

Volume Preface

The link between degrading air quality and adverse health outcomes is widely recognised (Lim et al. 2012). Ambient particulate matter pollution ranks as number 11 to 14 as a risk factor accounting for total burden of disease across Western, Central and Eastern Europe, while ambient ozone appears in positions 36 and 37 in the same ranking. Irrespective of particle size, epidemiological studies have shown a clear association between exposure to airborne pollutants and adverse cardiovascular and respiratory health outcomes. Evidence also shows adverse effects of short- and long-term exposure to gaseous pollutants, e.g. ozone, on all-cause, cardiovascular and respiratory mortality. The urban environment plays a key role in the occurrence of these health effects, given that it is in urban areas where the largest fraction of the population in Europe is exposed to degraded and degrading air quality.

Air quality is, however, an exceptionally broad subject, and it would be pretentious to aim to cover all of its aspects in one single book. Through its 16 chapters, this book aims to provide an overview of air quality in urban environments in Europe mainly from the point of view of the sources of atmospheric pollutants, whether they may be natural or anthropogenic, primary or secondary, and whether pollutants originate from local sources or are transported large distances across the continent. In this context, in Part I authors have contributed with valuable chapters dealing with emission sources such as biomass burning, vehicular traffic, industry and agriculture, but also with African dust and long-range transport of pollutants across the European regions. Assessments are based on measurements and exposure modelling approaches. The impact of these emission sources and processes on atmospheric particulate matter, ozone, NO_x and volatile and semi-volatile organic compounds is discussed. Based on air quality data, criteria for the identification of critical areas for particulate matter and NO_2 in Europe are presented, followed by an analysis of air quality management approaches. In Part II future perspectives are presented, giving insights into potential upcoming air quality monitoring strategies and metrics of interest such as nanoparticles and submicron particle size distribution data. The relevance of indoor and outdoor exposure scenarios is also highlighted.

Certainly a number of aspects are not covered by this overview, such as ultrafine particle or secondary organic aerosol formation processes and their roles on air quality degradation, urban-scale dispersion models for air quality modelling or the

impact of air quality in regional background areas on pollutants in the urban environment. In sum, while we hope this book covers major aspects influencing air quality in urban areas, it also evidences the sheer size of this topic and the need to push research forward in this direction.

This book is intended for a broad audience, from environmental specialists working already in this field to newcomers who want to learn more about this issue. I would like to thank all the authors for their time and efforts in preparing their corresponding chapters, as well as my team leaders and I would also like to thank my team leaders and my co-workers for creating a motivating work environment, which allowed this project to come to life.

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Reference

Lim et al (2012) *Lancet* 380:2224–2260



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