

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 dessicated 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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6) LABORATORY PROCEDURES

Method 1	Determination of Ammonia in Effluents.
<u>Method 1A</u>	<u>Determination of Ammonia in Effluents Collected in Acid Media Using the Specific Ion Electrode.</u>
Method 2	Determination of Beryllium in Effluent & Atmospheric Particulate Matter.
Method 3	Determination of Dimethylsulfide in Effluents.
Method 4A	<u>Determination of Lead Content in Atmospheric Particulate Matter on Particulate Filters by Microwave Extraction and Analysis by Atomic Absorption Spectrometry.</u>
Method 4B	Determination of Total Lead in Effluents.
Method 5	Determination of Total Mercaptans in Effluents.
Method 6	Determination of Particulate and Gaseous Mercury Emissions.
Method 7A	Determination of Oxides of Nitrogen in Effluents (Alkaline Permanganate Procedure).
Method 7B	Determination of Oxides of Nitrogen in Effluents (Grab Sample Procedure).
Method 8	Determination of Phenols in Effluents
Method 9	Determination of Compliance of Solvents, Coatings, and Related Products.
Method 10	Determination of Sulfur in Fuel Oil.
Method 11	Determination of Sulfur Dioxide in Effluents.
Method 12	Determination of Sulfur Dioxide, Sulfur Trioxide, and Sulfur Acid Mist in Effluents.
Method 13	Determination of the Reid Vapor Pressure of Petroleum Products.
Method 14	Determination of Trimethylamine in Effluents.
Method 15	Standardization of Carbon Dioxide Calibration Gas.

Method 15A	<u>Standardization and Analysis of Permanent Gases and Methane.</u>
Method 16	Standardization of Carbon Monoxide Calibration Gas.
Method 17	Standardization of Hydrocarbon Calibration Gases.
Method 18	Standardization of Hydrogen Sulfide Calibration Gas.
Method 19	Standardization of Nitric Oxide Calibration Gas.
Method 20	Standardization of Sulfur Dioxide Calibration Gas.
Method 21	Determination of Compliance of Volatile Organic Compounds for Water Reducible Coatings.
Method 22	Determination of Compliance of Volatile Organic Compounds for Solvent Based Coatings, <u>Inks and other Related Products.</u>
Method 23	Determination of Volatile Emissions from Polyester Resins.
Method 24	Determination of Total Fluoride in Effluents.
Method 25	Determination of Hydrogen Sulfide in Effluents.
Method 26	Determination of Volatile Weight Loss of Gel Coats.
Method 27	Determination of Vinyl Chloride in Effluent.
Method 28	Determination of Vapor Pressure of Organic Liquids from Storage Tanks.
Method 29	Determination of Ethanol in Bakery Effluents.
Method 30	Determination of Volatile Organic Compounds (VOC) in Solvent Based Non-heat Set Inks.
Method 31	Determination of Volatile Organic Compounds in Paint Strippers, Solvent Cleaners and Low Solids Coatings.
Method 32	Determination of Hydrogen Sulfide in Process Water Streams.
Method 33	Determination of Dissolved Critical Volatile Organic Compounds in Wastewater Separators.

- Method 34 Determination of Hexavalent and Total Chromium in Effluent Samples from Electrolytic Chrome Plating Operations.
- Method 35 Determination of Volatile Organic Compounds (VOC) in Solvent Based Aerosol Paints and Adhesives.
- Method 36 Determination of Volatile Organic Compounds (VOC) in Water Based Aerosol Paints.
- Method 37 Determination of Perchloroethylene in Dry Cleaning Filtration Wastes.
- Method 38 Determination of Petroleum (Stoddard) Solvent in Dry Cleaning Filtration Wastes.
- Method 39 Determination of Styrene Monomer Contents of Polyester Resin Material.
- Method 40 Determination of Volatile Organic Compounds in Adhesives Used for Pipes and Fittings.
- Method 41 Determination of Volatile Organic Compounds in Solvent Based Coatings and Related Materials Containing Parachlorobenzotrifluoride.
- Method 42 Determination of Ammonia in Coatings, Inks, and Related Materials.
- Method 43 Determination of Volatile Methylsiloxanes in Solvent Based Coatings, Inks, and Related Materials.
- Method 44 Determination of Reduced Sulfur Gases and Sulfur Dioxide in Effluent Samples by Gas Chromatographic Method.
- Method 44A Determination of Reduced Sulfur Gases and Sulfur Dioxide in a Gaseous Matrix Using the Sulfur Chemiluminescence Detector.
- Method 45 Determination of Butanes and Pentanes in Polymeric Materials.
- Method 46 Determination of the Composite Partial Pressure of Volatile Organic Compounds in Cleaning Products.