Delaware Community Air Toxics Study

Delaware Department of Natural Resources and Environmental Control

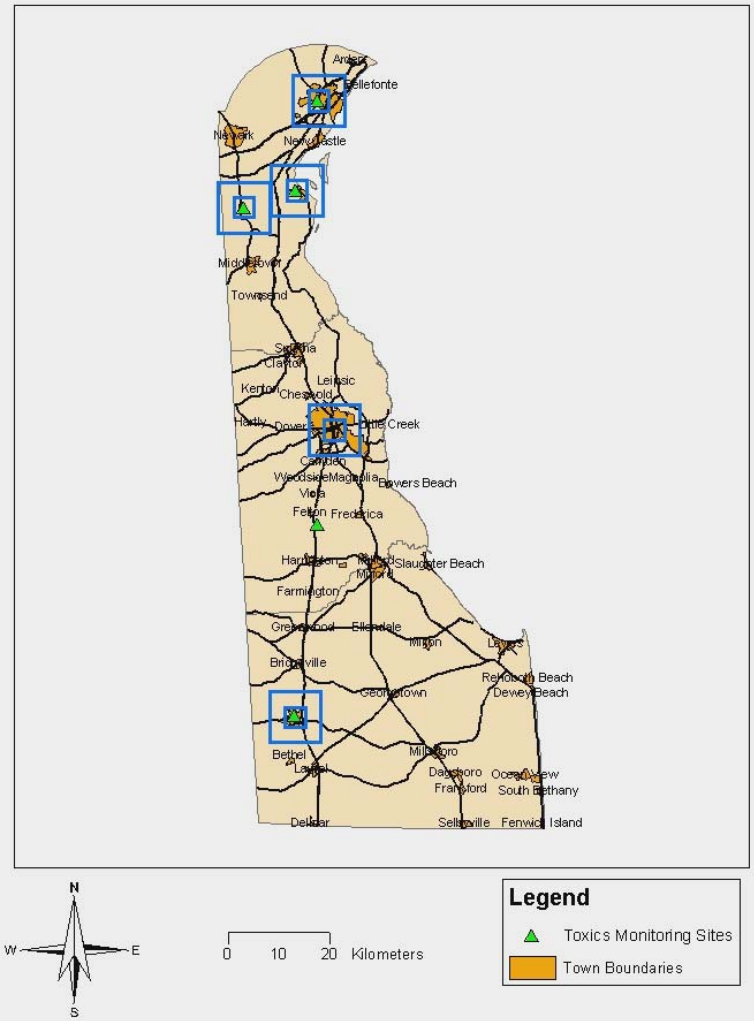
Overview

- DATAS
- Need for additional study
- Community Air Toxics Study

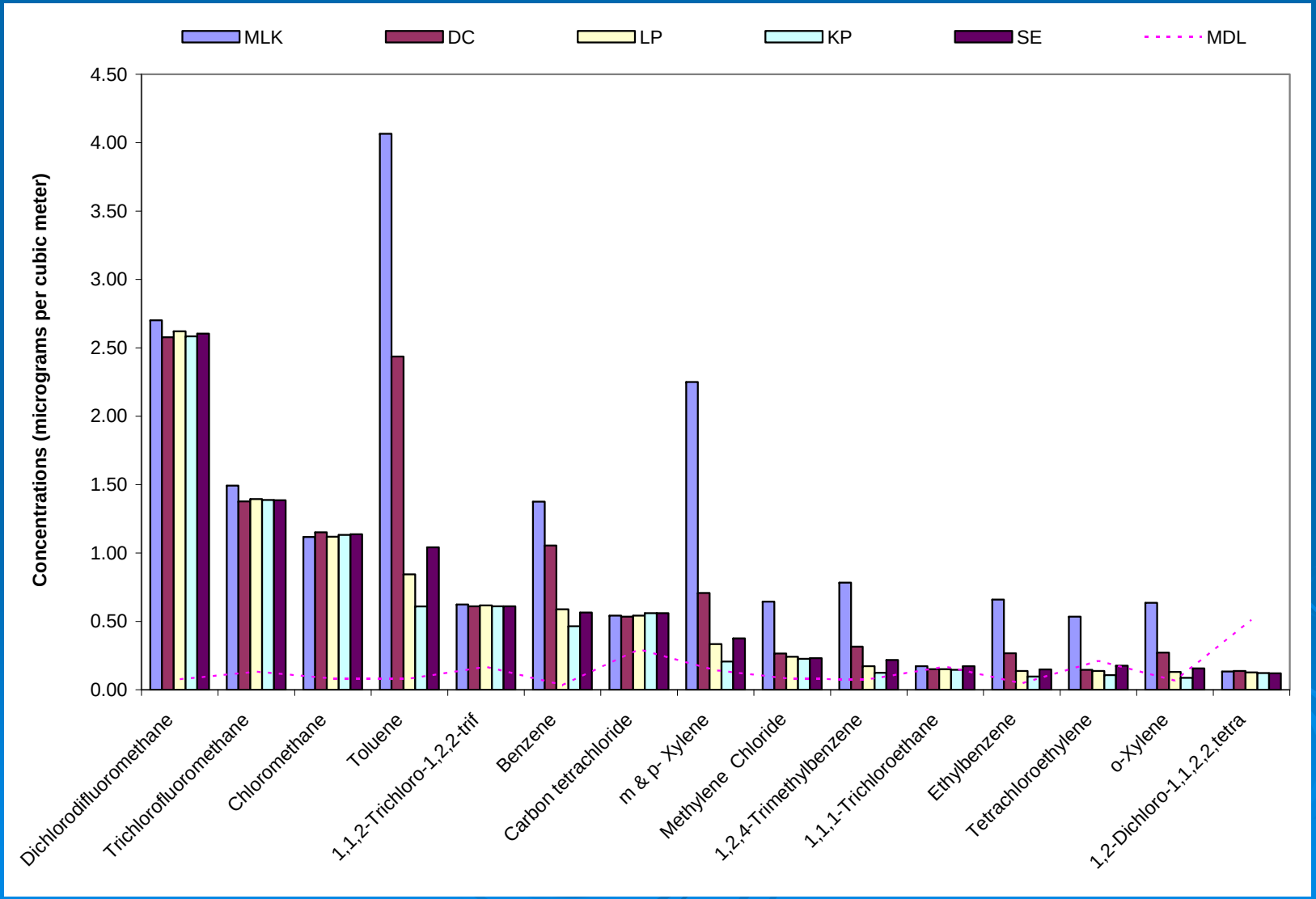
Delaware Air Toxics Assessment Study (DATAS)

- 5 locations
- ~ 120 compounds
- 24 hour average concentrations
- Annual averages
- Risk assessment

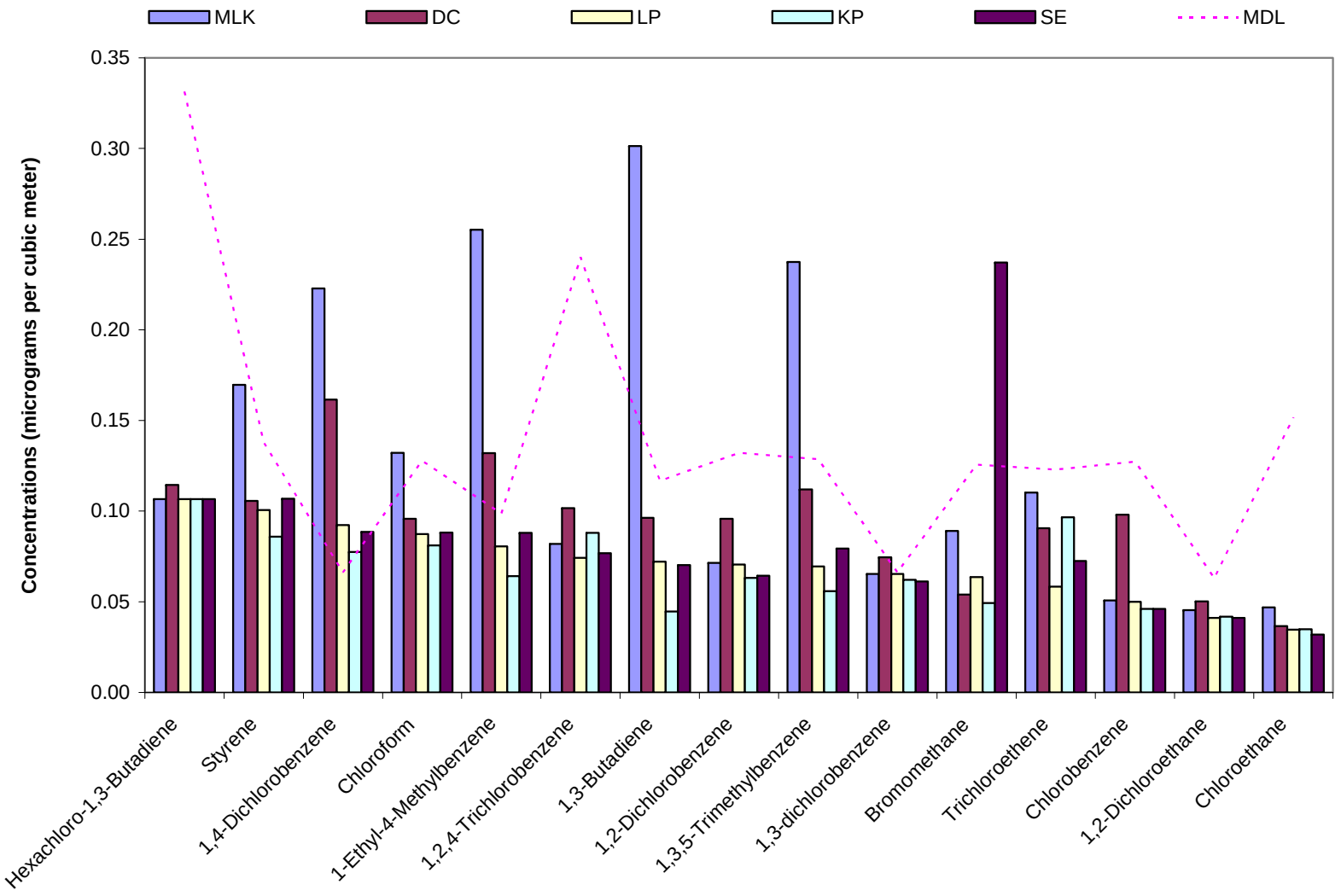
DATAS Monitoring Sites



DATAS VOC Results



DATAS VOC Results

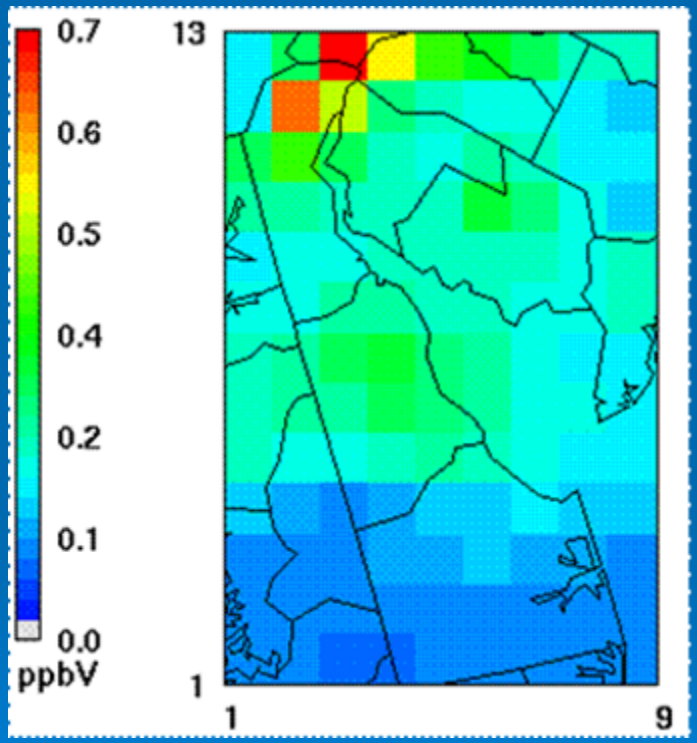


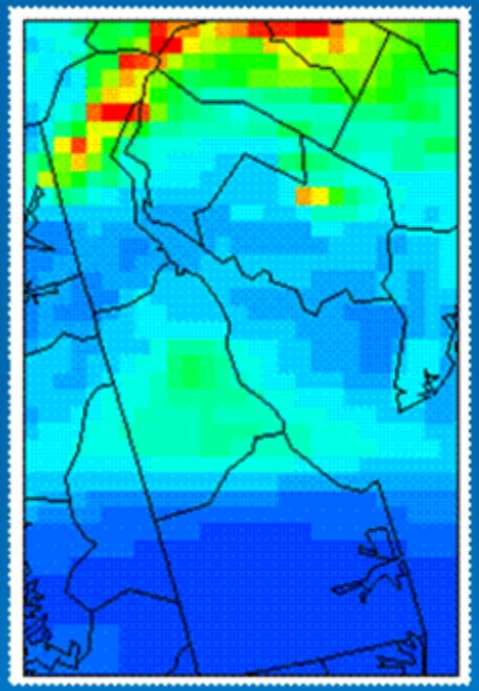
Risk Assessments Results

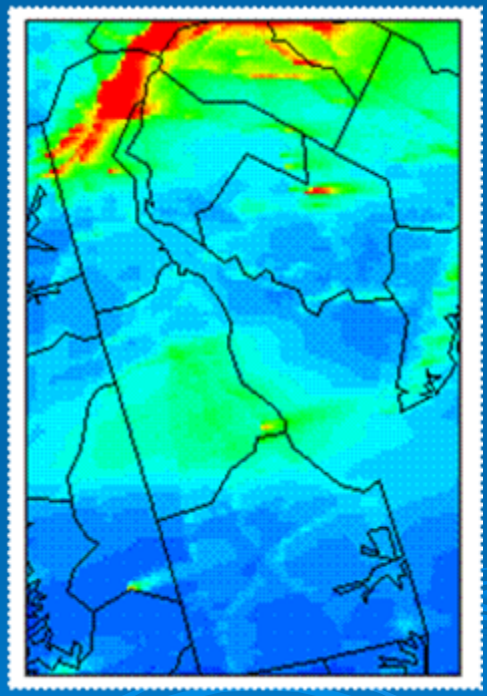
- MLK Monitoring Station showed increased risk for all three receptor populations. The compounds significantly contributing to the risk include:

Carcinogens	Non-Carcinogens
Chromium (VI)	Manganese
Trichloroethene	Carbon tetrachloride
Benzene	1,3-Butadiene
1,3-Butadiene	1,2,4-Trimethylbenzene
Carbon tetrachloride	

Modeling Results (benzene)



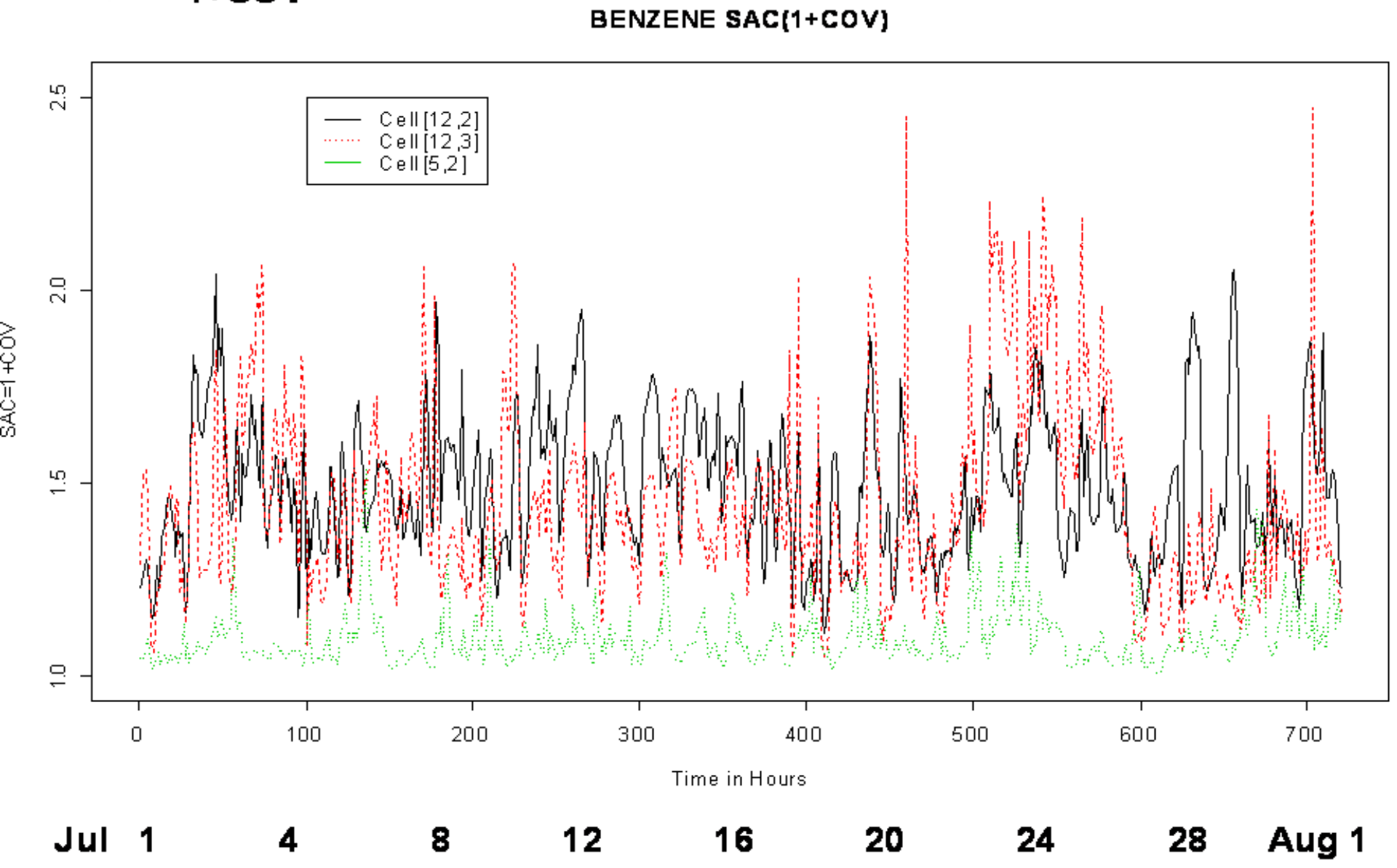




Benzene (ppb) (July 2001) Wilmington,DE

Black(A) **A** Red(B) **B** Green (C) **C**

1+COV



Objectives

- Establish an enhanced VOC monitoring program in Delaware capable of performing fast, accurate VOC measurements in communities identified through modeling as potential hotspots.
- Investigate temporal and spatial variations in VOC concentrations at community level.
- Build time-resolved VOC data set to be used for improved model validation.
- Evaluate potential concentration changes in ambient air of specific VOCs resulting from reformulated gasoline (RFG) usage.
- Build community-level data set of specific hazardous air pollutants (HAPs) to accomplish mutual health-risk assessment goals in cooperation with Delaware Department of Health and Social Services (DHSS).

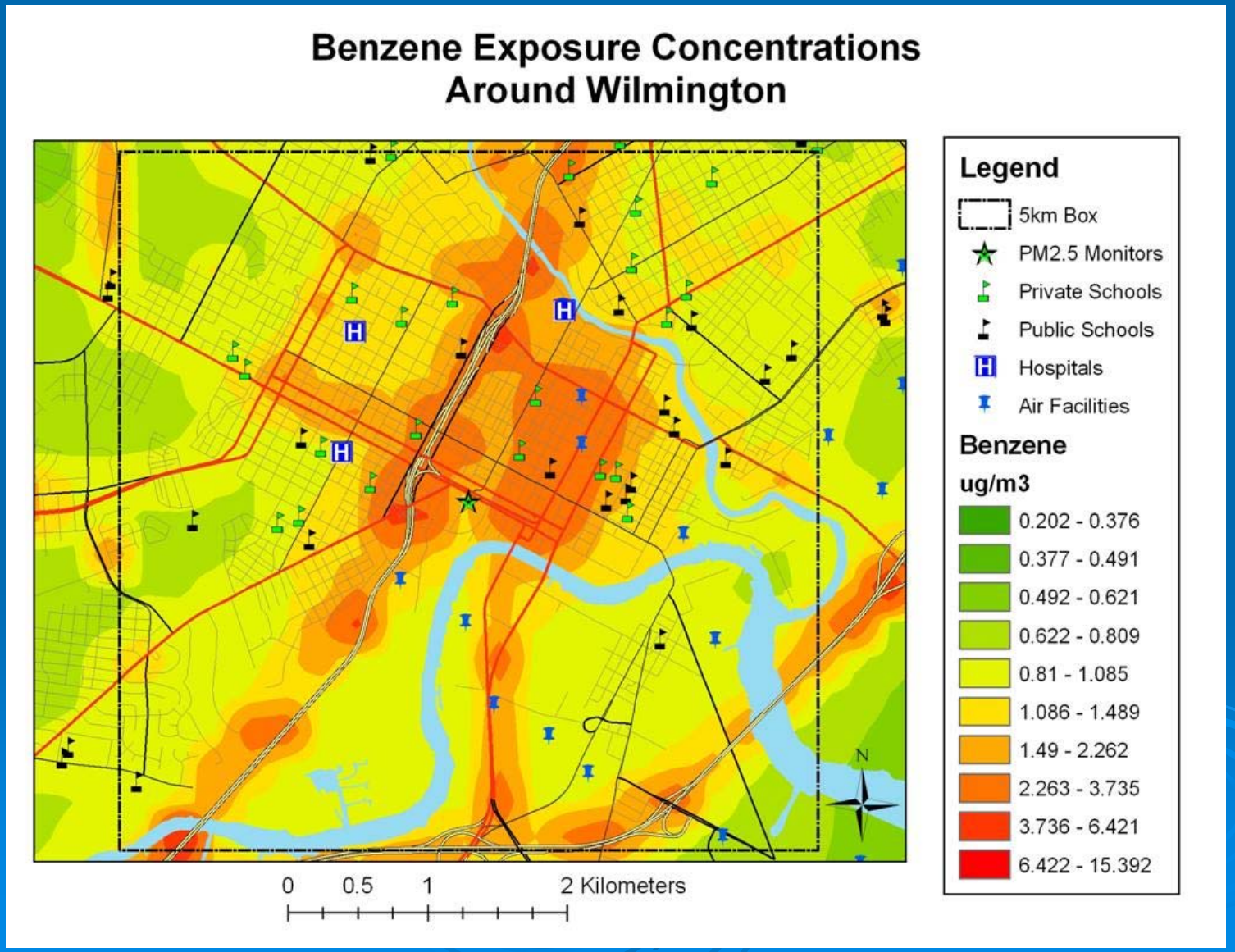
Delaware Community Air Toxics Study

- Site Selection
- Field Collection
- Laboratory Analysis
- Data Analysis

Site Selection

- Modeled concentrations will be overlaid on GIS maps within the Wilmington area.
- Population density tracks and sensitive receptors such as schools and hospitals will be identified.
- Monitoring site location will be selected within the appropriate 1 km grid considering proximity to a sensitive receptor, source, density track, and elevated VOC concentrations.

Exposure Map



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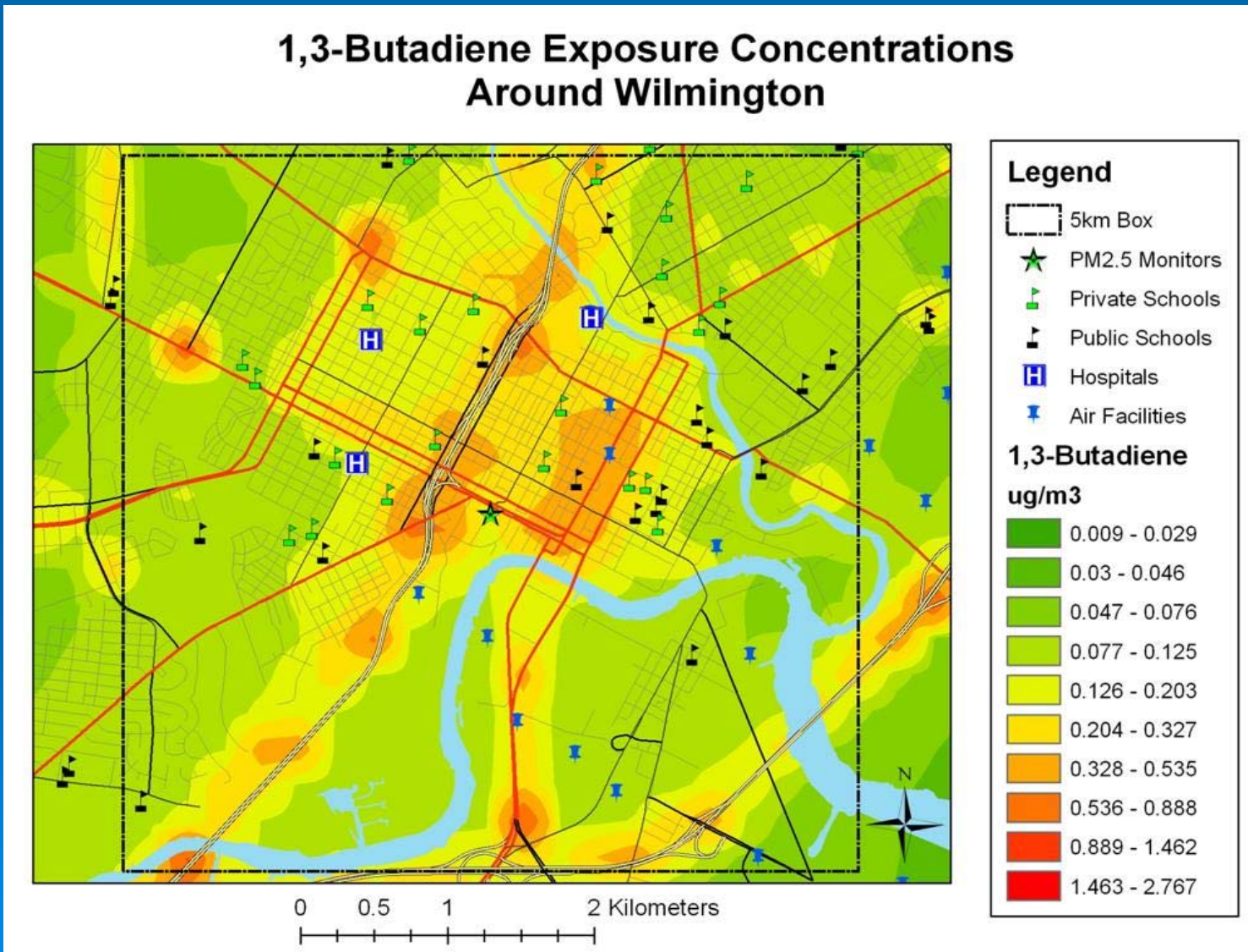

Field Collection

- 15 month study
- Sorbent tubes
- 12-2 hour samples
- 1 in 6 day schedule
- 5 community sites + 1

Laboratory Analysis

- EPA Method TO-17
- PerkinElmer Clarus 500 GC-MS
- Select VOC’s

Data Analysis

Includes:

- **Multiple variables (met, traffic patterns, emission inventory, etc.) to determine temporal and spatial variations**
- **Data evaluated at 2, 8, and 24 hour blocks**
- **Compare to existing canister data**

Community Involvement

- Community Groups
- AQMS webpage
- Brochures
- Displays

Project Goals

- ***Short-term:***
  - **Initiate time-resolved VOC monitoring program**
  - **Increase knowledge of spatial and temporal variability**
  - **Validate and improve air quality model**
  - **Re-evaluate health risks**
- ***Mid-term:***
  - **Support community action groups**
  - **Continue to develop VOC monitoring program**
- ***Long-term:***
  - **Continue to address HAPs on a community level**
  - **Reduce HAPs**
  - **Continue to develop VOC analytical system**

Many thanks to:

- EPA – Community-Scale Air Toxics Ambient Monitoring Program
- Delaware DNREC-AQMS