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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

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SUBJECT: OAQPS Position on Organic Species vs. Continuous NMOC Data Collection for the 1982 Ozone SIPs

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TO: Director, Air & Hazardous Materials Division, Regions I-X
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Members of my staff have received several inquiries from Regional Offices regarding State/local agencies proposing to collect discrete organic species rather than continuous non-methane organic compound (NMOC) data for air quality modeling in preparing their 1982 ozone SIPs. Technically, species data can be summed to yield NMOC concentrations equivalent to those obtained by continuous instruments for use in any model. However, for several reasons, we believe it inadvisable to substitute species sampling for the continuous NMOC data collection required for Level III modeling. Accordingly, we recommend that State and local agencies be discouraged from making such a substitution. Some of the reasons were alluded to in two guidance documents which have been distributed to the Regional Offices (and some of the States).[1,2] The following is a brief discussion of these reasons.

The most important reason is data quality. There are very few analytical groups in the U.S. possessing the skill needed to accurately analyze ambient samples for Organic species. Few of these are contractors who may be willing to perform routine sample analyses. If in-house analysis by a State/local agency is contemplated, it must be strongly emphasized that the required skill cannot be acquired by even very good analytical chemists or technicians in a short period of time. Thus, any data collected by agencies or their contractors may be greatly suspect unless or until competence to produce accurate data has been demonstrated.

A closely associated factor is that of cost. Contractor analysis of a single sample for individual and summed organic species is in excess of $100.

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[1] Guidance for the Collection and use of Ambient Hydrocarbon Species Data in Development of Ozone Control Strategies, EPA-450/4-80-008, April 1980.

[2] Guidance for Collection of Ambient Non-Methane Organic Compound (NMOC) Data for Use in 1982 Ozone SIP Development, and Network Design and Siting Criteria for the NMOC and NOx monitors, EPA-450/4-80-011, June 1980.

Field collection costs must be added to this. Since many samples must be analyzed during a season in order to have the necessary data for the few days to be modeled, analytical costs may run into many thousands of dollars--possibly exceeding the cost of a few continuous NMOC instruments. Similarly, if in-house analysis is contemplated, the cost of the analytical instruments is high. Hence, it does not seem a prudent use of grant monies for agencies to purchase the equipment (and train operator-analysts) for a short term study.

Another reason is the kind of data needed to support Level III (city-specific EKMA) modeling analysis. The city-specific EKMA model requires a 6-9 a.m. average NMOC concentration in the urban core. These can be easily acquired from continuous NMOC data records. Samples for organic species analysis, on the other hand, are usually 1-hour integrations (if not shorter-term grab sales). A multiple set of such samples would be needed to derive a 3-hour average. Whereas 3-hour integrated samples are possible, they are not usually obtained because they are more difficult to acquire than are 1-hour integrated (or short-term grab) samples.

A final reason worth considering is that of following the progress of the ozone control strategy. Although this may be of only peripheral concern at this time in preparing the ozone SIP, it should be remembered that the strategy will be based on control of organic emissions. In addition to tracking ozone trends, a simple and more direct check on progress would be to monitor NMOC concentrations routinely or periodically. This is most effectively done by using a continuous instrument. Although similar data could be collected by organic species analysis of individual samples, it would be at considerably greater expense.

In summary, NMOC data acquired by sum-of-species, rather than by continuous method, can be used as input in any modeling done for 1982 SIP development. However, for reasons previously discussed, continuous NMOC data are more suitable and cost-effective for Level III (city-specific EKMA) modeling analysis. Therefore, OAQPS recommends that State/local agencies be discouraged from substituting organic species data collection for the continuous NMOC monitoring requirements of Level III SIP analysis.

The above recommendation should not discourage collection of organic species data where specifically required or preferred. For instance, agencies choosing to apply a photochemical model (Level I analysis) will have certain Organic species data requirements. Also, in those situations where an agency believes that upwind sources or areas may contribute significantly to an urban area's organic burden, species sampling of limited scope is preferable upwind of the urban area. This is because continuous instruments are considered less accurate in measuring low organic concentrations (<0.5 -1.0 ppmC) likely to be encountered at upwind sites.

If you have any questions or comments, please contact Harold G. Richter at FTS 629-5474, or commercial 919/541-5474.

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