AIR TOXICS MONITORING NEWSLETTER

A PUBLICATION OF THE STAPPA/ALAPCO/USEPA AIR TOXICS MONITORING STEERING COMMITTEE

July 2001

National Air Toxics Monitoring Program

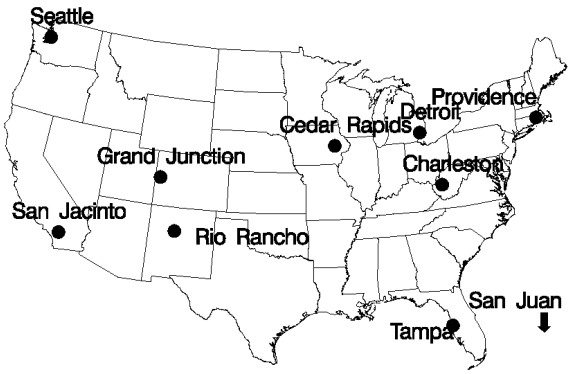
Two major projects are underway as part of the first year of national air toxics monitoring:

1. Pilot monitoring programs in four urban areas and six small city/rural areas; and

2. Analysis of existing (and the new pilot project) air toxics monitoring data.

The U.S. Environmental Protection Agency (USEPA) provided $3 million in FY2000 money for these two projects. The status of these projects is summarized below. In addition, USEPA provided another $3 million in FY2001 money for additional monitoring projects by state and local agencies. These new projects are also summarized below.

2001 Monitoring Pilot Project: The pilot project is intended to generate information on the spatial and temporal variability of ambient air toxics concentrations. Ten state and local agencies are participating in the project (see map below).



Map of Ten Cities in 2001 Monitoring Pilot Project

Monitoring in three of the cities (Tampa, San Jacinto, and Cedar Rapids) began in January, but the remaining 7 cities had various delays, bringing their start dates into the second quarter. Preliminary data indicate no big surprises so far in concentrations and variability. All sites will provide at least 12 months of data. Sampling is being conducted on primarily a 1-in-6 day frequency in the four urban areas, and a 1-in-12 day frequency in the six small city/rural areas. Each area will sample for at least 18 "core" VOCs, carbonyls, and metals. The data will be analyzed as part of the air toxics data analysis project.

2002 Monitoring Projects: In February 2001, USEPA issued guidance on the allocation of $3 million in FY2001 money. An equal amount of funds were provided for monitoring projects by state and local agencies in each of the 10 USEPA regions (i.e., $273K each). (Note, the remaining money was set aside for the four urban area pilot cities and other miscellaneous activities.) The funds are intended to support initial deployment of the national network, not more pilot cities. A summary of the approved monitoring projects is as follows:

Region I – (a) RI – continuation of one of the Providence pilot sites for trends purposes; (b) NH – addition of carbonyl measurements to existing VOC sites and Hg deposition monitoring; (c) MA – data analysis

Region II – NJ - mobile platform for sampling

Region III – A regional network is planned to better characterize multi-state conditions, and includes five states and 3 local agencies.

Region IV – (a) AL – additional resources for planned monitoring project in Mobile; (b) NC – mobile platform for sampling in Charlotte; (c) MS – new monitoring site along Gulf Coast

Region V – Similar to Region III, a regional network is planned to better characterize multi-state conditions, and includes five states and 1 local agency.

Region VI – (a) AR – new monitoring sites in Little Rock and West Memphis; (b) NM – new monitoring sites in Albuquerque and Santa Fe

Region VII – (a) MO – additional sampling at existing sites in St. Louis; (b) IA – continuation of the Cedar Rapids pilot site for trends purposes; (c) NE – new monitoring site in Lincoln

Region VIII – (a) CO – two new monitoring sites in Denver, Front Range; (b) UT – adding metals and carbonyl sampling to an existing site

Region IX – (a) AZ – data analysis and some new toxics sampling; (b) CA – two new monitoring sites in San Diego, data analysis in South Coast, and audits for San Jacinto; (c) HI – new monitoring site

Region X – (a) SA – continuation of two of the Seattle pilot city sites for trends purposes; (b) OR – new monitoring site in Portland.

This new monitoring will be conducted during calendar year 2002, although a few states will begin this summer. The monitoring will follow the general protocols developed as part of the pilot city project, and will incorporate, to the extent possible, any information which becomes available from the monitoring pilot and data analysis projects.

Air Toxics Data Analysis Project: The data analysis project is intended to "mine" the existing data to provide information about the spatial pattern, temporal profile, and general characteristics of air toxics compounds. The project is being performed by Battelle Memorial Institute and Sonoma Technology, Inc., under contract to LADCO.

A number of statistical and graphical analyses have been completed or are underway to address issues such as sampling frequency, spatial variability, temporal variability, emissions patterns, urbanicity, trace metal composition, compound comparisons, and minimum detection levels (MDLs). Three findings with important network implications are:

- In most cases, a site-specific annual average concentration (for VOCs, carbonyls, and metals) can be estimated with less than 10 percent relative error using every-third to every-sixth day sampling. A more frequent sampling schedule (i.e., every third-day) is recommended for higher concentration, source-oriented sites.

- Overall data variability at a given monitoring site over the course of a year is mostly driven by its temporal component. At low concentrations (i.e., < 0.5 ppbv), however, the temporal and other components of variability dissipate and analytical variability takes over.

- Numerous case studies demonstrate that in most cases spatial variability is a relatively small fraction of total variability. This suggests that measurements taken at one location in a city may adequately represent other locations in the city. The only exception appears to be if there is a significant local point source, which can produce higher, local concentrations.

Upcoming milestones include an updated version of the web page, a preliminary draft report in mid-August, and an updated data report in late September.

To supplement Battelle's data analysis work, ICF Consulting is analyzing air toxics modeling data. Specifically, ICF will examine the spatial, seasonal, daily, and diurnal variability of air toxics concentrations from USEPA's recent ASPEN modeling performed as part of their National Air Toxics Assessment and a special ISCST modeling analysis by USEPA. Pollutants and cities of interest include:

Houston:	TCE, benzene, 1,3-butadiene
Minneapolis:	formaldehyde, lead (tsp), benzene
Baltimore:	TCE, benzene, 1,3-butadiene

ICF will provide recommendations on network design based on their analysis of the modeling data (and monitoring data) and will address how states and locals can use the ASPEN modeling (in conjunction with other information) to help design air toxics monitoring networks.

Chicago O'Hare Airport Air Toxics Monitoring Program

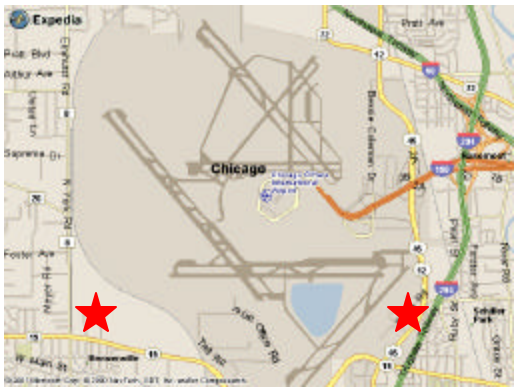
As planning for the national air toxics monitoring network proceeds, several state/local agencies will continue to operate their own air toxics monitoring programs. A special study by the Illinois EPA around Chicago's O'Hare Airport is discussed here. (Other state/local programs will be discussed in future editions of the newsletter.)

As part of Chicago O'Hare Air Toxics Monitoring Program, the Illinois EPA collected samples during the period of June-December 2000 at five locations in the Chicago Metropolitan Area. The monitoring program focused on the urban air toxic compounds identified in USEPA's National Integrated Urban Air Toxics Strategy and on mobile source emissions associated with airport operations. The compounds sampled included volatile organics, semi-volatile organics, carbonyls, and trace metals.

The air toxics monitoring program as deployed was designed to provide data to meet four objectives:

1. determine typical concentrations of specific compounds of concern;
2. describe pollutant levels at various locations across the area, assess their geographic variability, and perform a comparison of the levels of air toxics found at the O'Hare sites to other sites in the Chicago area;
3. provide results consistent with nationally available air toxics information that would allow a comparison of Chicago area results to data collected for other large U.S. cities; and
4. determine if the emissions from O'Hare Airport have a measurable impact on air quality in areas adjacent to the airport.

The program's sampling sites were located at different points within the metropolitan area with two sites located near O'Hare Airport (Bensenville and Schiller Park - see map below), one site located in Northbrook just north of the urban core, one site at Chicago-Washington in highly industrialized Southeast Chicago, and one site in Lemont just downwind of major refineries/chemical complexes and on the southwestern edge of the metropolitan area.



Air Toxics Monitoring Sites near O'Hare Airport

The Illinois EPA is expected to release a report on the results of the program in the next several weeks.

October Air Toxics Workshop

On October 29 – 30, 20001, a workshop will be held in Rosemont, IL (near Chicago's O'Hare Airport) to review the results (to date) from the 2001 monitoring pilot projects and Battelle's data analysis work. The workshop will begin at 1:00 pm CST on Monday, October 29. The first half-day of the workshop will include reports from each of the 10 pilot city areas. The second full day will include reports from Battelle on their data analyses. The workshop will end at 5:00 pm CST on Tuesday, October 30. To register for the workshop, please contact Winnie Leva, LADCO, leva@ladco.org, 847-296-2181.

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