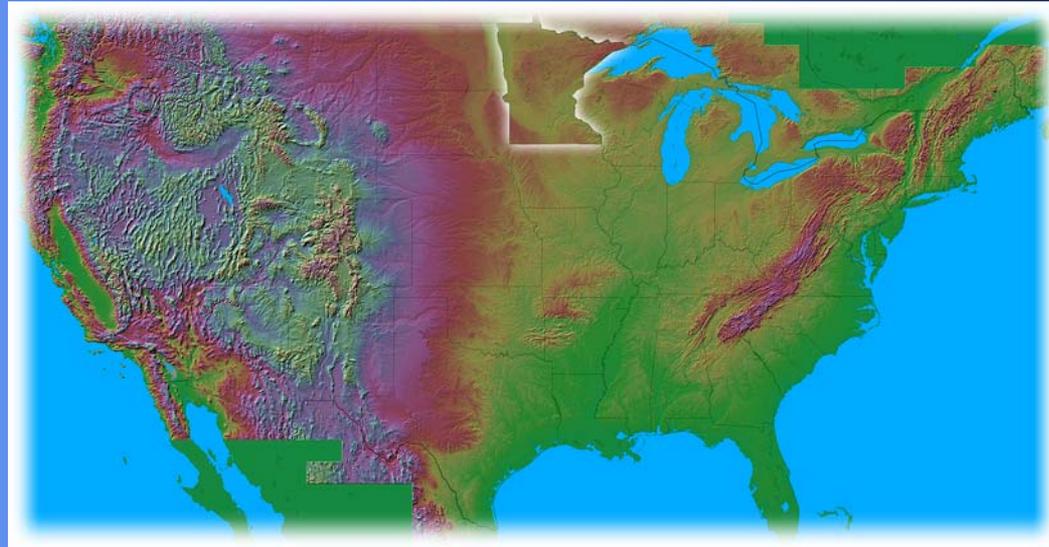


Emissions Inventory for Large-Scale Risk Assessments



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Lakes Environmental
Clearwater, FL – June 2004

Overview

- ◆ General Introduction
 - ◆ Why do it?
- ◆ Data “Quality” – Is It...?
 - ◆ Where is it coming from?
 - ◆ How “good” is it?
 - ◆ Interpolation
- ◆ Data Collection Quick & Easy
- ◆ Down the Road...

Why Do Risk Assessments?

- ◆ Identify the high-risk target groups
- ◆ Identify important emissions sources and toxics
- ◆ Plan and design facilities to minimize impacts
- ◆ Meet regulatory requirements
- ◆ Determine residual risk after MACT standard compliance

Traditional Assessments

- ◆ Focused on air toxics from point sources
- ◆ Applied to new and expanding facilities
- ◆ Time consuming and resource intensive
- ◆ Limited by scope

What Is Large-Scale RA

- ◆ All know sources (point, area, mobile, etc.) within the area of interest
- ◆ Multi-program/Cross media
- ◆ Receptor-based model
- ◆ Allocation using census/tract data

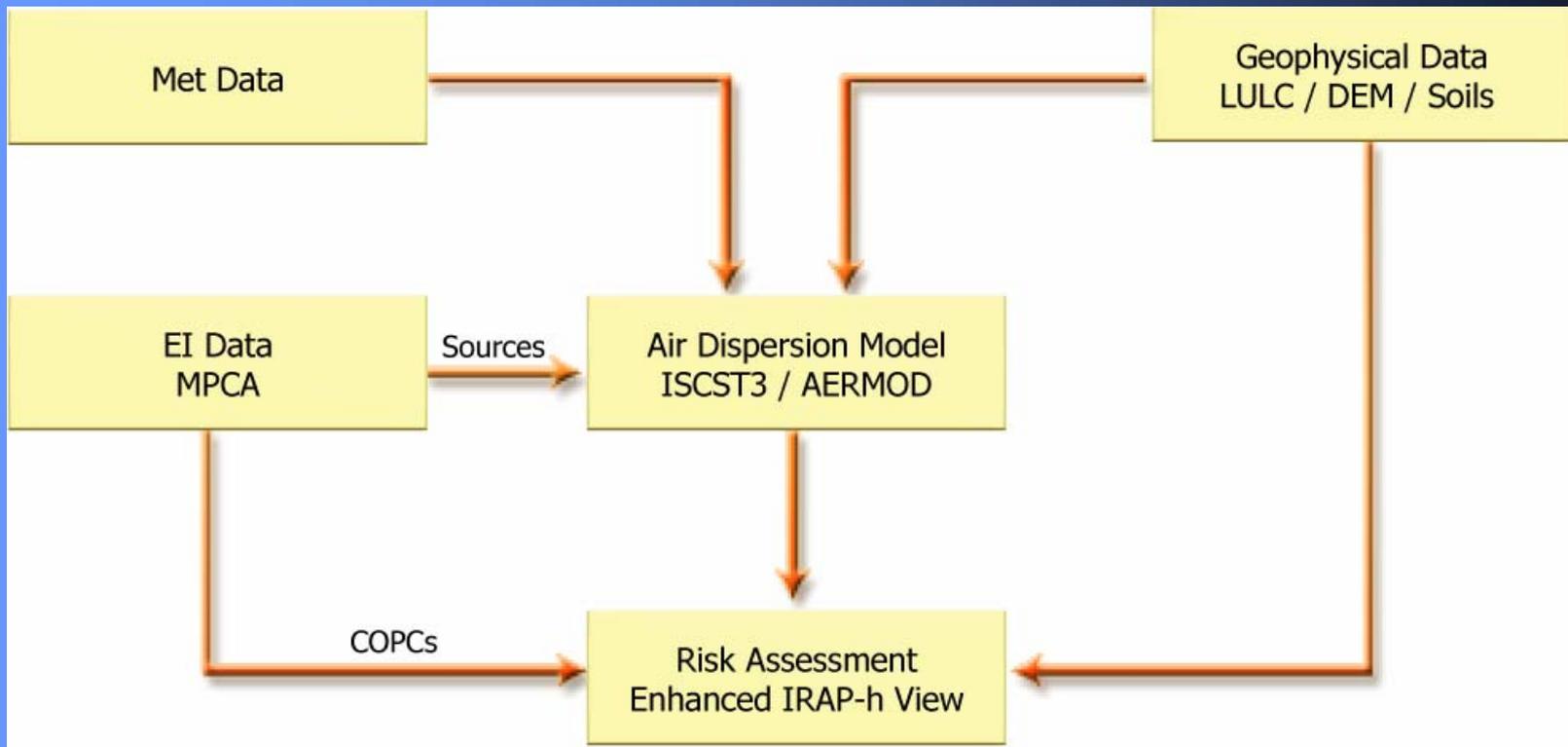
Applied Projects

- ◆ Minnesota Pollution Control Agency (MPCA)
 - ◆ Multi-source, multi-pathway cumulative risk-assessment study
- ◆ New Jersey Department of Environmental Justice (NJDEP)
 - ◆ Environmental justice solution

Inventory + Risk?

- ◆ Risk assessments require source data
- ◆ Source data is available in facility, county and state inventories
- ◆ Use inventory to populate model for assessment

Risk Assessment in a Nutshell



Air Modeling Source Data



Emissions Inventory Data Limitations

- ◆ Data collected does not consider risk assessment needs as part of the collection schema
- ◆ Limited building data (when available)
- ◆ Summed emissions for entire sites
- ◆ Emissions lumped into a single category (e.g., NMOCs)

Source Data Needs: Physical

- ◆ Stack Source
 - ◆ height, base elevation, inside diameter, exit velocity, exit temperature, control devices, location, base elevation
- ◆ Fugitive and Mobile Sources
 - ◆ area, release height, location, base elevation

Source Data Needs: Emissions

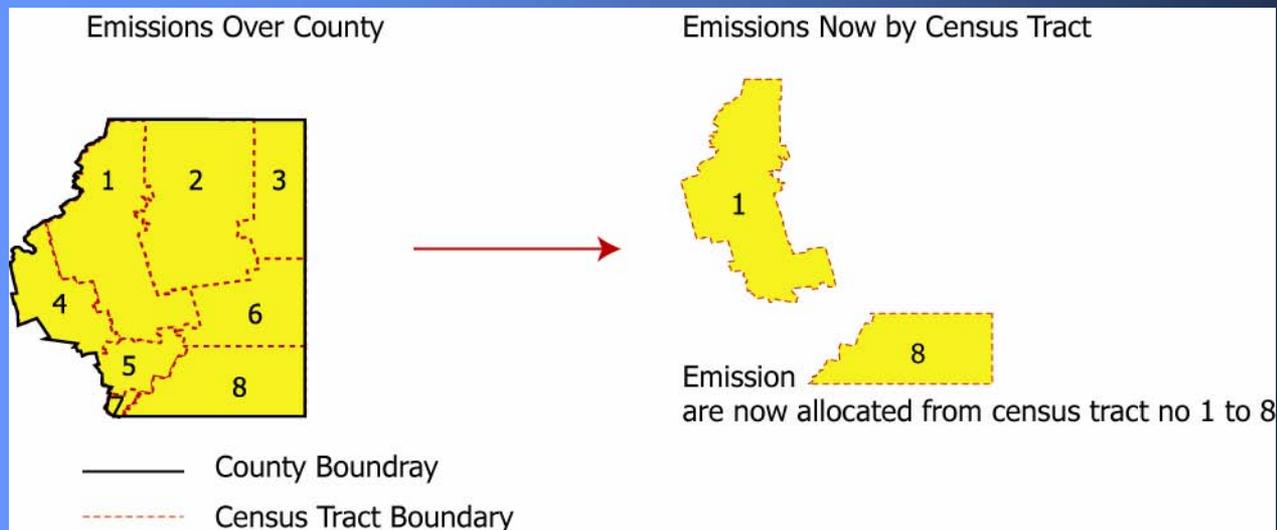
- ◆ Contaminant name and CAS number
- ◆ Speciated emissions rate(s), g/s

Characterization of Point Sources

- ◆ Location
 - ◆ Facility reported, GIS address matching
 - ◆ Centroid or front gate of facility
- ◆ Source Parameters
 - ◆ Regulatory agency files, average facility values, facility reported (where available)
- ◆ Source Emissions
 - ◆ Getting to that...

Characterization of Area Sources

- ◆ Allocated at the County/Census Tract level using emissions surrogates



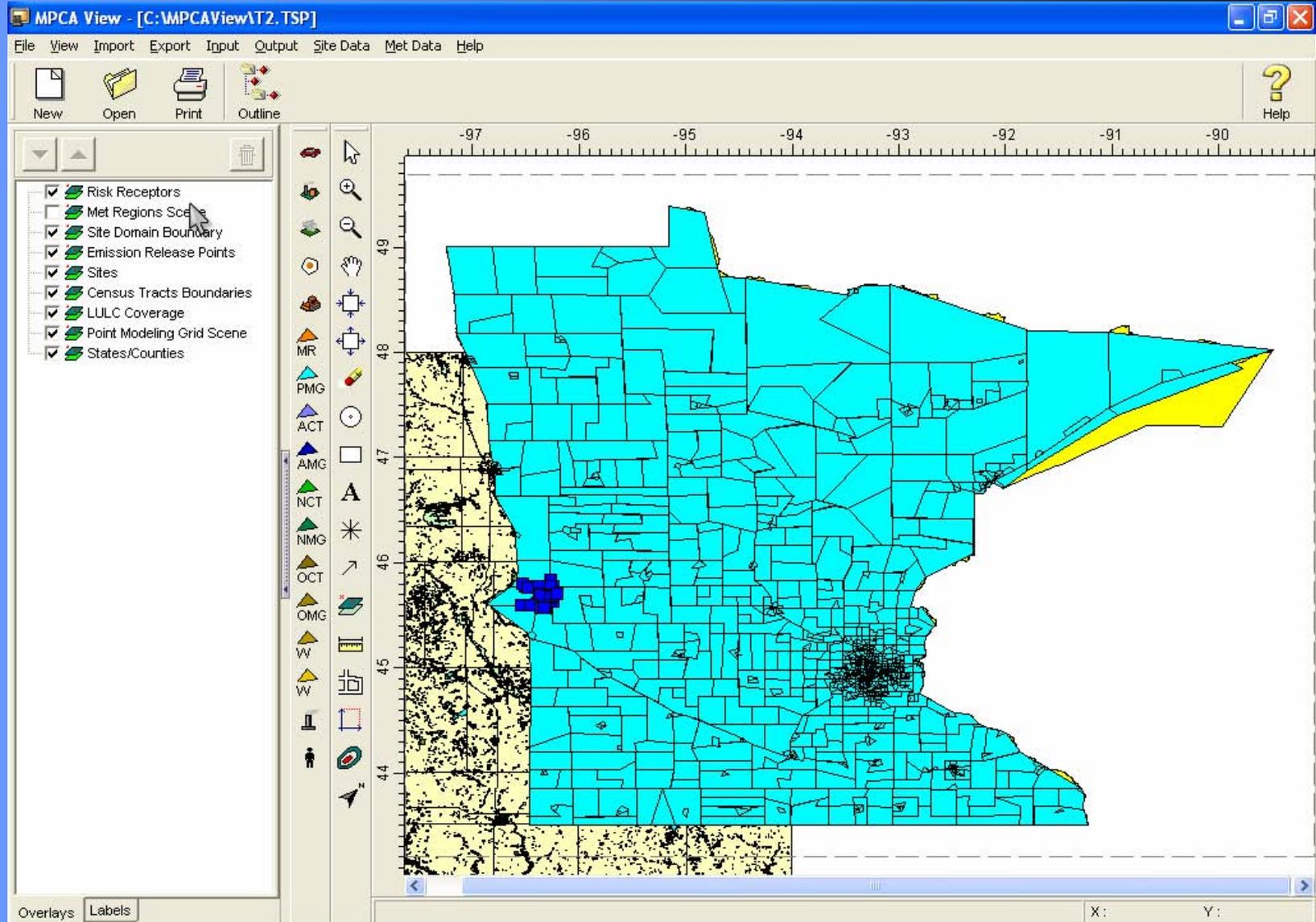
Emissions Data

- ◆ Use available emissions inventory data
 - ◆ Limited to what is actually reported
- ◆ Speciated data limitations
 - ◆ Speciate by specific contaminant
 - ◆ Speciate by contaminant class
 - ◆ Speciate by SCC process profiles

One Method: Environment Canada

- ◆ CAC2003
 - ◆ Use available facility reported data (VOCs)
 - ◆ Assign SCC(s) and materials used to source
 - ◆ Calculate emission using FIRE
 - ◆ Speciate VOC results using available SCC process profiles

Data Collection: Emissions View



Data Collection: Emissions View

The screenshot displays a software interface for data collection, divided into two main panes. The left pane, titled "Outline", shows a hierarchical tree structure of data sources. The right pane, titled "POINT SOURCES - Point Location: Traverse County - MN", provides configuration options for a specific point source.

Outline Structure:

- POINT SOURCES
 - Point Locations (1)
 - Point Location: Traverse County - MN
 - Sites (1)
 - Site: T2
 - Release Points (1)
 - Release Point: 1 : T21
 - Point Modeling Grid (1)
 - Point Modeling Grid: 2
 - Point Land-Use Sectors (1)
 - Point Land-Use Sectors: 1
 - Emission Units (1)
 - Emission Unit: t2
 - Processes (1)
 - Process: 2
 - Control Equipments (1)
 - Control Equipment: Benzene
 - Emission Periods (1)
 - Emission Period: Jan/1/03 - Dec/31/03
 - Emissions
- AREA SOURCES
- NON-ROAD MOBILE SOURCES
- ON-ROAD MOBILE SOURCES
- TRIBES
- STATES AND COUNTIES
- Met Regions (87)
- Waterbodies
- Watersheds
- Risk Receptors Location (4)
- Orphans

POINT SOURCES - Point Location: Traverse County - MN

Location | Transmittal Info | Transmittal Contact

Point Location

State FIPS:

Specify the Federal Information Processing Standards (FIPS) code for the State.

Minnesota 27 ...

County/Tribe Name:

Traverse County 155 ...

Tip



Specify above the State and County or Tribal Land for which emissions will be reported. The emissions inventory is grouped by source type (e.g., Point, Area, Non-Road, or On-Road) and by Location at the County or Tribal Land level.

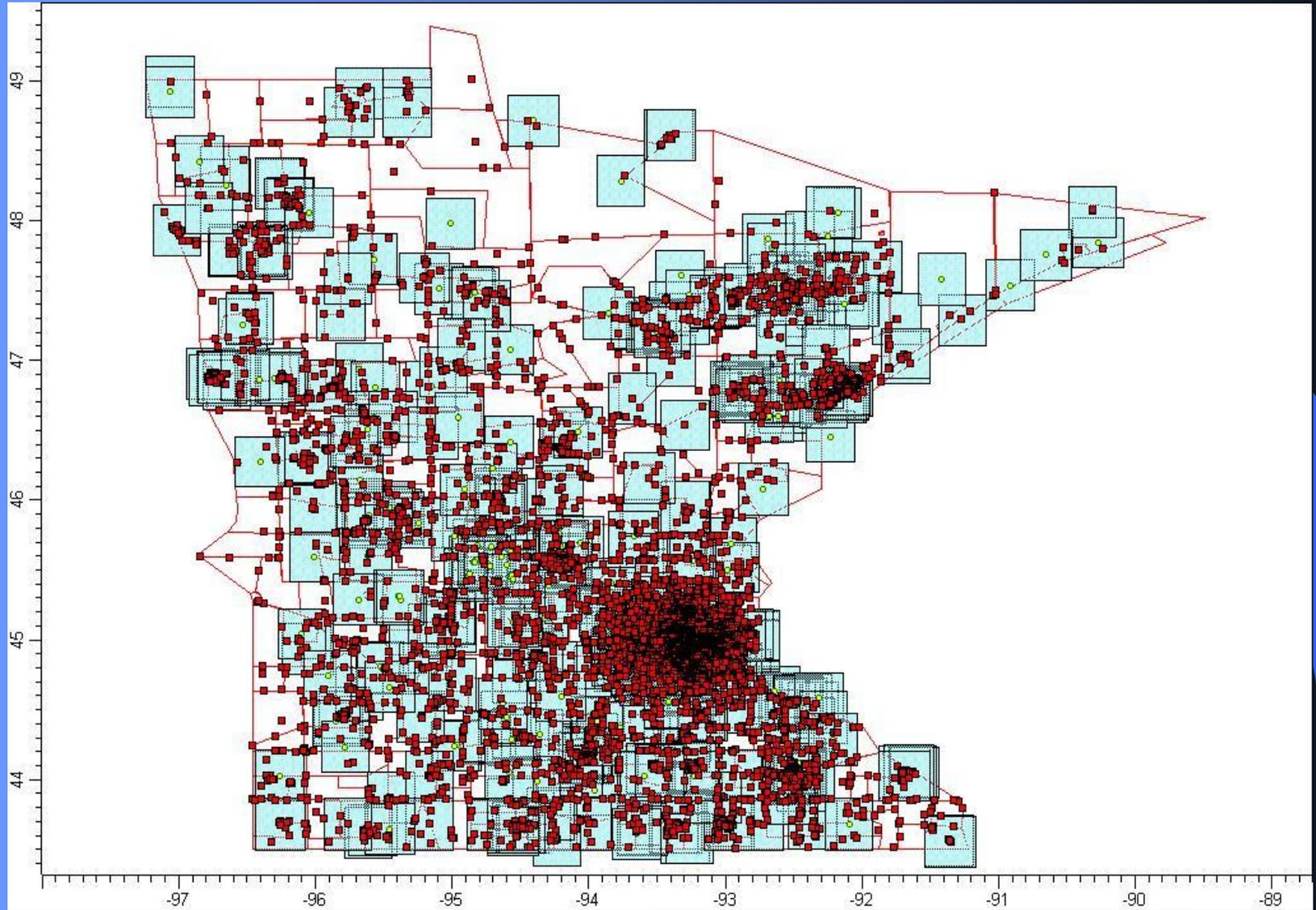
Help

Save

Cancel

Save and Exit

Risk Model: Visualization



Advantages of LSRA

- ◆ Impact studies account for as many background pollutants as possible
- ◆ Vulnerable groups/areas are identifiable
- ◆ Critical pollutants that are of major concern are placed into context
- ◆ Multi-pathway, thousands of sources
- ◆ Traceable allowing for evaluation and implementation of solutions

What Else?

- ◆ Background concentrations
 - ◆ Multi-year analysis
- ◆ Temporal influence
- ◆ Surround buildings
 - ◆ Building downwash effects
- ◆ Improvements in inventory collection
 - ◆ Implicitly defined individual sources

Questions?

Got any...?

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