

AIR TOXICS MONITORING NEWSLETTER

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

April 2002

The STAPPA/ALAPCO – USEPA Air Toxics Steering Committee was established in 1999 for the purpose of overseeing the development of a national air toxics monitoring network. Members include representatives from several states and local agencies (Vermont, Massachusetts, New Jersey, Texas, Oregon, California, South Coast, Puget Sound), multi-state organizations (NESCAUM and LADCO), and USEPA (OAQPS and certain Regional Offices). The Steering Committee 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.

FY02 Grant Guidance

On March 1, 2002, USEPA issued guidance for the allocation of \$3 million in FY2002 money to support national air toxics monitoring activities. Based on the Air Toxics Monitoring Steering Committee’s recommendations and the approval of the STAPPA/ALAPCO Board of Directors, these funds will be used to:

- (1) analyze data from the 10 pilot cities,,
- (2) perform an inter-lab comparability study,
- (3) establish an initial national trends network,
- (4) aid existing state monitoring efforts, and
- (5) assist three pilot cities to continue or enhance measurements.

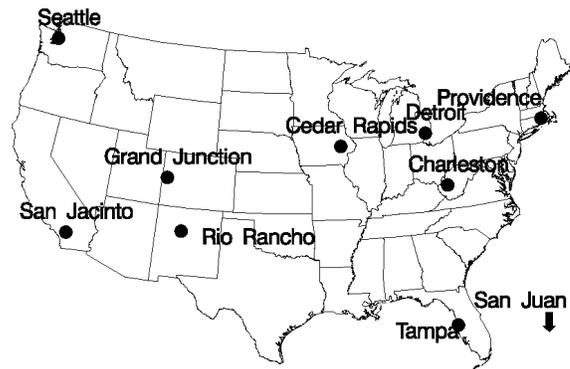
The funding allocation for these activities is as follows:

Data Analysis	\$430K
Inter-lab Study	50K
Initial Trends Sites	800K
State Monitoring	1,600K
Pilot City Assistance	<u>120K</u>
	\$3,000K

This allocation provides funds for all 50 states: 80K each for 10 states to operate an initial trends site, and 40K each for the other 40 states to support air toxics monitoring activities. Any of this funding that is not applied for will be reallocated to support the establishment of additional trends sites. Further discussion of the data analysis activities and the initial trends sites is provided below.

Status of Pilot City Monitoring

The pilot city monitoring project began in 2001 and is scheduled to include at least 12 months of sampling in four urban areas and six small city/rural areas (see map below). This program is intended to help answer several important network design questions (e.g., sampling and analysis precision, sources of variability, minimum detection levels, and elemental carbon v. diesel emissions.)



Map of Ten Cities in Monitoring Pilot Project

The status of the sampling in each area is as follows:

Area	Completion Date
Providence	May 2002 (one site will continue to operate)
Tampa	January 2002 (two sites will continue to operate)
Detroit	April 2002 (one site will continue to operate)
Seattle	February 2002 (two sites will continue to operate)
Charleston (Keeney Knob)	August 2002
San Juan	August 2002
Cedar Rapids	January 2002 (one site will continue to operate)
Rio Rancho	August 2002
Grand Junction	May 2002
San Jacinto	January 2002

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.

Analysis of Pilot City Data

The data analysis project is intended to "mine" the monitoring data to provide information about the spatial pattern, temporal profile, and general characteristics of air toxics compounds, and to develop recommendations concerning network design.

The first phase of this project, which was performed by Battelle Memorial Institute and Sonoma Technology, Inc., under contract to LADCO, consisted of an analysis of existing state/local data. A draft final report was delivered in September 2001 and the results of this work were presented in a workshop in October 2001. In view of the limitations of the existing data, these analyses cannot provide any definitive recommendations about network design. More specific recommendations must await the completion of the pilot city data analyses.

The second phase of this project is to analyze the new pilot city data. The following tasks will be performed as part of this next phase:

- (1) **Compile and Quality Assure Data**
This task consists of acquiring the pilot city data and performing a cursory (quality assurance) review of these data.
- (2) **Assess Inter-lab Variability**
This task will compare the laboratory results by analysis of the "split" samples, the relative distribution of non-detects by lab, and the precision for each compound by lab.
- (3) **MDL and Reporting**
This task will use the complete set of reported data to assess the sensitivity of using actual data below the MDL v. using various alternative techniques.
- (4) **Monitoring Data Variability**
This task will address the different sources of variability (i.e., environmental spatial and temporal, and monitoring sampling and analytical). Case studies will be performed for each of the 10 pilot cities. Sampling and analysis precision will also be examined.
- (5) **Other Analyses**
Several additional analyses may be performed, including trace metal composition v. particle size, elemental carbon v. diesel particulate, hexavalent chromium v. total chromium, and seasonal variability.

- (6) **Reporting**

This task will include regular monthly status calls, a draft and final written report (by late 2002/early 2003), and presentation of the results at a national workshop in early 2003.

Initial Trends Network

The initial national network will reflect a limited number of trends sites (approximately 10 - 20 sites). More trends sites will be added in future years of the program. Given the large number of state and local air toxics monitoring sites, as well as the many new sites established pursuant to the first and second year monitoring activities, it is felt that most of the trends sites can rely on the existing infrastructure, although modifications may be needed to meet the national monitoring protocols. The basic elements of the initial trends network are as follows:

Objectives: Estimate annual average values and associated trends, with spatial resolution to regional-scale and temporal resolution to quarterly-scale.

Pollutants: The network should ensure that those compounds which pose the greatest risk are measured. To this end, the 1996 NATA data show that only a few compounds contribute nationally to widespread cancer and/or non-cancer risk. The most prominent are benzene, formaldehyde, acrolein, and chromium. Current monitoring methods for these compounds will also yield data for a number of other compounds. Co-location with other measurements is also highly desirable (e.g., PM_{2.5}-speciation). It should be noted that methods for acrolein and chromium capture is currently under investigation by USEPA. A new method for acrolein may be field-tested at some of the trends sites. In addition, because diesel particulate matter is another compound of concern, \$20,000 (from PM_{2.5} monitoring program funds) will be awarded to each of the initial trends sites to purchase an aethalometer to obtain elemental carbon data, which is an indicator of diesel emissions.

Siting: The trends sites should be distributed across the country and should be focused on representative urban areas, but also include representative rural and regional background locations. Trends sites should be situated in areas that are not source specific, including siting away from any predominant mobile or point source-specific influences.

Sampling Duration and Frequency: Sampling should begin in late FY02 or early FY03 and extend for at least 12 consecutive months. Sampling will be conducted on at least a 1-in-12 day schedule. (Continuation of the trends sites beyond this 12-month period is expected, although the funds for this additional monitoring will need to be addressed in next year's funding allocation.)

Protocols: Monitoring shall conform to protocols as specified in "USEPA FY2000 State and Local Agency Grant Guidance and Allocation, National Air Toxics Monitoring Pilot Program", July 2000 and "Pilot City Air Toxics Measurements Summary", EPA/454 R-01-003, February, 2001.

Data Quality Objectives and Technical Guidance Documents are being prepared through this summer and fall. These documents will outline the necessary field method and laboratory measurement protocols for the national trends network.

To identify the location of the initial trends sites, Battelle performed a stratified sampling analysis using USEPA's NATA data. These data were stratified by USEPA Region (to provide geographic representativeness) and by urban v. rural areas (to ensure a full range of concentrations). (Note, for the rural areas, some EPA Regions were grouped given similar concentration levels and low data variability.) Based on this analysis, it was recommended that an initial 20-site network consist of at least 10 urban sites (one in each EPA Region); at least six rural sites (one each in EPA Regions 1/2, 3/4, 5, 6, 7/8, 9/10); plus an additional urban site in EPA Regions 2, 9, 5, and 4 (in that order). A list of candidate sites was prepared in accordance with these recommendations, with special attention to existing PM_{2.5}-speciation and air toxics monitoring sites. After discussions with the EPA Regional Offices (and affected state and local agencies), the following list of initial trends sites were identified (see also figure below):

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

The funding priorities are to first establish the 11 urban sites and, if there are additional funds available, then the six rural sites. A decision will be made on appropriate additional urban sites in EPA Regions 2, 9, 5, and 4, if further funds become available.



Map of Recommended Initial Trends Sites

For information on the monitoring pilot project, 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.