

AIR TOXICS MONITORING NEWSLETTER

A PUBLICATION OF THE STAPPA/ALAPCO/SAMWG AIR TOXICS MONITORING WORKING GROUP

April 2003

The STAPPA/ALAPCO – USEPA/SAMWG Air Toxics Monitoring Working Group was established in 1999 for the purpose of developing technical recommendations on the development of a national air toxics monitoring network. Members include representatives from several states and local agencies (Vermont, New Jersey, Texas, Oregon, California, Puget Sound), multi-state organizations (LADCO), and USEPA (OAQPS and some Regional Offices). The Working Group decided in early 2000 that the national air toxics monitoring network should be “rolled-out” over a several year period. Recent activities related to the national network are discussed in this quarterly newsletter.

Allocation of FY03 Funds

On March 12, USEPA issued its final FY03 grant guidance for the allocation of \$3 million for the air toxics monitoring program. The final guidance calls for:

\$1.3 M for continuation of the initial 13-site trends network (see list below)

\$0.9 M for establishment of 9 new trends sites (see sites in bold in the list below)

\$0.08M for aethelometers at the new urban sites

\$0.12M for completion of the pilot city data analysis work

\$0.25M for new data analyses (see story below)

\$0.05M for the methods workshop (see story below)

\$0.30M for a community-scale monitoring study

It should be noted that planning for the community-scale monitoring study, which will be conducted in the Cincinnati-Dayton area, is currently underway. More information on this study will be presented in the next edition of this newsletter.

National Air Toxics Trends Stations

The first step in establishing the national air toxics monitoring network began in CY02 with the deployment of 13 initial trends sites. As noted above, an additional 9 trends sites have been identified. The 22-site network is as follows:

Region	Urban	Rural
I	E. Providence, RI Boston, MA	Chittendon, VT
II	New York, NY Rochester, NY	
III	Washington, DC	
IV	Decatur, GA Tampa, FL	Hazard, KY Chesterfield, SC
V	Detroit, MI Chicago, IL	Mayville, WI
VI	Houston, TX	Harrison Cty, TX
VII	St. Louis, MO	
VIII	Bountiful, UT	Grand Junction, CO
IX	San Jose, CA Phoenix, AZ	
X	Seattle, WA	Bend, OR

(Note: the 9 new sites are identified in bold above)

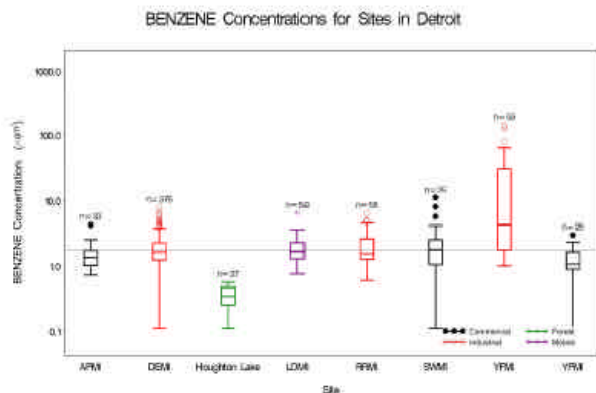


Map of National Air Toxics Trends Sites

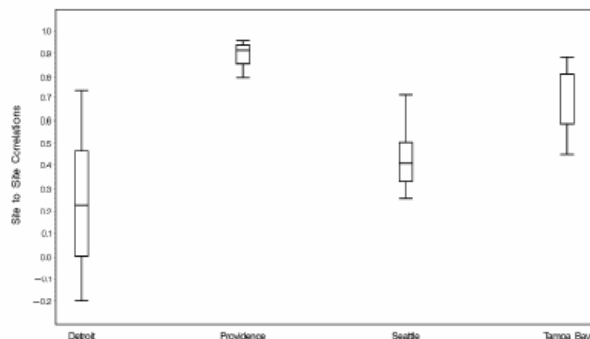
Analysis of Pilot City Data

With a near complete pilot city database, Battelle and STI have conducted a number of analyses over the past few months, including efforts to understand some of the measurement uncertainties observed in the pilot data and to quantify the spatial and temporal variability observed within and between pilot cities. Recent results are presented below.

First, case studies have been performed to understand site-to-site and city-to-city spatial variations in daily concentrations for benzene, formaldehyde, and chromium TSP in Providence, Tampa, Detroit, and Seattle. Benzene concentrations in Detroit, for example, were found to be quite variable from site-to-site, whereas those in Providence were found to be more similar (see figures below).

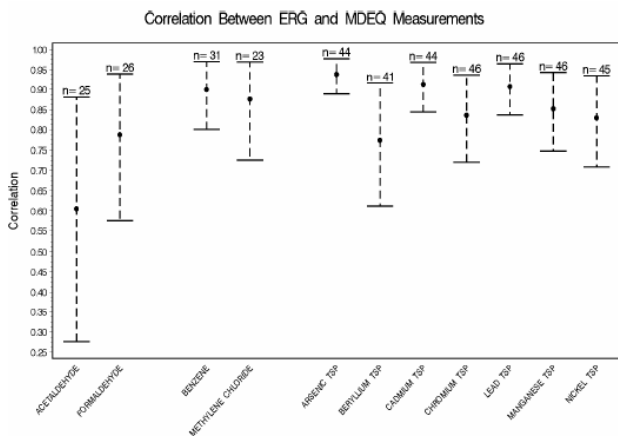


Correlation of Daily Average Benzene Concentrations Between Sites



Benzene Concentrations for Sites in Detroit (top) and Correlation of Daily Average Benzene Concentrations Between Sites (bottom)

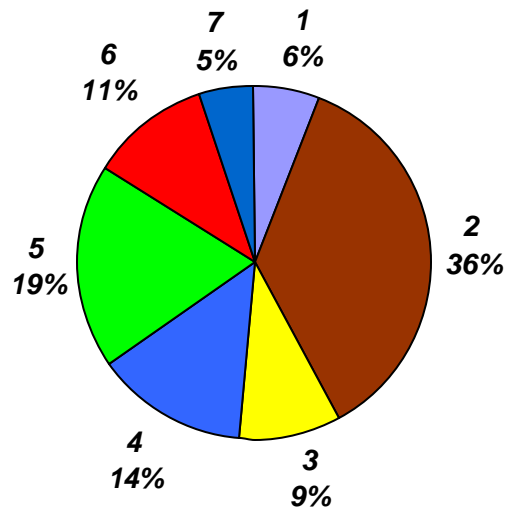
Second, concentrations from co-located samples collected in Detroit analyzed by two different labs (i.e., split samples) were compared to assess the uncertainty between labs. As seen in the figure below, the correlation between the two labs (i.e., ERG and MDEQ) was reasonable (greater than 80%) for most species, with the exception of acetaldehyde.



Correlation Between ERG and MDEQ Measurements

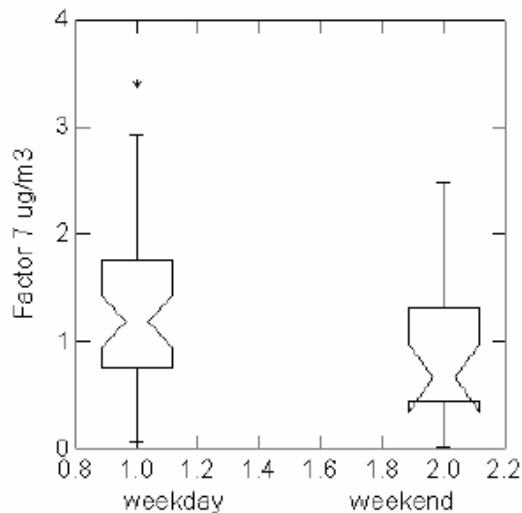
Third, source apportionment tools have been applied to identify source contributions using data collected in Detroit. The pie chart below shows the average

percent contribution to fine particle mass for the seven “sources” identified by the PMF statistical model. Source 1, which was identified as motor vehicles, and Source 7, which was identified as diesel, each contribute about 5% to annual average fine particle mass concentrations.



Average % of Total Fine Particle Mass by PMF “Sources” at Allen Park, MI Site

The concentrations associated with Source 7 (diesel) were found to vary significantly between weekdays and weekend days (see figure below), which may further support the identification of this source.



“Source” 7 Concentrations by Weekday and Weekend Day for Allen Park, MI Site

An executive summary of draft network design recommendations will be available in early May prior to the data analysis workshop (see story below). A draft report should be available in June for review, and a final report will be prepared this summer to address comments on the draft report and comments provided during the workshop.

New Air Toxics Data Analyses

A wealth of air toxics monitoring data has been collected by state and local agencies (e.g., more than 270 monitoring sites operated in 2002, according to the April 30, 2002 STAPPA/ALAPCO survey) and pursuant to the national air toxics monitoring program (e.g., 38 sites in 10 cities as part of the pilot monitoring project). To date, only limited analyses of these data have been conducted, such as the review of historical state and local data in the air toxics archive that was performed by Battelle and STI to provide recommendations concerning the design of the national air toxics monitoring.

Additional analyses are desired to address the key objectives of the national air toxics monitoring program (i.e., air quality characterization and support modeling). The following new analyses will be performed to address these objectives and make additional use of air toxics monitoring data.

Air Quality Characterization: A review of existing data (that are of sufficient quality) is desired to characterize community-scale air toxics concentrations. The purpose of this activity is to assess and report “what the data are telling us” about community-scale air toxics concentrations across the U.S. based on available measurements. Case studies for as many cities/areas with adequate data as possible should be conducted to develop a conceptual model of air toxics concentrations in these cities/areas. To the extent possible, this air quality characterization should also provide information about any relevant source-oriented measurements (e.g., impacts from mobile sources, airports, and industrial sources).

Model Evaluation: Air quality models have been used for several years as a planning tool for criteria pollutants, and are starting to get used for air toxics (e.g., residual risk analyses). The purpose of this activity is to evaluate the performance of one or more air quality models using data from two pilot cities: Detroit and Seattle. The modeling should be performed using representative meteorological data and updated emissions inventories supplied for these areas, and should, to the extent possible, complement on-going model evaluation analyses conducted by USEPA as part of their NATA modeling. For example, these analyses could rely on similar modeling tools, but improved (higher resolution) model inputs, such as emissions. Graphical and statistical comparisons of modeled and measured data should be provided, along with recommendations for future model improvements and evaluations.

Air Toxics Workshops

Please mark your calendar for May 13 – 14 for a workshop to review the results of the pilot city data analysis. The workshop will be held at the Sheraton Gateway Suites (Chicago O’Hare Airport) in Rosemont, Illinois. The workshop will begin at 9:00 am CDT on May 13 and conclude on May 14 at noon CDT. The first day will include presentations by Battelle and STI on their data analyses. The second day will include presentations by a number of the pilot city contacts. Time will also be spent on the second day to review the on-going national air toxics monitoring (i.e., NATTS) and plans for future air toxics monitoring.

Also, planning is underway for a workshop later this year to discuss monitoring methods for air toxic compounds. The purposes of the workshop are to provide state and local agency monitoring personnel with an opportunity to share their experiences with air toxics monitoring and to develop recommendations on effective, practical air toxics monitoring methods. A formal announcement for this workshop will be issued soon.

For information on the national monitoring pilot project and national network, please contact Sharon Nizich, USEPA, OAQPS, nizich.sharon@epa.gov, 919-541-2825. For information on the data analysis project, please contact Michael Koerber, LADCO, koerber@ladco.org, 847-296-2181. This newsletter is issued on a regular (quarterly) basis to provide status reports on air toxics monitoring activities.