

**MANUAL OF PROCEDURES
VOLUME III
LABORATORY PROCEDURES**

1) INTRODUCTION

This volume of the Manual of Procedure specifies the analytical Methods used for the determination of compliance to the Regulations of the Bay Area Air Quality Management District (BAAQMD). As new Methods are developed and found acceptable, they may replace or be added to the existing Methods in this manual.

2) GENERAL PROVISIONS

2.1 Laboratory Quality Assurance Program: The goal of these procedures is to provide accurate and precise analyses, and it is essential that a laboratory assurance program be established and maintained.

2.2 Objectives of the Laboratory Quality Assurance Program are:

2.2.1 To provide ongoing information for monitoring unsatisfactory performance of personnel, equipment or procedures.

2.2.2 To provide prompt detection and correction of conditions which contribute to the generation of inadequate data.

2.2.3 To collect and supply information necessary to describe the quality of the data.

2.3 Implementation of the following elements will produce data of acceptable precision and accuracy.

2.3.1 Routine monitoring of the known variables which may affect the quality of data.

2.3.2 Routine training and evaluation of analysts.

2.3.3 Corrective action.

2.4 Representative Sampling

2.4.1 Analytical results, regardless of the accuracy and precision of the procedure, cannot be better than the representativeness of a submitted sample.

2.5 Sample Submission and Continuity

2.5.1 All samples will be identified and the identification carried forth with the analytical results.

2.6 Reagents

2.6.1 Reagent grade or better chemicals shall be used. Lesser grades may be used provided it is first ascertained that their use will not degrade the accuracy of the determination.

2.6.2 Unless otherwise specified, inorganic reagents used in the preparation of standards shall be dried at 105°C for two hours and kept desiccated until used.

2.7 Distilled water or its equivalent shall be used for reagent preparations.

2.8 Gas Chromatography

2.8.1 Gas chromatographic units used shall have the required systems and sensitivities as specified in the procedure.

2.8.1.1 Each chromatograph will be equipped with a recorder that provides permanent charts for record purposes.

2.8.1.2 All carrier gases, fuel gases and air supplies will be free of interfering substances.

2.8.1.3 Analytical columns are specified in this manual for each procedure. The separation characteristics of an alternate column must be comparable to those specified.

2.9 Atomic Absorption

2.9.1 Atomic absorption spectrophotometers utilized should have the following minimum specifications:

- a) Analytical wavelength coverage of 1937A to 7800A.**
- b) Less than 0.3% light scatter at 3000A.**
- c) Less than 1% noise at full gain.**
- d) Slit system to provide 5A resolution.**

2.9.2 Acetylene, nitrous oxide, and air supplies used will be those commonly used for best analytical results.

2.10 Spectrophotometers

2.10.1 Spectrophotometers employed for colorimetric and turbidimetric procedures should be capable of operation in the 340 to 700 nm range.

2.10.2 Spectrophotometers should have a grating or prism system capable of ± 25 nm reproductivity of wavelength settings.

2.10.3 Spectrophotometers should be checked for wavelength accuracy once per year using a didymium filter or comparable system.

2.11 Volumetric Glassware

2.11.1 Class A glassware shall be used for all volumetric flasks, pipettes and burets employed in the procedures. Class A specifications are identical to those found in the National Bureau of Standards publication "Circular 602".

3) APPLICABILITY

3.1 Each analytical procedure is applicable to a specific regulation, division and section. The designated numbering system applying to the regulation appears on the upper left corner of each procedure.

4) METHODOLOGY

4.1 Alternate analytical procedures may be used provided that such procedures have established equivalency to an accepted reference Method. Any questions relating to equivalency may be referred to the Chief of Laboratory Services.

4.1.1 Appropriate ASTM and EPA approved Methodologies will be deemed equivalent procedures.

4.2 If the test Method specified in a federally enforceable regulation is not applicable to the type of sample submitted for analysis, minor, intermediate and major changes, as defined in 40 CFR §63.90, can be made to the procedure. Any change in the Method requires the mutual agreement of the manufacturer, user, and the Air Pollution Control Officer (APCO). A major change requires the additional approval of the U. S. Environmental Protection Agency (US EPA).

5) DISCLAIMER

5.1 Any reference to specific product brands does not indicate an endorsement of that particular brand by the BAAQMD. Specific brand names and instrument descriptions listed are for products or equipments used by the BAAQMD. Other equivalent instrumentation or products can be used.

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