
Contents

<i>List of Contributors</i>	<i>xiii</i>
<i>Preface</i>	<i>xv</i>
<i>Contents of Other Volumes</i>	<i>xvii</i>

PART A SAMPLING AND ANALYSIS

1. Particulate Matter Sampling and Sizing

Paul M. Giever

I. General	4
II. Sample Collection	9
III. Collection and Evaluation for Particle Count and Size Determination	21
IV. Particle-Size Analysis	28
References	47

2. Analysis of Inorganic Particulates

Philip W. West

I. Introduction	51
II. Airborne Particulates	53
III. Dustfall and Sootfall	89
IV. Intersociety Committee Methods of Air Sampling and Analysis	94
V. Conclusion	94
References	95

3. Microscopy and Pollution Analysis

Walter C. McCrone

I. Sampling Methods	100
---------------------	-----

II. Particle Analysis	102
III. Conclusion . . .	143
References . . .	144
4. Sampling and Calibration of Gaseous Pollutants	
Herman D. Axelrod and James P. Lodge, Jr.	
I. Sampling	145
II. Calibration	164
References	177
5. Hydrocarbons and Carbon Oxides	
Aubrey Paul Altschuller	
I. Introduction	183
II. Carbon Oxides	184
III. Total Analysis for Organic Substances	190
IV. Compositional Analysis of Volatile Organic Substances	190
V. Applications to Atmospheric Analysis	194
VI. Analysis of Aliphatic Oxygenated Compounds	196
References	207
6. Sulfur Compounds	
Donald F. Adams	
I. Introduction	214
II. Sulfur Dioxide	215
III. Hydrogen Sulfide	222
IV. Mercaptans	231
V. Alkyl Sulfides and Disulfides	233
VI. Multifunctional Instrumental Methods	233
VII. Sample Lines and Particulate Removal	250
References	252
7. Nitrogen Compounds and Oxidants	
Morris Katz	
I. Nitrogen Compounds	259
II. Oxidants and Ozone	277
III. Discussion	297
References	301
8. Odors	
Austin H. Phelps	
I. Introduction	307
II. Classification of Odor Measurement Problems	309
III. Methods of Describing Odors	311
IV. Units of Measurement—The Odor Unit	314

V. Techniques of Odor Measurement by Dilution	315
VI. Ambient Odors	328
VII. Examples of Application of Odor Measurement Results	331
VIII. Odor Threshold Data	334
References	337

PART B AMBIENT AIR SURVEILLANCE

9. Ambient Air Quality Surveillance

Robert J. Bryan

I. Introduction	343
II. Basic Considerations	344
III. System Design	352
IV. Measurement Principles	368
V. System Operation	386
References	389

10. Air Pollution Effects Surveillance

Charles W. Gruber and George Jutze

I. Introduction	393
II. Material Effects Indicators	394
III. Vegetation Effects Indicators	399
IV. Effects Surveillance by Static Indicators	401
References	411

11. Radionuclide Surveillance

Harry F. Schulte

I. Introduction	414
II. Physical and Chemical Forms of Radioactive Pollutants	415
III. Purposes of Monitoring Air for Radioactive Substances	416
IV. Radioactive Particulate Sampling and Quantitation	418
V. Radioactive Gas Sampling and Quantitation	435
VI. Automated, Direct-Reading, and Specialized Samplers	445
VII. Surveys, Networks, and Reporting	446
VIII. Standards and Standard Methods	447
IX. Perspective on Radioactive Materials as Air Pollutants	448
X. Radioactivity Measurements as Tools in Air Pollution Studies	448
References	449

12. Air Quality Data Handling and Analysis

Charles E. Zimmer

I. Introduction	453
II. Data Recording	454

III. Data Validation	464
IV. Computer Storage Media	466
V. Statistical Parameters	468
VI. Methods of Statistical Analysis	471
References	484
13. Global Monitoring and Surveillance of Air Pollution	
Richard D. Cadle	
I. Introduction	486
II. Aims of Global Monitoring	490
III. Substances to Be Monitored	495
IV. Monitoring Locations	500
V. Measurement Techniques	503
VI. Data Handling, Analysis, Storage, and Retrieval	513
VII. Existing and Planned Global Monitoring and Surveillance Systems	514
VIII. Use of the Data in International Decision Making	517
References	519

PART C SOURCE SURVEILLANCE

✓ 14. Stack Sampling

Harold J. Paulus and Raymond W. Thron

I. Introduction	525
II. Gas Flow Measurements	530
III. Particulate Matter Sampling	540
IV. Gaseous Sampling	570
V. Special Sampling Methods	578
References	585

15. Source Monitoring

John S. Nader

I. Introduction	590
II. Sampling and Analysis Overview	594
III. Particulate Matter Emissions	601
IV. Gas Emissions	618
V. Data Reduction	634
VI. Special Monitoring Requirements	638
References	639

16. Measurement, Testing, and Surveillance of Air Pollution from Mobile Sources

William F. Biller and John Harkins

I. Introduction	648
---------------------------	-----

II. Classification and Composition of Emissions from Automobiles	648
III. Measuring Exhaust Gas Emissions from Automobiles	649
IV. Measuring Evaporative and Refueling Emissions from Automobiles	688
V. Testing, Surveillance, and Inspection of Automobile Emissions	695
VI. Other Mobile Sources	706
References	713

17. Emission Inventory

James R. Hammerle

I. The Air Pollutant Emissions Inventory	718
II. Uses of the Inventory	729
III. Emission Models	731
IV. Source Inventory for Source Categories	737
V. Emission Factors for Source Categories	764
VI. Automatic Data Processing	769
VII. Data Presentation	778
References	783

Subject Index

785

