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Category: 30 – Test Methods

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

DATE: April 3, 1981

SUBJECT: Evaluation of Laboratories Proposing to Measure
Hydrocarbon Species in Ambient Air

FROM: Richard G. Rhoads, Director
Monitoring and Data Analysis Division (MD-14)

TO: Director, Air and Hazardous Materials Division, Regions I-X
Director, Surveillance and Analysis Division, Regions I-X

MDAD/OAQPS has been asked by several State agencies to suggest contractor organizations qualified to analyze ambient air samples for their hydrocarbon species composition. These data are needed either for photochemical dispersion modeling or for estimates of the upwind hydrocarbon concentrations for the Empirical Kinetic Modeling Approach (EKMA). In my memorandum of January 8, I pointed out the difficulties and expense of hydrocarbon species analysis, and that we discourage States from seeking these data for any purpose other than the two uses just mentioned.

The recent inquiries for qualified contractors indicated a need for assistance in selecting competent organizations for this type of analysis. To meet this need, MDAD/OAQPS has collaborated with ESRL/ORD/RTP and EMSL/ORD/RTP to establish a modest program to evaluate the species analysis capability of potential contractor laboratories. Although not a laboratory "certification" program, this evaluation should be of considerable help to States in selecting a competent contractor laboratory. Accordingly, Regional Offices should make sure that those states which are considering hydrocarbon species measurements are aware of this new program and strongly encourage them to use it. Resources available for the evaluations are very limited, however. Only those laboratories having a reasonable expectation of adequate capability can be evaluated. States wishing to avail themselves of the program should contact MDAD/OAQPS through the Regional Office.

Briefly, the evaluation program is as follows:

1. The potential contractor laboratory submits (a) a concise description of the proposed chromatographic analytical system and the sample collection technique to be used; (b) a brief summary of the laboratory's expertise and experience related to species analysis; (c) two or more recent chromatograms of ambient air samples showing species identification; and (d) any other information pertinent to the laboratory's species analysis capability. The submitted information should be succinct but complete. By means of this initial submission, we hope to eliminate those organizations having only casual interests and/or marginal capabilities.

2. The submitted material will be evaluated and, if the laboratory's capability is found to be promising, a canister containing a prepared mixture of 10 to 15 hydrocarbon species commonly found in urban areas will be sent to the laboratory for identification and quantitation. This canister will be sent at the laboratory's expense. The results of two or more analyses of the sample and the canister are then returned to EPA.

3. The results of these analyses will be evaluated based on (a) incorrect identification of not more than three species; (b) concentration error of not more than +/- 25% in any species; and (c) reasonable precision based on the two or more replicate analyses. If necessary or requested, additional prepared samples may be sent to the laboratory for analysis if the laboratory did not properly identify or quantitate within the above limits. Also, the laboratory may be asked to collect and analyze an ambient sample of urban air and submit the analytical chromatogram, as well as the remaining sample, to EPA for confirmation analysis.

4. After these tests, a narrative judgment will be rendered on the laboratory's species analysis capability. This judgment will be based on the performance specifications listed above. Laboratories will be given ample opportunity to discuss their test results; analyze additional samples, and submit additional information. Where a laboratory's capability seems appropriate, but the laboratory appears to have technical problems in certain areas, limited consultation may be offered by ESRL/ORD in an effort to correct shortcomings. All evaluation results and conclusions will be made available to the States for their use as a basis for selecting their contractor. These results will also be made available to the candidate laboratory and the Regional Office.

All field studies involving hydrocarbon species analysis should include adequate quality assurance (QA) and quality control (QC) procedures. MDAD strongly recommends that an appropriate QA program be described and incorporated in the terms of the written contract work statement.

Guidelines and specifications for implementing EPA's QA requirements are provided in References 1 through 3. EMSL/ORD can provide assistance in this area, and States are encouraged to seek their assistance if needed.

By means of this program, we hope to increase the probabilities that the States will obtain high quality hydrocarbon data acceptable for modeling. Since these tests are laborious, it is necessary that States allow adequate time for evaluating potential contractors.

If you have questions about this program, the technical contact in MDAD will be Dr. Harold Richter, FTS 629-5575.

Attachment

cc: QA Coordinators
A. Ellison

T. Hauser
J. Bufalini

REFERENCES

1. QAMS 002/80 - Guidelines and Specifications for Implementing Quality Assurance Requirements for EPA contracts
2. QAMS 004/80 - Guidelines and Specifications for Preparing Quality Assurance Program Plans
3. QAMS 005/80 - Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans