



Contents

<i>List of Contributors</i>	vii
<i>Preface</i>	ix
<i>Contents of Other Volumes</i>	xix

Part VII. SOURCES OF AIR POLLUTION

32. Stationary Combustion Sources

Richard B. Engdahl

I. Introduction	4
II. Fly Ash	4
III. Gases	5
IV. Gas-Burning Sources	16
V. Oil-Fired Furnaces	20
VI. Solid Fuels	27
VII. Incinerators	37
VIII. Fires	46
References	50

33. Mobile Combustion Sources

R. W. Hurn

I. Introduction	55
II. Atmospheric Pollutants from Gasoline-Powered Equipment	55
III. Automotive Emissions Control	69
IV. Atmospheric Pollutants from Diesel-Powered Equipment	82
V. Gas Turbines	91
References	

34. Petroleum Refinery Emissions

Harold F. Elkin

I. Introduction	97
II. Oil Refining Technology	100

III. Type of Emissions	108
IV. Source and Control	112
V. Estimation of Quantities	115
VI. Economics of Control	117
References	121
35. Nonmetallic Mineral Products Industries	
<i>Victor H. Sussman</i>	
I. Introduction	123
II. General Operations	123
III. Specific Processes	127
IV. Conclusion	140
References	141
36. Ferrous Metallurgical Processes	
<i>William Sebesta</i>	
I. Coke Production	
II. Sinter Production	
III. Iron Production	146
IV. Steel Production	149
V. Foundry Operations	164
References	168
37. Nonferrous Metallurgical Operations	
<i>Kenneth W. Nelson</i>	
I. Introduction	171
II. Copper	173
III. Lead	179
IV. Zinc	182
V. Aluminum	186
VI. Secondary Copper, Lead, Zinc, and Aluminum	188
VII. Nonferrous Foundries	189
References	190
38. Inorganic Chemical Industry	
<i>Austin N. Heller, Stanley T. Cuffe, and Don R. Goodwin</i>	
I. Introduction	
II. Hydrochloric Acid	

III. Hydrofluoric Acid	197
IV. Phosphoric Acid	198
V. Nitric Acid	203
VI. Sulfuric Acid	208
VII. Calcium Oxide (Lime)	213
VIII. Sodium Carbonate (Soda Ash)	216
IX. Sodium Hydroxide (Caustic Soda)	218
X. Phosphate Fertilizers	221
XI. Ammonium Nitrate	231
XII. Chlorine	234
XIII. Bromine	238
References	240

39. Pulp and Paper Industry

Donald F. Adams

I. Introduction	243
II. Kraft Pulping Process	244
III. Sulfite Pulping Process	262
IV. Analytical Methods	263
V. Conclusion	
References	

40. Food and Feed Industries

W. L. Faith

I. Introduction	269
II. Crop and Animal Production	270
III. Dust from Food and Feed Processing	276
IV. Odors from Food and Feed Processing	280
V. Feed Manufacture	286
VI. Allied Industries	287
References	288

Part VIII. CONTROL METHODS AND EQUIPMENT

41. Process and System Control

Melvin W. First

I. Introduction	291
II. Elimination of Air Pollution Emissions	292
III. Minimizing Emissions of Gaseous and Gasborne Wastes	292

IV. Concentration of Air Pollutants at the Source for Effective Treatment Prior to Release to the Atmosphere	---
V. Utilizing Untapped Air Resources.	316
References	318

42. Efficiency, Application, and Selection of Collectors

Arthur C. Stern

Conversion Factors Used in Collector Technology	319
I. Efficiency of Collectors	320
II. Selection of Collectors	332
III. Application of Collectors	347
References	358

43. Source Control by Centrifugal Force and Gravity

Knowlton J. Caplan

I. Introduction	359
II. Cyclone Collector	360
III. Rotary Stream Dust Separator	395
IV. Gravity Settling Chambers	398
V. Inertial Separators	400
References	406

44. Source Control by Filtration

K. Inoya and C. Orr, Jr.

Nomenclature.	409
I. Introduction	410
II. Fabric Filters	410
III. Paper Filters	422
IV. Fibrous Mats and Aggregate Beds	424
V. General Considerations	430
References	433

45. Source Control by Electrostatic Precipitation

Chad F. Gottschlich

Nomenclature.	437
I. Introduction	438
II. Electrical Field and Particle Charging	442
III. Collection Efficiency	446
IV. Dust Resistivity and Conditioning	449

V. Pressure Drop and Gas Distribution	452
VI. Energization	453
References	455

46. Source Control by Liquid Scrubbing

Seymour Calvert

Nomenclature	457
I. Introduction	459
II. Gas Absorption	461
III. Particle Collection	477
IV. Power Requirement.	492
V. Economics	492
References	495

47. Source Control by Gas-Solid Adsorption and Related Processes

Amos Turk

I. General Principles	497
II. Adsorbents	499
III. Equipment and Systems	503
IV. Applications to Source Control.	512
References	518

48. Nuisance Abatement by Combustion

Harold J. Paulus

I. Introduction	521
II. Principles of Combustion	522
III. Flares.	523
IV. Furnace Disposal.	527
V. Catalytic Combustion	529
VI. Summary	533
References	533

49. Water Pollution Potential of Air Pollution Control Devices

F. E. Gartrell

I. Interrelationships between Air and Stream Pollution Control Measures	535
II. Water Quality Standards	536
III. Air Pollution Control Facilities with Stream Pollution Control Features	537
References	548

Part IX. AIR POLLUTION CONTROL

50. Air Pollution Control Legislation*Sidney Edelman*

I. Introduction	554
II. Control of Nuisance Conditions	554
III. Legislative Approaches to Air Pollution Control	558
IV. General Survey of National Legislation	568
V. Model Legislation	591
VI. Guiding Principles for Air Pollution Legislation	592
References	598

51. Air Pollution Standards*Arthur C. Stern*

I. Introduction	601
II. Air Quality Criteria or Guides	602
III. Air Quality Goals	605
IV. Air Quality Standards	607
V. Emission Standards	616
VI. Design Standards	641
VII. Measurement and Test Method Standards	652
References	717

52. Air Pollution Control Administration*Jean J. Schueneman*

I. The Philosophy of Air Pollution Control	719
II. Governmental Air Pollution Control Programs in the United States	723
III. Role of Various Levels of Government in Air Pollution Control	759
IV. Air Pollution Control Program Elements	768
V. Community Planning and Air Resource Management	790
References	793

53. Public Information and Education*John A. Maga*

I. Purpose and Need for Public Information and Education	
II. Methods of Public Information and Education—Reaching the Public	
III. Information and Education Resources	
IV. Limitations and Expectations of Public Information and Education	
References	

54. Air Pollution Literature Resources

John S. Nader

I. Books	813
II. Periodical Literature	814
III. Specialized Bibliographies and Abstracts	814
IV. General Bibliographies and Abstracts	817
V. Newsletters	817
References	817

Appendix

List of Potential Air Pollution Producing Industrial Operations	825
---	-----

<i>Author Index</i>	833
---------------------	-----

<i>Subject Index</i>	845
----------------------	-----