



## Project Summary

# Guidelines for Determination of Laboratory Acceptability for Analysis of Volatile Organic Pollutants Collected on Tenax GC® Adsorbant

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This technical assistance document (TAD) is intended to serve as a guide to those responsible for evaluating and selecting a laboratory to perform sampling and analysis of volatile organic compounds in the ambient air. The sampling and analysis techniques are limited to a discussion of Tenax GC® adsorbant for collection of pollutants and gas chromatography/mass spectrometry (GC/MS) for identification and analysis. Tenax GC® was selected because it is the most widely used medium for sampling of volatile organic compounds in ambient air. However, the techniques presented here are general enough for use with other types of solid adsorbants used to sample for organic compounds and evaluating a laboratory's ability to provide valid air sampling data. It is expected that technical personnel within regional, state, and local environmental regulating agencies will be the primary users of this document.

*This Project Summary was developed by EPA's Environmental Monitoring Systems Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).*

### Summary

This document has two principal parts. The first is a discussion of the Tenax GC®

and GC/MS techniques to be used for analysis of volatile organic pollutants. The specific analytical procedures discussed include (1) preparation of Tenax GC® sample collection devices; (2) field sampling using Tenax GC® resin; (3) recovery of the organic compounds from the Tenax GC®, and (4) qualitative and quantitative analyses of the compounds using combined gas chromatography/mass spectrometry. This technical presentation is general in nature; that is, specific details of the methods, for example, type of GC column or thermal desorption temperature to be used, are not presented as the methods are in a constant state of improvement. The current literature and experts should be contacted in order to determine the state-of-the-art for the Tenax GC® and GC/MS methods.

The second principal part of this document is a generally objective procedure for evaluating a laboratory's capabilities to utilize the Tenax GC® and GC/MS methods in an acceptable manner. This laboratory evaluation and selection protocol has three principal components. These are:

- (1) Preparation and use of performance evaluation samples for analysis by the laboratory in question.
- (2) Evaluation of key personnel function descriptions and written standard operating procedures as

provided by the laboratory in question.

- (3) A systems audit of the laboratory in question.

This document is not intended to serve as a single source of information upon which all judgments concerning a laboratory's analytical practices can be made. The first part of the TAD should be used as an overview document to be consulted in preparation for a laboratory evaluation, with the user directed to the referenced literature or other specific, detailed information as required. The second part of the TAD, the evaluation protocol, has been made as objective as is reasonable so that it can be used by non-experts. The document, however, does not eliminate the need for sound technical judgment on the part of the person performing the evaluation. In general, persons performing a laboratory evaluation must have a strong technical background with some specific knowledge in instrumental sampling and analysis techniques. If such persons are not available, the probability of performing a successful evaluation will be reduced and information obtained inaccurate.

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*The complete report, entitled "Guidelines for Determination of Laboratory Acceptability for Analysis of Volatile Organic Pollutants Collected on Tenax GC® Adsorbant," (Order No. PB 84-189 638; Cost: \$10.00, subject to change) will be available only from:*

*National Technical Information Service*

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*Springfield, VA 22161*

*Telephone: 703-487-4650*

*The EPA Project Officer can be contacted at:*

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