

**Building an Emissions Inventory:
Lessons Learned from the
Baltimore Community Partnership
Project**

National Training Workshop

Local Urban Air Toxics

Detroit, MI

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Contact Information:

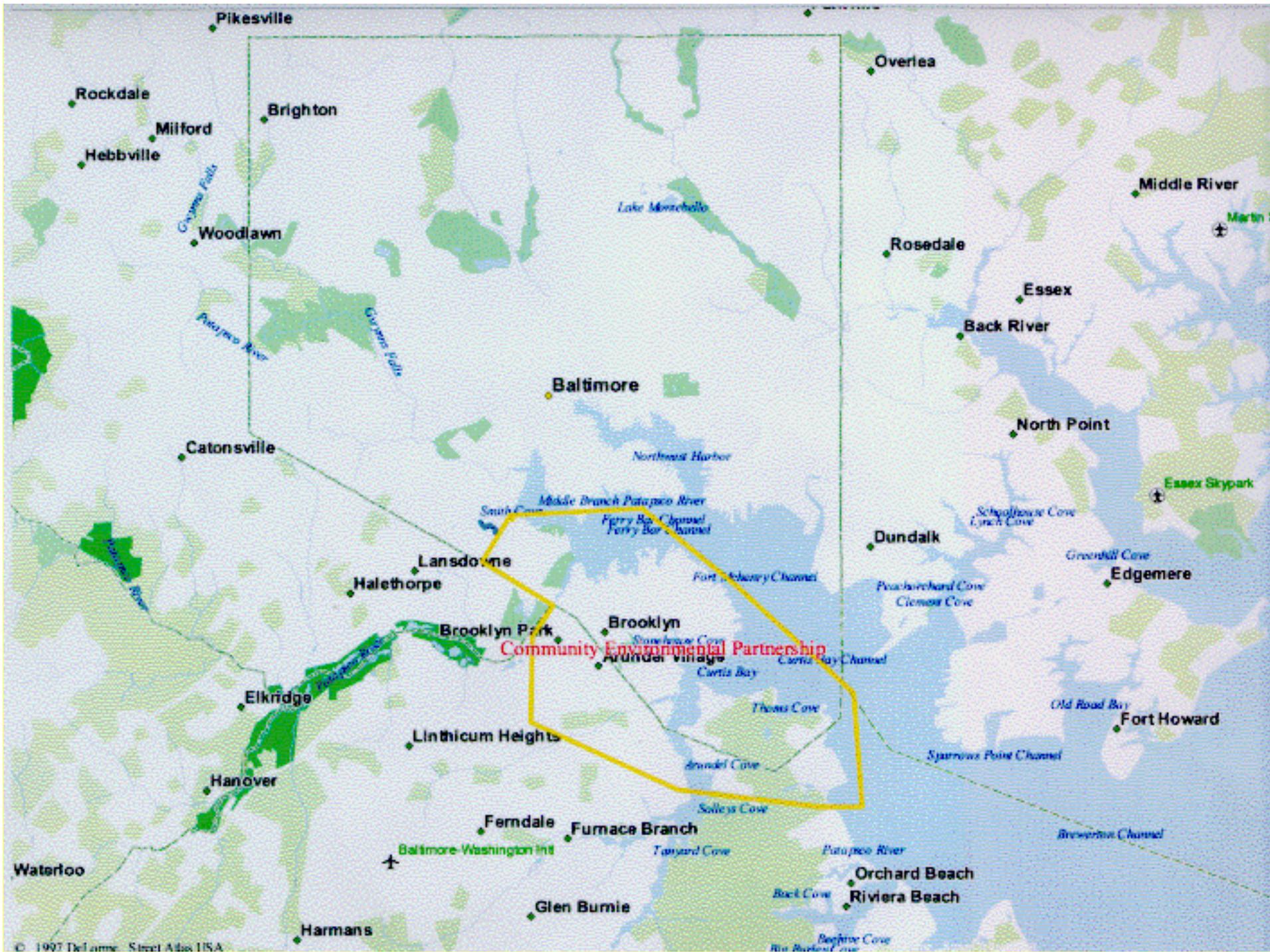
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The Baltimore Community Environmental Partnership

- Broad Partnership formed in 1995 to address neighborhood concerns
- Project area covered five neighborhoods in south Baltimore
- Community set priorities and formed five committees
- Partnership took comprehensive sustainable development approach







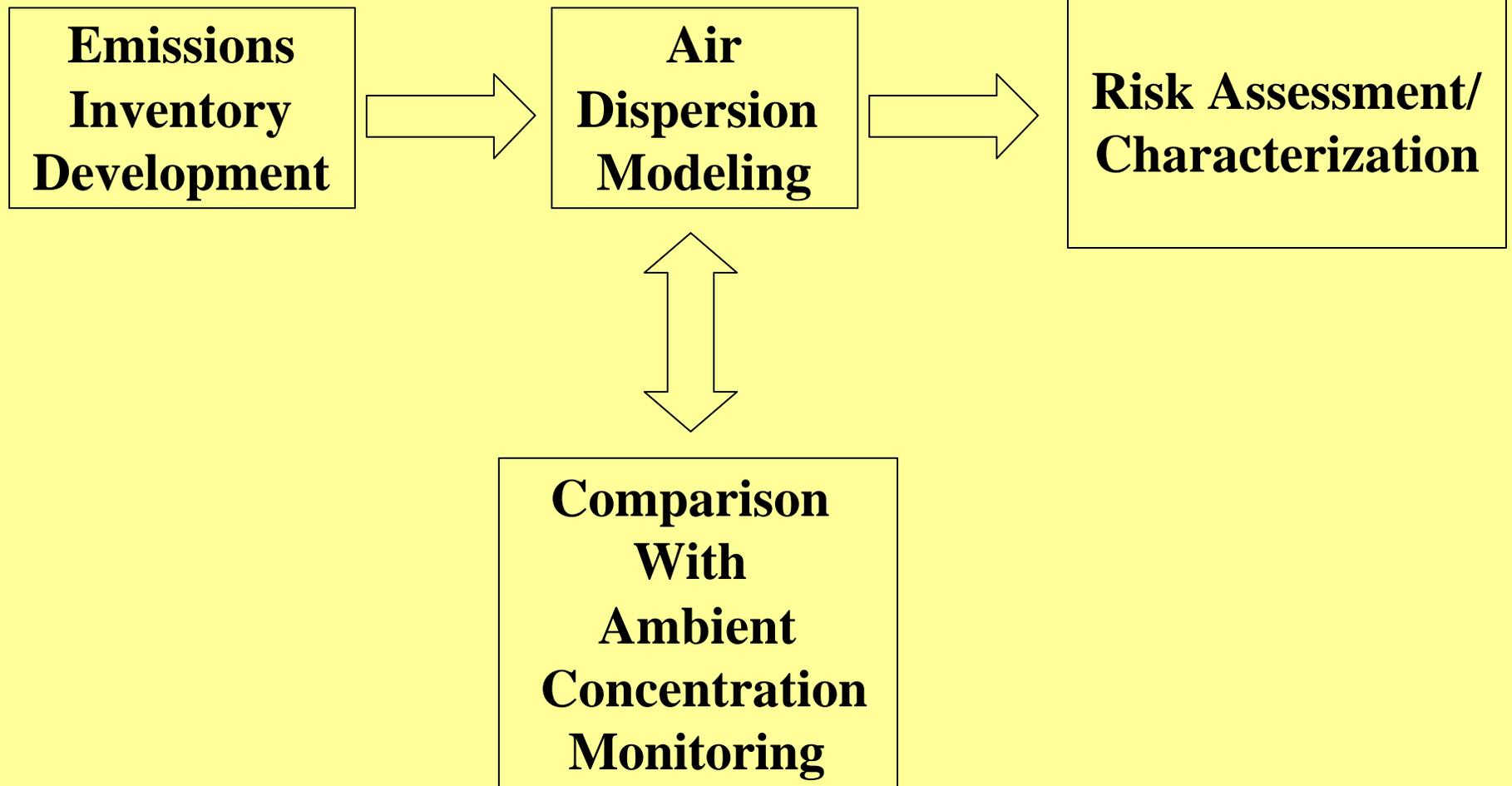




What is the question?

- What is in the air?
- What air pollutants am I exposed to?
- What chemicals or air sources would make good priorities for reduction?
- What is the risk of harm from chemicals emitted outdoors in my neighborhood?

Air Toxics Assessment



Constructing an Emissions Inventory

- An emissions inventory is a collection of information about the releases of chemicals to air within a finite geographical area.
- It serves as input to air dispersion models which estimate the airborne concentrations of these chemicals in the community

Emissions Inventory

- Emissions inventories can also be used to
 - track progress on emissions reductions
 - rank and prioritize work on chemicals and sources

Source Types

- Inventories can include emissions from stationary and mobile sources
- Stationary:
 - **industrial manufacturing facilities, utilities, small commercial operations e.g. gas stations, dry cleaners**
- Mobile
 - **on-road sources (cars, trucks, buses)**
 - **off-road sources (lawn mowers, trains)**

Determining Emissions Inventory Coverage Area

- How does the community describe its boundaries?
- Can the community borders be described by other means ?
 - **census tracts**
 - **zip codes**
 - **municipal boundaries**
 - **political boundaries**
 - **lat/long UTM coordinates**
 - **geographic features**

How large an area should be included in the emissions inventory?

- Air pollutants from outside the immediate community boundaries may be blown into the community from near or distant locations
- Community may want to expand spatial limits of emission inventory to include large sources of emissions outside of the community boundaries

How Large an Area?

- Sources up to 50 km from community can be included, but generally 10 - 15 kilometers is sufficient.
- Smaller areas may be sufficient depending on purpose.
- Community should consider resources available and purpose of assessment when selecting area size

Information to be Collected

- Most information collected for emissions inventory is used as input to air dispersion model
 - **Emissions (estimated, maximum permitted, measured)**
 - **Emission source characteristics**
 - **stack parameters including stack height, diameter, temperature, exit velocity**
 - **area source characteristics including dimensions**
 - **Source location**
 - **lat/long**
 - **UTM**

Creating Lists of Potential Emission Sources in the Community

- National Toxics Inventory (NTI) contains an extensive list of sources of air emissions
- NTI source categories can be used as a check list to suggest local sources to be considered
- NTI contains some specific local point source and area source descriptions

Identification of Sources

- Toxics Release Inventory (TRI) contains information including quantities of certain toxic chemicals released by facilities to the air, water and land
- Dun and Bradstreet listings of local businesses

Identification of Sources

- State air permits databases
- Communities possess a wealth of knowledge that can serve as a valuable resource in “ground truthing” local emissions inventories

Sources of Local Emissions Data

- Point Sources
 - National Toxics Inventory (NTI)
 - State Air Permitting Authorities
 - Toxics Release Inventory
 - AIRS/AFS
- While none of these sources are completely comprehensive their combined use can provide good coverage

Area Sources

- Emissions from small commercial, industrial, and institutional sources are often combined and treated as area sources (e.g. dry cleaners, gas stations)
- Increased modeling accuracy can be achieved if these sources can be inventoried as individual point sources.
- If data on area source emissions are not available from state authorities, county wide NTI emissions estimates can be apportioned (scaled down) to community level and divided among known source locations

Area Sources

- Alternate methods can be used employing emission factors
- Domestic emissions such as emissions from home heating can be estimated by apportioning from county wide NTI data using population data or other factors
- Communities possess a wealth of knowledge that can serve as a valuable resource in “ground truthing” local emissions inventories

Mobile Source Emissions

- On-road mobile source emissions at the community level can be estimated by a number of methods
- NTI county level mobile source emissions data can be apportioned down to community level using vehicle miles traveled (VMT) or other appropriate factors (e.g. road miles, population)

Mobile Source Emissions

- Emissions and speciation models can be used to estimate emissions of some toxics from mobile sources based on local VMT and other information.
- Off-road emissions can be apportioned from NTI county level data to community level using factors such as population and land use indicators

Mobile Source Emissions

- Communities can serve as a valuable resource by conducting local traffic counts to provide accurate community scale traffic activity data, and by confirming land use patterns on a local scale

Inventory Data Management

- Determine hardware requirements for data base
- Select format that is easily manipulated e.g. PC spreadsheet
- Identify resources needed to develop and maintain database

Inventory Data Management

- Provide training and involve community as much as possible in the development and maintenance as they may ultimately decide to continue to update the database as data become available
- Provide spreadsheet templates containing data fields necessary for screening work

Inventory Data Management

- Establish QA/QC procedures for data entry
- Develop data entry forms to collect common data set

Lessons Learned

- Include the community in the process of emissions inventory building from the beginning. Consider the knowledge on the community about their community as one of your most valuable resources



Lessons Learned (con't)

- Define the study area boundaries as early as possible in the process
- Consider including major sources outside of the community even though they may be distant.

Lessons Learned (con't)

- Identify and utilize technical expertise both within and outside of the community
- Access the available knowledge in emissions estimation, inventory building, and air dispersion modeling at the local, state and federal levels

Lessons Learned (con't)

- Develop an inventory that is sustainable and provide resources and training for the community to maintain it in the future