

AIR TOXICS MONITORING NEWSLETTER

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

October 2001

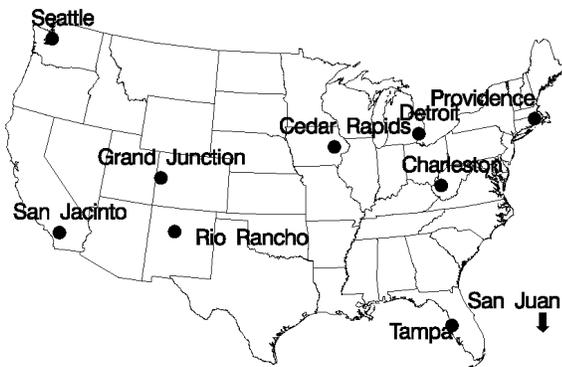
National Air Toxics Monitoring Program

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 2001 pilot project, which is being funded out of the FY2000 money, 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

All 10 pilot cities are monitoring on their planned schedules. Two of the "small" cities, Rio Rancho NM and Keeney Knob, WV, had multiple equipment and weather problems and thus their start dates were delayed into August. Operations for the Detroit pilot were transferred to the state of Michigan, due to the closure of the Wayne County Air Monitoring Group. 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 is sampling for at least 18 "core" VOCs,

carbonyls, and metals. (Several small cities are not monitoring for metals, however.) Preliminary data collected has not shown any surprises. The data will be included in the air toxics data analysis project discussed below.

2002 Monitoring Projects: The 2002 projects, which are being funded out of the FY2001 money, are scheduled to begin monitoring in January 2002 (refer to the July newsletter for background on these sites.) Some work has already begun, however, with the Mobile, Alabama and Mississippi projects. All data from these projects will be uploaded to AIRS and will aid in network design decisions.

FY2002 Funding: The Air Toxics Monitoring Steering Committee meets October 31 to formulate plans for the \$3 million grant allocation of FY2002 funds. Grant guidance will be developed soon thereafter and distributed to the Regions. The January newsletter will include information on this outcome.

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

Draft reports were received from Battelle/STI and ICF in September 2001. Based on the draft reports, several key findings should be noted:

- A nationally-consistent monitoring network is needed with common sampling and analysis procedures, a common set of compounds, and common data reporting. This network must reflect the following monitoring objectives:
 - characterize ambient concentrations;
 - support modeling; and
 - assess trends.

To address all these needs, a nested approach with a national "core" set of monitors is recommended. The network of core monitors may not be sufficient to

address local concerns, in which case a strategic planning decision must be made as to whether monitoring for local concerns should be a component of the national program/network, or an activity that should remain at the discretion and funding of state and local agencies, as it has been in the past.

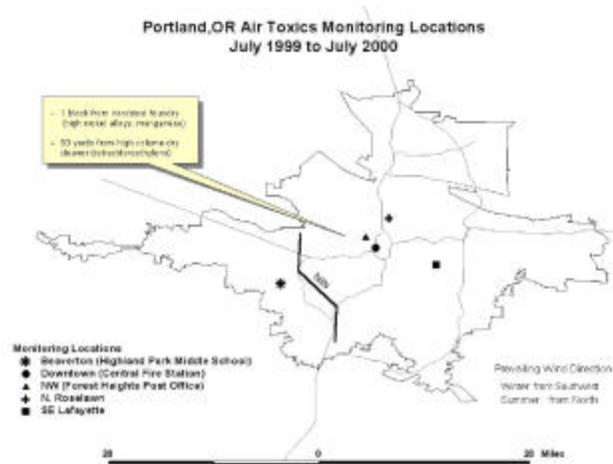
- In the absence of local major point sources, very few monitoring stations (possibly only one) may be needed to meet the objective of characterizing annual average concentrations across an urban area.
- Monitor siting should consider all available local information, especially any reliable modeling data, current emissions inventories, and representative wind data. ASPEN modeling, in particular, can be used to help establish neighborhood- or urban/regional-scale monitors.
- Mobile monitoring stations provide a cost-effective, flexible approach to measuring ambient concentrations over a wider geographic area (as compared to fixed monitoring stations).
- To provide a reliable annual average concentration, sampling should be performed year-round for a 24-hour period (midnight-to-midnight) at least every sixth day (or every third day for higher concentration or source-oriented sites).
- A basic suite of air toxics compounds (e.g., the 18 compounds of interest in the pilot city monitoring) can be measured adequately with current monitoring methods. To measure other compounds of interest, it will be necessary to develop more cost-effective, practical methods.

This analysis of existing air toxics data represents an important first step in developing network recommendations. Additional steps include completion of the full year of pilot city monitoring in all 10 areas (which should be done by summer 2002), a thorough analysis of these data (which can be done by late 2002), and consideration of any additional material, such as updated emissions inventories and modeling, and information on current monitoring methods. Of course, implementation of a national (as well as a regional and local) monitoring network is expected to require substantial resources. It is unclear exactly how much this would cost or how it will be paid for.

Portland 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. The existing monitoring network operated by the State of Oregon in Portland is discussed here. (Other state/local programs will be discussed in future editions of the newsletter.)

The State of Oregon collected data from July 1999 through July 2000 at five sites relying on one-time-only grant funds. Volatile organics, semi-volatile organics, carbonyls, and total suspended particulate trace metals were measured on a 1-in-6 day sampling schedule. All of the sites were deployed within the Portland urban area (shown on the map below) in residential and/or commercial areas where significant population exposures would occur.



Map of Monitoring Sites in Portland, Oregon

Characterizing air quality with respect to air toxics, in order to provide (measured) data to the citizens of Portland, was the primary objective of the project. Finding a single site that might be considered representative of the urban area, and could be used for trend analysis, was also an important objective of the study.

After initial examination of the data, it was evident that no one site stood out as being universally representative. Relatively simple correlation analyses done by both EPA Region X and Oregon DEQ staff pointed to some sites being better predictors for some key organics, but showed little correlation between sites for the metals. In general, the N/NE and SE sites were more typical of residential exposure to mobile and area sources, while pollutant levels were generally higher at the NW and N/NE sites. The NW site was closest to a large concentration of industrial sources located near the confluence of the Willamette and Columbia Rivers. Overall, the N/NE site was chosen for the Portland trend site, as it seemed to best meet the objective of

a residential neighborhood-scale site with relatively high levels of toxic air pollution resulting from a variety of sources. The monitoring results were presented at two community meetings, and the process used to select the trend site was described. An opportunity to provide additional information or arguments for either supporting that selection, or recommending an alternative, resulted in several comments, but no change was made in the initial selection of the N/NE site.

These Portland project data were used by Battelle as one of the case studies. The Battelle analysis also suggests that local emissions sources contribute to local spatial variability, but in the absence of these sources, the spatial gradients are so flat, especially on an annual basis, that little information is to be gained from adding more sites. Their analysis also indicates that what is a source-oriented site for some compounds may not be so for others, suggesting a potential need to monitor different compounds (or classes of compounds) at different sites in some cases.

Because Oregon has no stable source of funding for an air toxics monitoring network, it will have to continue to rely on project-specific grants to keep operating in the foreseeable future and needs to find economic ways to do that. Oregon DEQ found another one-time grant to support the Portland site in 2001, and will use funding from the national FY01 grant to continue monitoring in 2002.
(Thanks to Gregg Lande, Oregon DEQ for this article.)

October Air Toxics Workshop

On October 29 – 30, 2000, 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 the 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 and ICF 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 projects, please contact Sharon Nizich, USEPA, OAQPS, nizich.sharon@epamail.epa.gov, 919-541-2825. For further information on the data analysis projects, 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.