



NATA - CHANGING FOCUS DUE TO REVISED RISK THRESHOLDS

MARAMA Air Toxics Training Workshop

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WHAT IS NATA?

EPA's National-Scale Air Toxics Assessment (NATA)

- Comprehensive evaluation of air toxics in the U.S.
- Estimates the risk of cancer and other serious health effects from breathing (inhaling) air toxics
- Population based risk at the census tract level
- Not designed to determine actual health risks to individual people
- Developed as a **screening tool** to prioritize pollutants, emission sources and locations of interest for further study



BACKGROUND

- Developed in order to help guide efforts to cut toxic air pollution
- This is the 6th NATA (2014 NATA)
 - Previous Assessments:
 - 1996
 - 1999
 - 2002
 - 2005
 - 2011



2014 NATA ANALYTICAL STEPS

Compile
National
Emissions
Inventory
(2014 NEI)

Estimate
ambient
concentrations
of air toxics
across the U.S.

Estimate
population
exposures

Characterize
potential public
health risks
from inhalation

- 2014 NEI includes stationary, mobile and natural sources
- NATA includes 180 HAP and diesel particulate from mobile sources.

- Uses CMAQ and AERMOD to predict census-tract ambient concentrations nationwide.

- Includes an exposure model (HAPEM7) to account for human activity data, commuting patterns, and near-roadway exposures.

- Census-tract level cancer and noncancer risks nationwide.



LIMITATIONS OF NATA

- **Modeled data** using general source information
 - Tendency to overestimate risk
- Inputs to the model are from outdoor sources (E.G. emissions, modeled ambient concentration, and estimated inhalation exposures)
- Should not be compared with previous versions
- Should not be used to compare different geographic locations



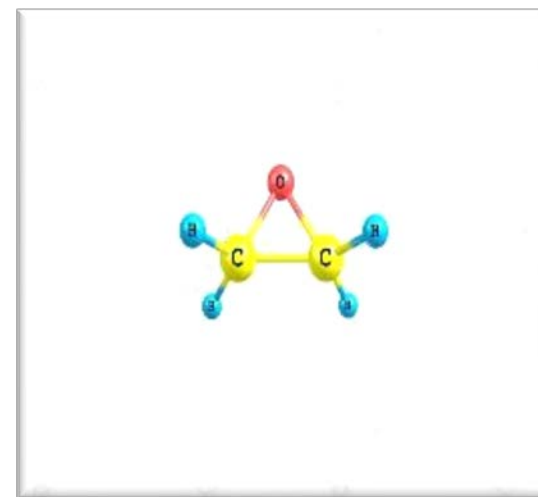
IMPROVEMENTS & UPDATES

- Inventory:
 - *Updated spatial allocation for mobile and nonpoint sources*
 - NEI improved in many areas: e.g., oil & gas, onroad, nonroad, commercial marine vessels
 - Areas outside CMAQ domain (AK, HI, PR, VI) better characterized for AERMOD modeling
 - New emissions processing tool built for preparing AERMOD emissions
- Photochemical/Dispersion Modeling:
 - In CMAQ: improved boundary conditions and carbon tetrachloride treatment; nine more HAP modeled than for 2011 NATA
 - More spatially refined meteorology using prognostic meteorological modeling (WRF)
- Exposure Modeling:
 - New features of HAPEM 7, including updated population and commuting patterns, activity pattern data, and four additional commuting-related microenvironments
- Risk Characterization:
 - *Updated health benchmarks – ethylene oxide, acrolein, benzo(a)pyrene*
- Outreach:
 - Updated Map App features



ETHYLENE OXIDE – WHAT IT IS

- Colorless, flammable, and extremely reactive gas
- EtO is Used:
 - As an intermediate in the chemical synthesis of ethylene glycol and other chemicals
 - To sterilize medical and dental equipment and to fumigate spices, cosmetics, and library and museum materials

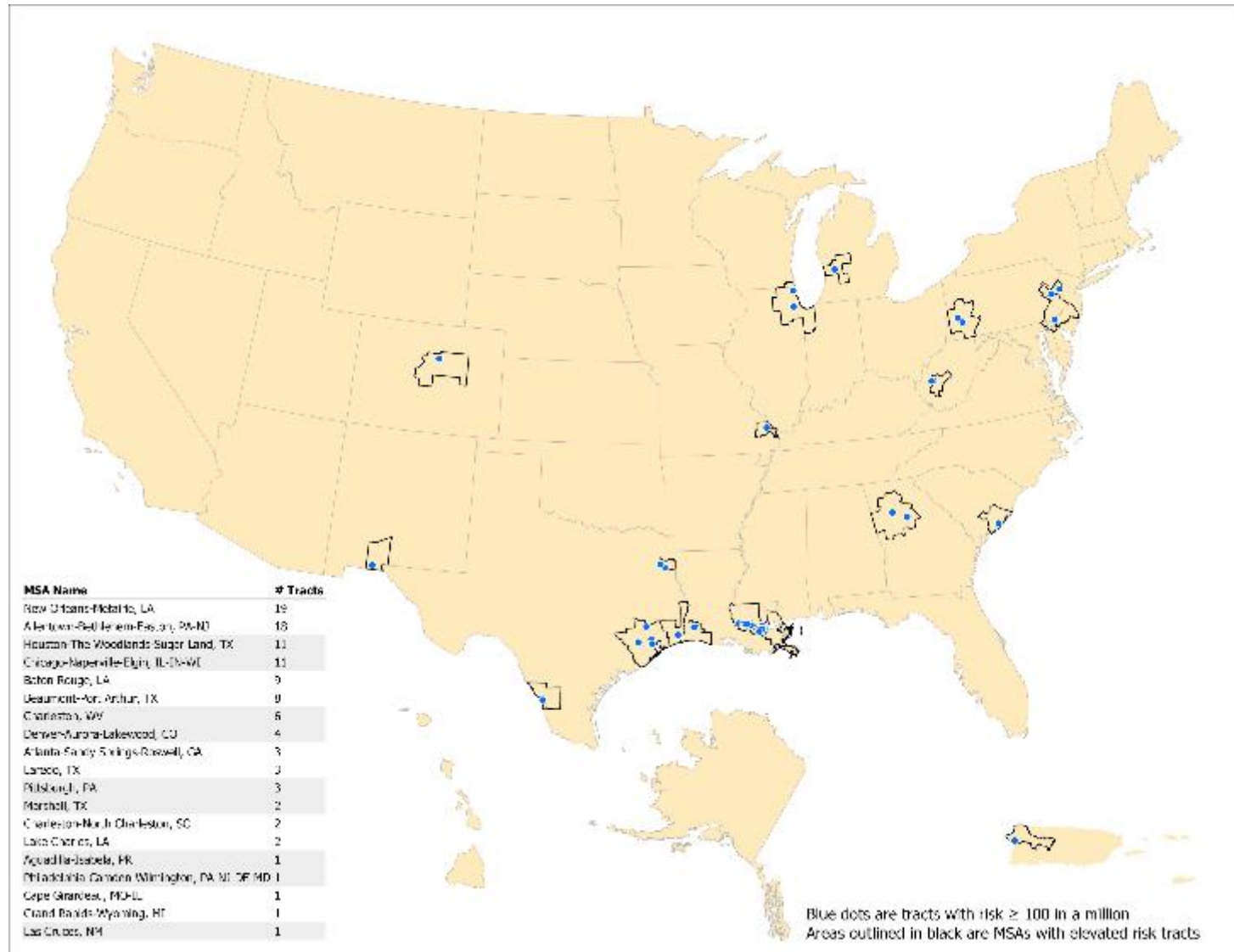


ETHYLENE OXIDE – WHAT IS NEW

- Updated IRIS assessment posted December 2016
- Classified EtO as a known carcinogen
 - Increased potency estimate by a factor of 50
- New inhalation cancer risk estimate used for 2014 NATA
 - Areas with ethylene oxide emissions showing up as high risk



MSAs WITH ELEVATED RISK



MSAs WITH ELEVATED CANCER RISK

MSA (<i>Region 3 MSAs</i>)	#Tracts ≥100- in-1 million	Highest Risk Tract in MSA (-in-1 million)	MSA (<i>Region 3 MSAs</i>)	#Tracts ≥100- in-1 million	Highest Risk Tract in MSA (-in-1 million)
New Orleans-Metairie, LA ^{**} , †	19	2,000	Pittsburgh, PA^{**}, †	3	100
Allentown-Bethlehem-Easton, PA-NJ	18	600	Charleston-North Charleston, SC	2	100
Chicago-Naperville-Elgin, IL-IN-WI [†]	11	300	Lake Charles, LA	2	100
Houston-The Woodlands-Sugar Land, TX	11	300	Marshall, TX	2	200
Baton Rouge, LA	9	200	Aguadilla-Isabela, PR	1	300
Beaumont-Port Arthur, TX	8	300	Cape Girardeau, MO-IL	1	200
Charleston, WV	6	400	Grand Rapids-Wyoming, MI	1	100
Denver-Aurora-Lakewood, CO [†]	4	500	Las Cruces, NM	1	200
Atlanta-Sandy Springs-Roswell, GA	3	200	Philadelphia-Camden- Wilmington, PA-NJ-DE-MD[†]	1	100
Laredo, TX	3	100			

** With the exception of New Orleans-Metairie, LA (chloroprene) and Pittsburgh, PA (coke oven emissions), the primary risks are driven by emissions of ethylene oxide from point sources.

† The following 5 MSAs were also in the 2011 NATA as MSAs with elevated cancer risks: Chicago-Naperville-Elgin, IL-IN-WI; Denver-Aurora-Lakewood, CO; New Orleans-Metairie, LA; Philadelphia-Camden-Wilmington, PA-NJ-DE-MD, and Pittsburgh, PA.

NEXT STEPS

- NATA to be released August 22 (Today)
- Will continue to work with state and local agencies on areas of concern
 - Still have areas with coke oven emissions
- Useful Websites (should be updated today):
 - <https://www.epa.gov/nata>
 - <https://www.epa.gov/ethylene-oxide>



QUESTIONS???

