

*2002 National Scale Air
Toxics Assessment (NATA)*

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Plan Steering Committee Meeting
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Overview

- Overview National Air Toxics Program
- Background National Scale Air Toxics Assessment (NATA)
 - History of NATA
 - Overview of 2002 NATA
 - EPA New England Review of 2002 NATA

Components of the National Air Toxics Program

- Source specific and sector specific standards (e.g., MACT* standards, residual risk standards, area source standards, mobile source standards)
- National, regional and community multi-media and cumulative risk initiatives
 - Integrated Air Toxics Strategy
 - Community assessment and risk reduction projects
 - Indoor Air
 - Mercury and persistent bioaccumulative toxics

* Maximum Achievable Control Technology (MACT)

Components of the National Air Toxics Program

- Education and Outreach
- Air Toxics Assessments
 - Emissions inventory
 - Air toxics monitoring
 - Ambient air quality and exposure modeling
 - Research on health effects and risk assessment tools
 - National Scale Air Toxics Assessments

What is the National Scale Air Toxics Assessment (NATA)?

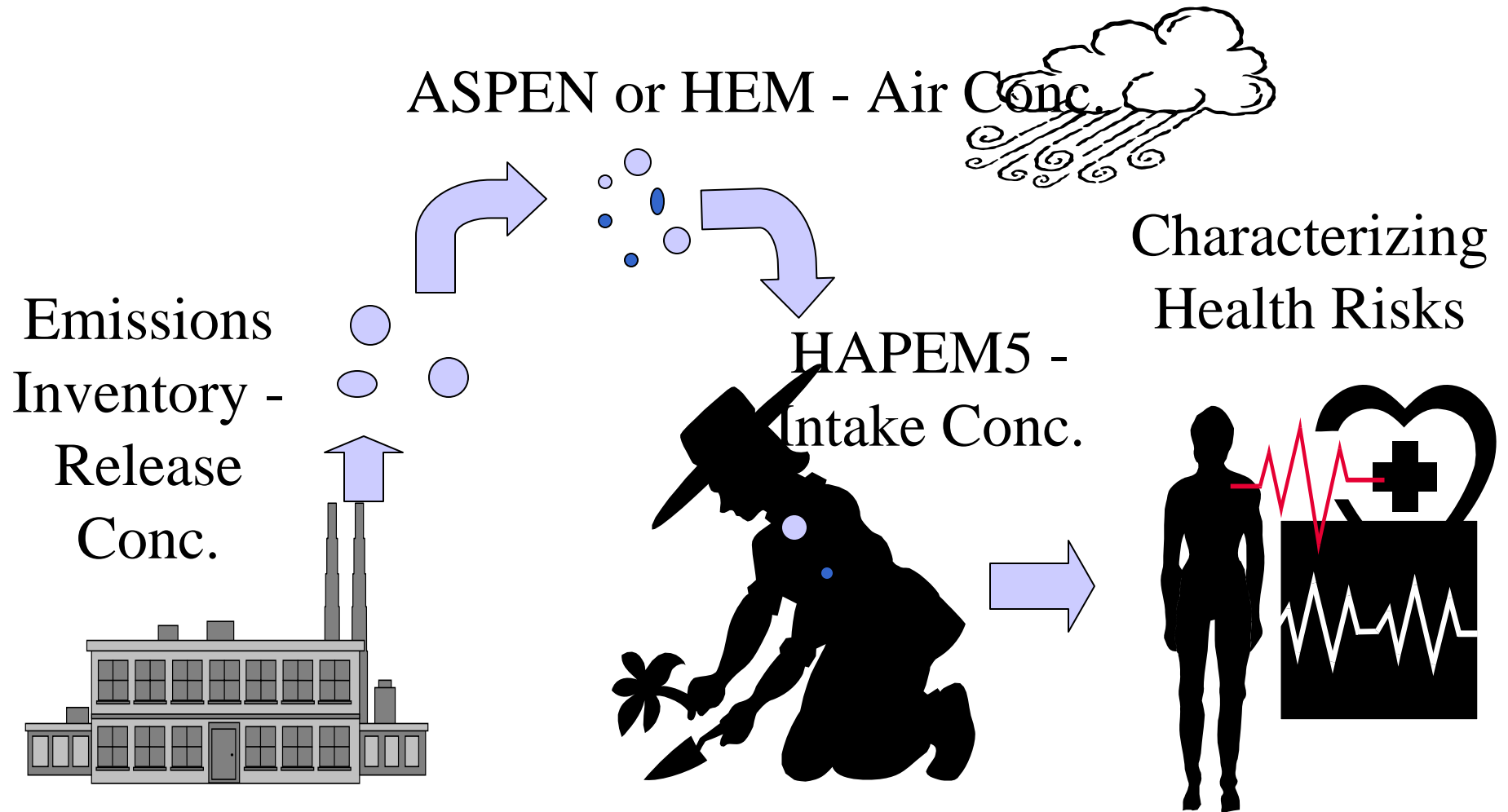
- **Characterization of air toxics across the nation**
 - Nationwide assessment with census tract¹ resolution for 180 HAPs plus diesel PM
 - Emissions, modeled ambient concentrations and estimated inhalation exposures from outdoor sources
 - Cancer and noncancer risk estimates for the 124 HAPs with health data based on chronic exposures
- **Tools for EPA, State/Local/Tribal Agencies, and communities to prioritize pollutants, emission sources and locations of interest**

1 census block data available for point sources

NATA History

- **1996 NATA**
 - Based on 1996 National Toxics Inventory
 - Release May 2002 (6 year lag)
 - 33 HAPs + Diesel Particulate Matter (DPM)
- **1999 NATA**
 - Based on 1999 National Emissions Inventory (NEI)
 - Released Feb 2006 (7 year lag)
 - 177 HAPs + DPM
- **2002 NATA**
 - **Based on 2002 NEI**
 - **Released in June 2009**
 - **180 HAPs + DPM**
- **2005 NATA/NAPA**
 - Based on 2005 NEI
 - Release later in 2009
 - Transitioning to national air pollutant assessment approach, including criteria pollutants

NATA Modeling



NATA Emissions Inventory

- Sources Include:
 - Major Stationary Sources (e.g., incinerators and manufacturing facilities)
 - Non-point sources (e.g., dry cleaners, residential fuel burning)
 - Onroad and Nonroad Mobile Sources (e.g., cars, trucks, and boats)

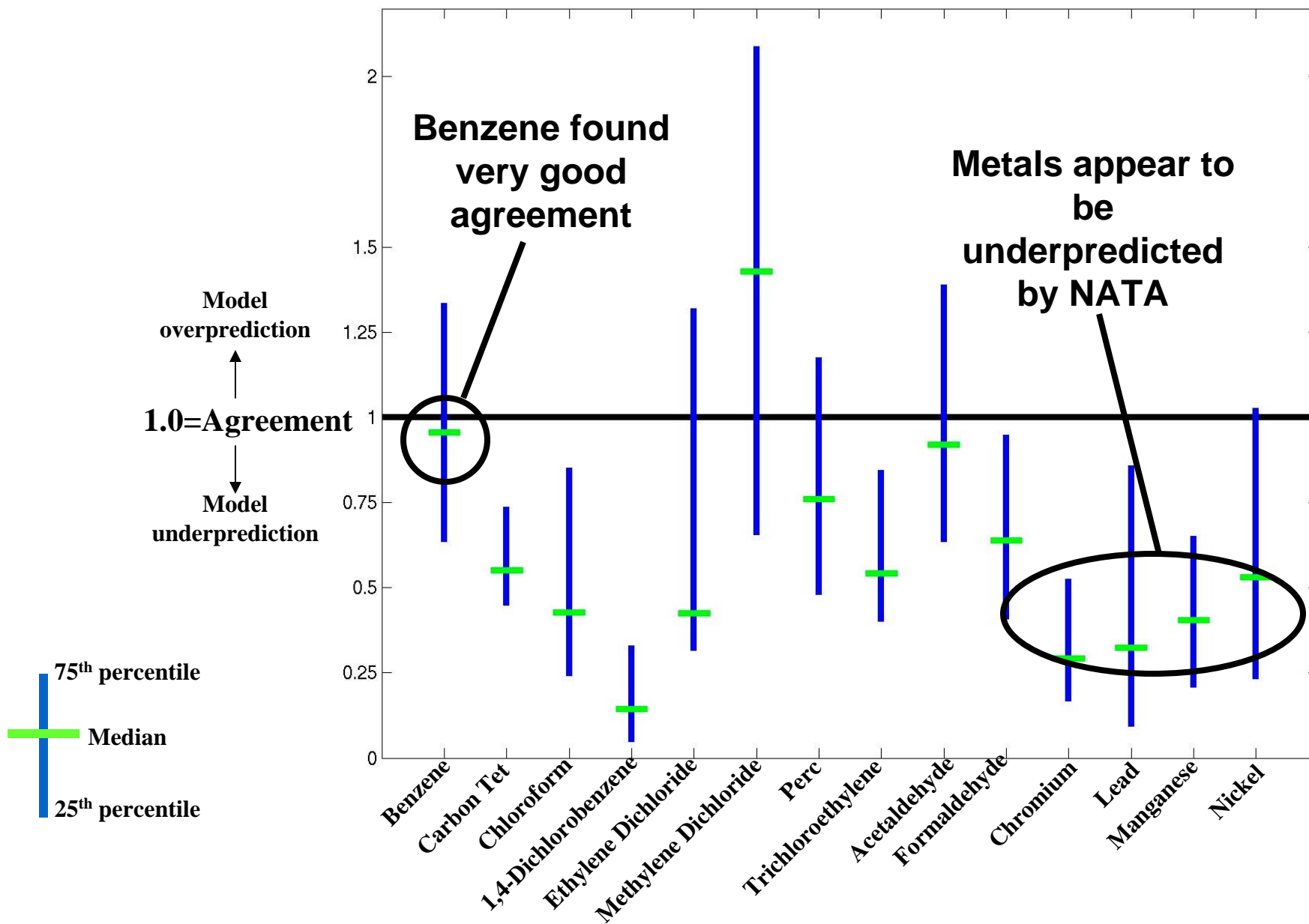
NATA Emissions Inventory

- **Primary Sources of Data:**
 - State and local air toxics inventories
 - EPA databases for air toxics regulatory programs
 - Toxics Release Inventory (TRI)
 - Mobile source emissions estimates from EPA's Office of Transportation and Air Quality
 - Non-point source estimates using emission factors and activity data
 - Residual risk and technology review inventory revisions

2002 NATA Limitations

- Based on 2002 data
- Inhalation risks only
- Excludes indoor air sources
- Results apply to broader geographic regions, not specific locations
- Background emissions (natural sources, unidentified sources, long range transport) are estimated values over broad geographic regions

1999 Model to Monitor Comparison



Overall Summary of 2002 NATA Results

- The national average cancer risk* is 36 in a million (1 in 27,000)
 - Massachusetts state average cancer risk is 40 in a million
 - This represents the subset of total air toxics cancer risk which can be quantified
 - **Benzene** is most significant carcinogen
- The national average noncancer risk is a hazard index of 4.4 (hazard index for respiratory)
 - Massachusetts state average noncancer risk is a respiratory hazard index of 5.2
 - **Acrolein** a majority of this risk
 - Aggregate exposures **below a Hazard Index of 1.0** will likely not result in adverse noncancer health effects over a lifetime of exposure

* Note: This is an estimate of the average American's chance of contracting cancer from breathing the air toxics analyzed here, if they were exposed to 2002 emissions levels for 70 years. This assessment does not include indoor air, diesel emissions, non-inhalation exposure pathways. Risks from PM and other criteria pollutants are not included in this assessment.

EPA New England Review of 2002 NATA and Website Update

EPA New England Review

- Identify Air Toxics of Significance
 - Health Effects Information
 - County Level Ambient Air Maps
 - County Level Risk Maps
 - Emissions Inventory
 - Summary and Detailed Information
- Air Toxics Monitoring Data and Trends

EPA New England Review of 2002 NATA

- Air Toxics of Greatest Concern New England
 - State average risk values exceed health benchmarks in all New England states for:
 - acetaldehyde, acrolein,, benzene, 1,3-butadiene, carbon tetrachloride, polycyclic organic matter (POM)
 - State average risk values exceed health benchmarks in at least one state in New England:
 - arsenic, chromium compounds, naphthalene
 - Also concerned about diesel

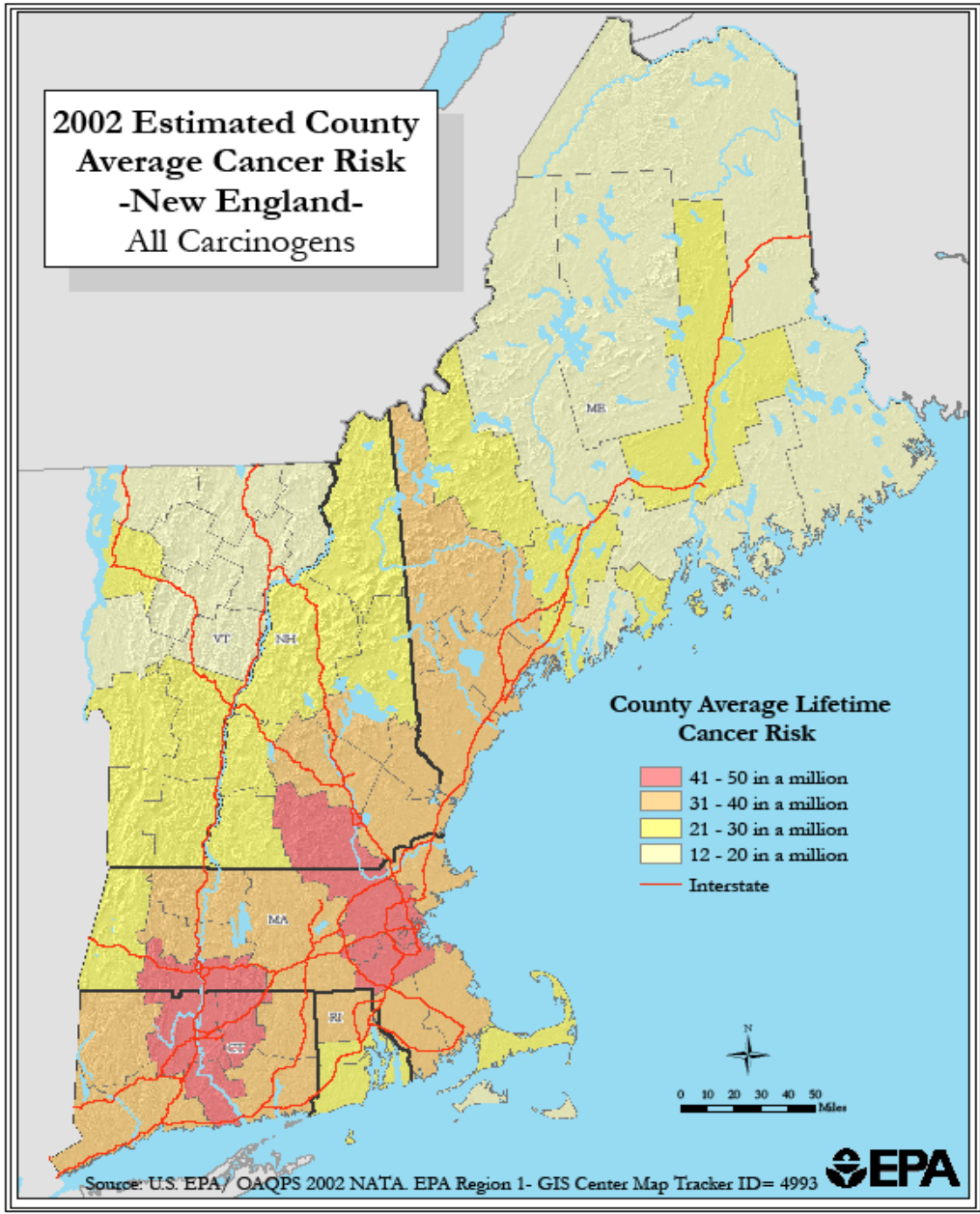
Air Toxics of Greatest Concern Significant Emission Categories

- Mobile sources - acrolein, acetaldehyde, benzene, 1,3-butadiene and diesel particulate
- Background sources - carbon tetrachloride, arsenic, chromium compounds and acetaldehyde

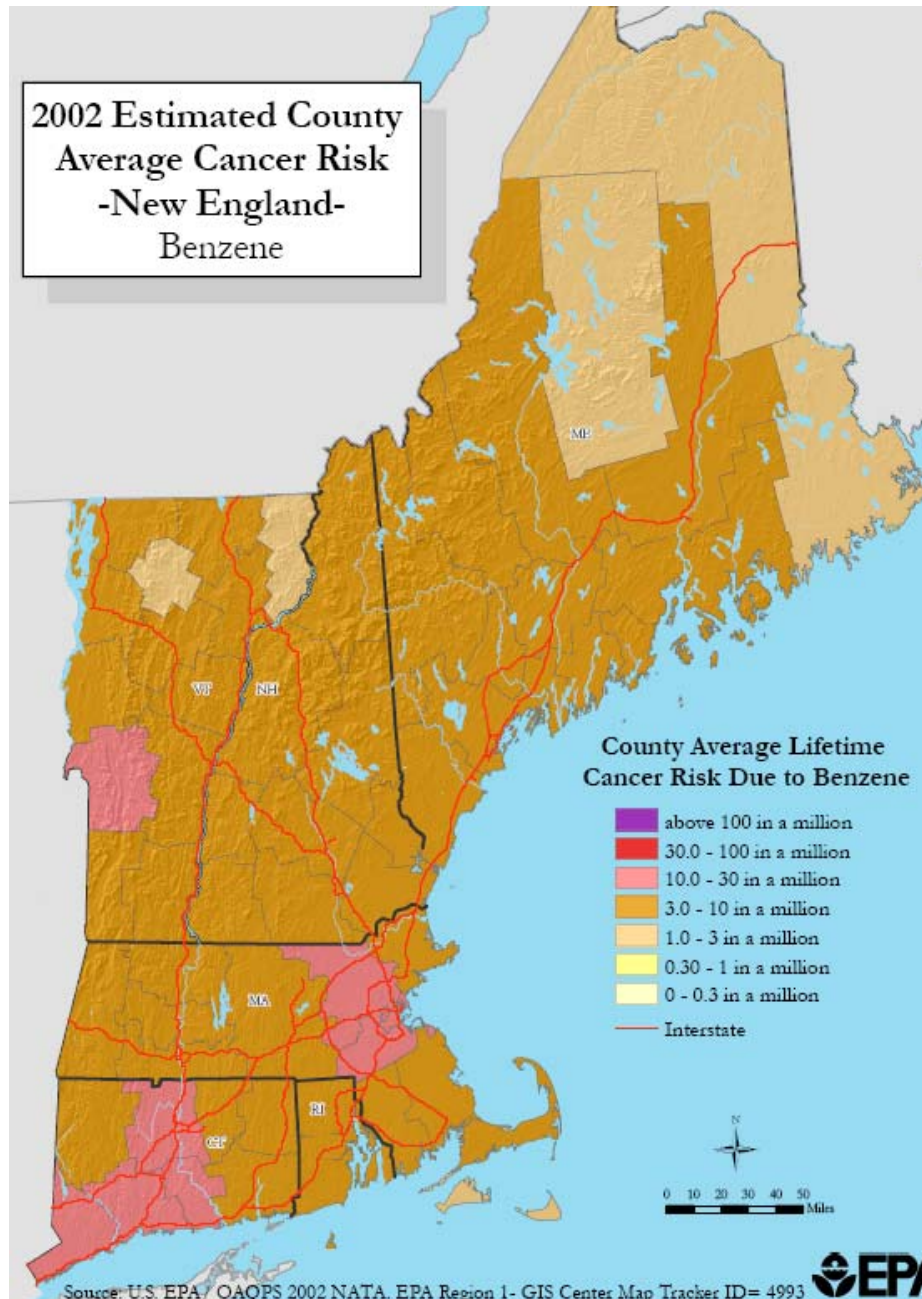
Air Toxics of Greatest Concern *Significant Emission Categories*

- Combustion sources - acrolein, acetaldehyde, chromium compounds, naphthalene, and POM
 - Woodstove and Fireplace Emissions
 - acetaldehyde, acrolein, naphthalene

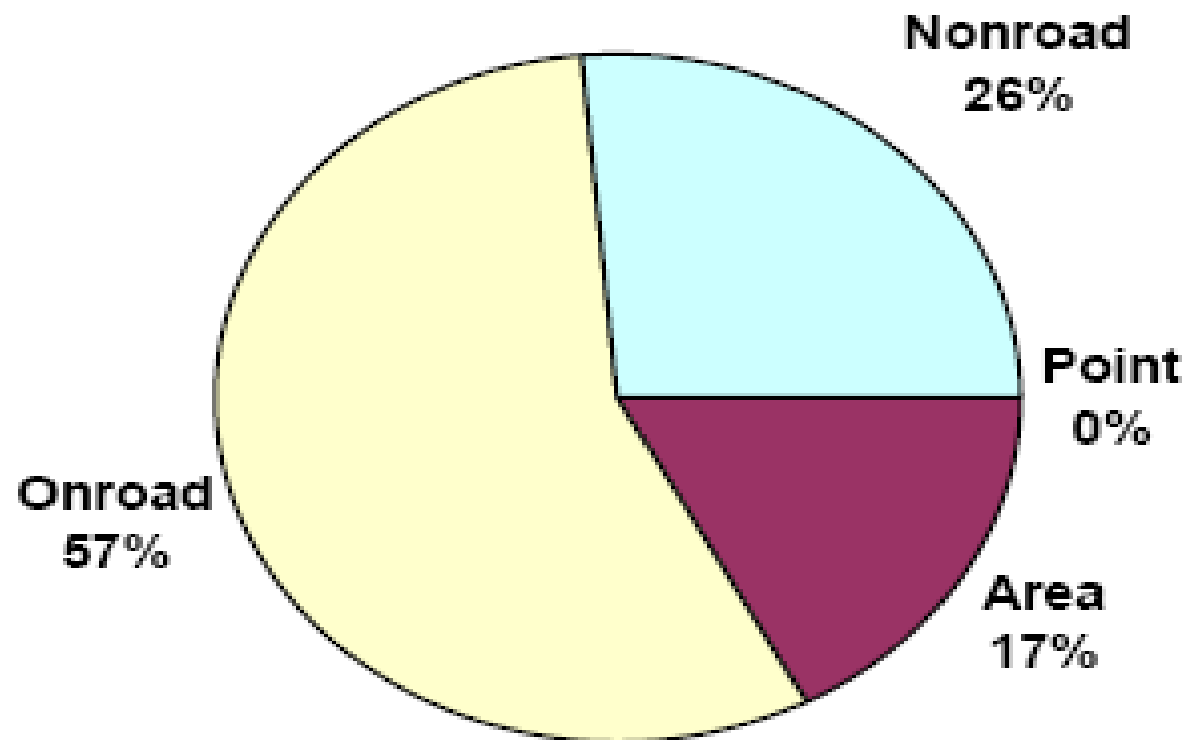
**2002 Estimated County
Average Cancer Risk
-New England-
All Carcinogens**



2002 Estimated County
Average Cancer Risk
-New England-
Benzene

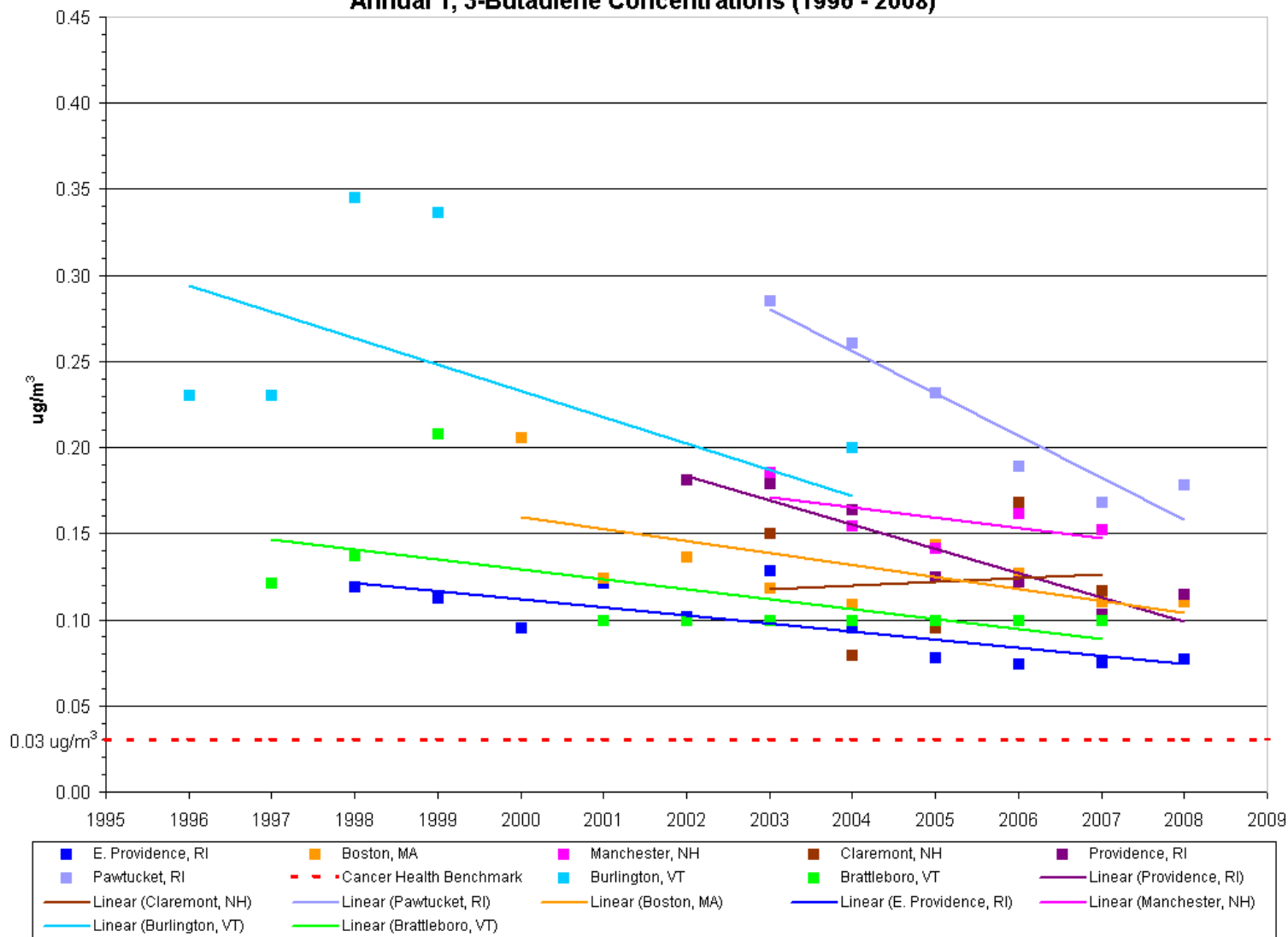


1,3 Butadiene Emissions in New England



Data Source: EPA's 2

Annual 1, 3-Butadiene Concentrations (1996 - 2008)



How to Use This Information

- Prioritize Air Toxics of Concern
- Characterize Relative Contributions of Air Toxics by Emissions Sources
- Identify Areas for Further Study
- Tool for Communities to Target Risk Reduction
- Set Priorities for Collecting More Data

For More Information

- EPA NATA Website
 - <http://www.epa.gov/nata/>
- Regional Website Updates
 - <http://www.epa.gov/region01/eco/airtox/>

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