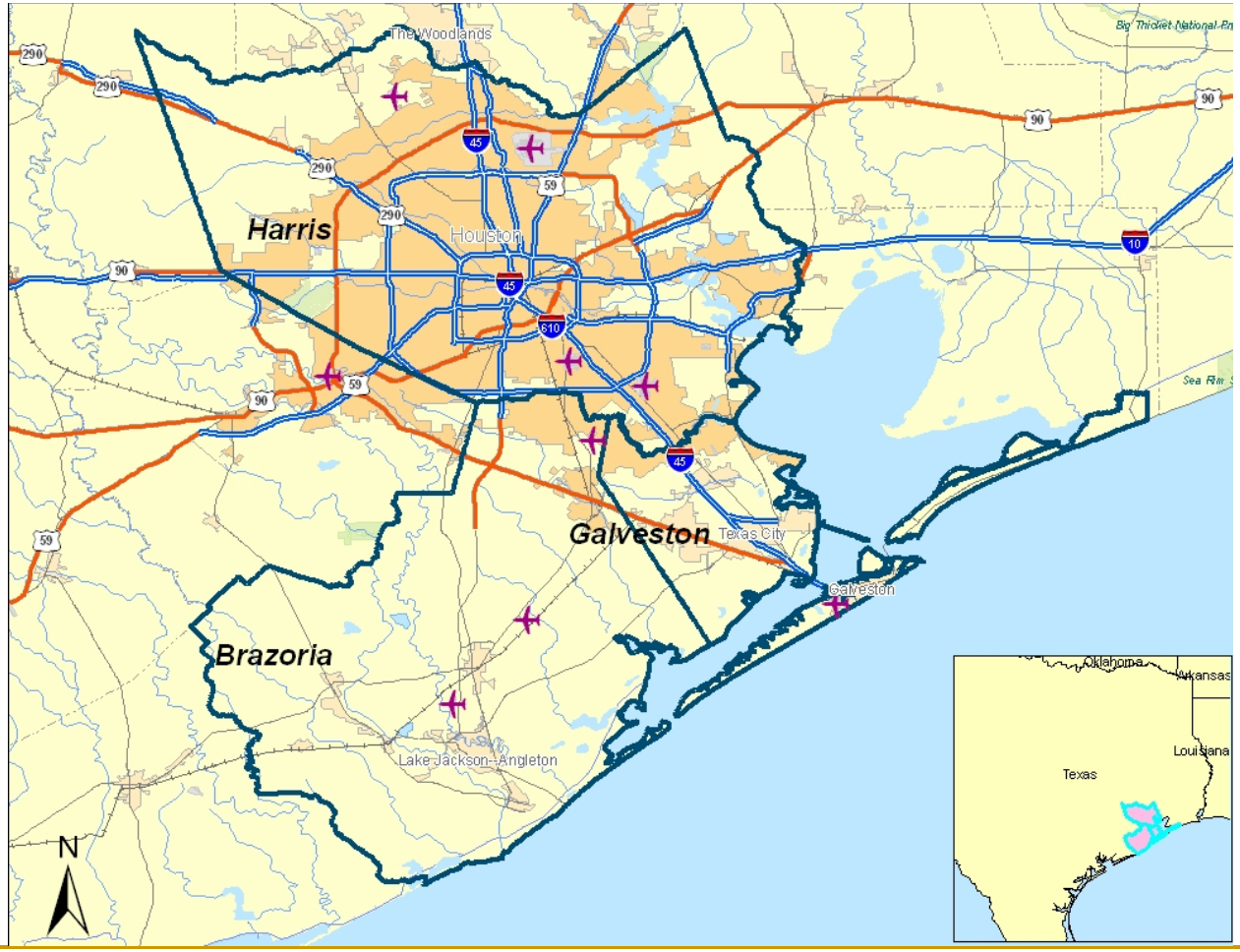
Purposes of Case Study:

- To generate example Clean Air Act Amendments (CAAA) benefit results for a HAP in an urban setting
- To consider the value of this exercise more broadly for HAP benefits characterization

Scope and Scenario Development

- Conducted a local-scale study of benzene in Houston, focusing on three counties:
  - Harris
  - Brazoria
  - Galveston
- Estimated benefits of reductions in benzene from 1990 to 2020 with results reported for three target years (2000, 2010, 2020)
  - Without-CAAA Scenario: Freeze regulations at 1990 levels
  - With-CAAA Scenario: Include all current and anticipated regulations affecting benzene emissions (Titles I, II, & III)
  - 2007 Mobile Source Air Toxics (MSAT) rule not included

Study Area: Harris, Brazoria and Galveston Counties



Source: "Section 812 Clean Air Act Cost-Benefit Study Air Toxics Case Study: Benzene Emissions Reduction in Houston – Draft Report." E.H. Pechan & Associates, February 2006.

Preliminary Results for Study Area

- Significant emission reductions
  - Clean Air Act (CAA) programs expected to reduce benzene emissions across all source categories by thousands of tons per year
  - Largest reductions in point and non-point sources
- Reductions in lifetime risks of leukemia by one to two orders of magnitude
  - For census tracts with highest levels of benzene, individual risks reduced by at least 72 percent (e.g., in Brazoria, some risks dropped from increased lifetime leukemia risk of 2 in 10,000 to 3 in 1,000,000)
- Fewer cases of leukemia

Limitations of Scope of Study

- Focuses only on a subset of health effects
- Does not include all benzene reductions expected from the CAA
- Does not include ozone and particulate matter co-benefits of reducing benzene
  - Captured in larger 812 study
  - Benzene controls include Title I requirements

Implications for Future Analysis

- Methodology is resource-intensive
- Most pollutants lack toxicity data to support such analysis
- Model has not been demonstrated for non-cancer
- Thoughts about next steps:
  - Apply model to another air toxic (e.g., 1-3, butadiene)
  - Analyze 2002 National Air Toxics Assessment (NATA) for the three counties to evaluate potential of using NATA for national scale assessment
  - Fall workshop on cancer and non-cancer benefits methodologies