Contents

Part	I Foundations of Air Pollution Monitoring, Modelling, Health Risk and Control Engineering	
1	Introduction to Urban Air Pollution	3
2	Air Quality Monitoring and Techniques	13
3	Air Quality Modelling	35
4	Air Quality Management and Control	59
5	Indoor Air Quality	69
6	Personal Exposure and Health Risk Assessment	75
7	Air Quality Measuring Sensors	89
Part	II Case Studies	
8	Short-Term Variation of Particulate Matter and Black Carbon During Deepawali Festival in an Urban Area	107
9	Surface O ₃ and Its Precursors (NOx, CO, BTEX) at a Semi-arid Site in Indo-Gangetic Plain: Characterization and Variability Nidhi Verma, Anita Lakhani, and K. Maharaj Kumari	119

Prediction of Air Pollution by the Communica of

10	Predicting Particulate Air Pollution Using Line Source Models Selvakumar Madhavan and S. Geetha	137
11	Prediction of Air Pollution by the Contribution of Road Traffic—Signal Processing and Higher-Order Statistics (HOS) Spectra Approach S. Sangeetha, P. Venkatakrishnan, and G. Srikanth	155
12	Performance Evaluation of UK ADMS-Urban Model and AERMOD Model to Predict the PM ₁₀ Concentration for Different Scenarios at Urban Roads in Chennai, India and Newcastle City, UK Prince Vijay, S. M. Shiva Nagendra, Sunil Gulia, Mukesh Khare, Margaret Bell, and Anil Namdeo	169
13	Modeling of Atmospheric Mercury Deposition in India Krish Vijayaraghavan, Shari Libicki, Ross Beardsley, and Sunil Ojha	183
14	Risk-Based Optimal Ranking of Air Quality Monitoring Stations in a Fuzzy Environment: A Case Study	197
15	Impact of Increasing Ozone on Agricultural Crop Yields Sonal Kumari, Nidhi Verma, Anita Lakhani, and K. Maharaj Kumari	211
16	Air Pollution Episode Analysis and Qualitative Evaluation of Proposed Control Measures in Delhi City	225
17	Stabilizing Different Subgrade Soils with Pond Ash to Lower Greenhouse Gas Emissions for Bituminous Pavements in India Gaurav Gupta, Hemant Sood, and Pardeep Kumar Gupta	239
18	Strategic Approach for Emission Reduction from Coal-Fired Thermal Power Plants in India Shipra and Asim Kumar Pal	255
19	Plasma-Based Hybrid Technique for Abatement of Pollutants (NO _x and CO) from Stationary Engine Exhaust-Effect of Loading Condition and Flow Rate	267
20	Evaluation of Carbon Foot Print Reduction in Aviation Infrastructure	279
21	Structural Analysis of Interactions Between Airborne Pollutants and Chemically Modified RNAs	291

22	Characterization of PM ₁₀ and Its Impact on Human Health During Annual Festival of Lights (Diwali) in Northeast India Rajyalakshmi Garaga and Sri Harsha Kota	305
23	Toxicological Study of Nanoparticles: An Attempt to Relate Physicochemical Characters with Toxicity A. Seenivasan, M. Muthuraj, and T. Panda	325
24	Comparative Study of Gas and Particulate Phase Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs) at Two Sites in Agra Puneet Kumar Verma, Dinesh Sah, K. Maharaj Kumari, and Anita Lakhani	343
25	Estimation of Passenger Exposure to PM _{2.5} on a Highway Soma Sekhara Rao Kolluru and Aditya Kumar Patra	355
26	Assessment of Organic Markers in Fine Aerosol of Mumbai City Abba Elizabeth Joseph, Seema Unnikrishnan, Rakesh Kumar, and S. Vivek Balachander	367
27	Distributions of n-Alkanes, Alkanoic Acids and Anhydrosugars in Wintertime Size-Segregated Aerosols Over Middle Indo-Gangetic Plain Nandita Singh and Tirthankar Banerjee	383
28	Exposure of PM _{2.5} and Carbonaceous Matter Amongst Rural Inhabitants in and Around Durg District of Chhattisgarh, India Shailendra Kumar Kushawaha, Yasmeen F. Pervez, Sumita Nair, and Shamsh Pervez	399
29	Assessment of Biomass Burning Emissions from India—A Comprehensive Study	411
30	Correlation Assessment of Indoor Air Pollutants Emitted by Household Fuels and Its Health Impacts	425