

Appendix A - Recommendations to the Clean Air Coalition Western New York for Optimizing the Personal Air Monitoring

Placement of personal air monitors

One way your study could complement our monitoring study would be to focus your personal air monitoring on outdoor sources. Personal air monitors generally focus on capturing an individual's exposure, which is complicated because it includes indoor and outdoor sources and sources remote from their home location area when that individual travels about their day. Since our study is focused on sources in the neighborhood of the fixed-site monitor locations, personal air monitoring focused on outdoor sources could potentially provide useful information about the spatial distribution of pollutant sources which may help us when we investigate which sources contribute to specific pollutant levels. Therefore, we thought if each volunteer were given two badges, one could be used to capture outdoor source exposures with the badges placed in the following arrangement:

- One badge would be worn by the individual and would reflect personal exposure as it would capture both indoor and outdoor sources.
- One badge would be placed outside the home, not near home-based sources (such as a car, garage, outdoor gas-powered equipment, dryer vent). This badge could be useful to compare to our fixed-site monitoring.

Optimizing the detection limit

A US EPA study conducted in the Houston-Galveston area of Texas¹, evaluated increasing the sampling time of personal air monitors (3M 3500 Organic Vapor Monitor) to improve the detection limit. Many of the air toxics in their study are also ones we are monitoring in our study. Their results show an optimal sampling duration of two and three days for some of the air toxics.

The ambient air concentrations for many of the toxics we measured in the first six months are on the order of parts-per-billion. These low level air concentrations may be hard to detect with short-term personal air monitoring devices. One way to resolve this is a longer sampling duration, which may pose an inconvenience for some volunteers who may not want the responsibility of wearing a monitor for two to three days. This could be resolved by the placement of a personal air monitor outside the home with the sampling time beginning one day before and ending one day after our fixed-site monitoring date.

Assessing indoor sources

We see from your volunteer sign-up form that you have given consideration of the confounding influence that smoking may provide. We suggest you consider other home-based sources that may significantly influence the results. Many studies which have

¹ AMBIENT AIR TOXICS IN THE HOUSTON-GALVESTON AREA WITH HIGH AND LOW TRI EMISSIONS- A PILOT STUDY OF TEMPORAL AND SPATIAL CONCENTRATIONS USING PASSIVE SAMPLING DEVICES (PSDs), October 2004
http://www.epa.gov/ttn/amtic/files/ambient/passive/PATM_Pilot_Houston_Final%20report_2004.pdf

conducted personal air monitoring (such as Relationships of Indoor, Outdoor, and Personal Air (RIOPA) and Toxic Exposure Assessment: A Columbia-Harvard (TEACH) Study) assess indoor sources through a questionnaire. Some examples of air toxics sources that may influence the indoor environment are fresh paint, fumes in gas fueling, or hobbies which involve the use of solvent based paints or glues. Other indoor sources to be aware of include attached garages, air fresheners, home renovations and indoor fuel oil tanks.

Assessing influence of personal activities

We also are providing links to studies that contain examples of time-location-activity diaries. You might find this information helpful when you develop a form for participants to complete.

VOC Exposure in an Industry-Impacted Community, 2005

http://www.sph.uth.tmc.edu/mleland/attachments/Buckley_Report4.pdf

Toxic Exposure Assessment: A Columbia-Harvard (TEACH) Study (The New York City Report), 2005

http://www.sph.uth.tmc.edu/mleland/attachments/NY_TEACH%20Study3.pdf