

Preface

This volume complements Issue Number 8 on *Air Quality Management*. Together, the two represent a comprehensive overview of the major forces driving air pollution control and the policies and measures through which that air pollution control is achieved. In this volume on air pollution and health, some of the leading international figures in this field give their personal view on the current state of knowledge in the key areas in which air pollutants impact on the health of the general population. This has been a very active field in recent years, with a burgeoning of research activity and a drive by both national governments and international organizations such as the European Union and World Health Organization to set new health-based air quality standards based on the latest research designed to protect the public. Much of that recent activity is encapsulated in the chapters of this volume.

In the first article, Jon Ayres reviews the latest information on health impacts of the more important gaseous air pollutants. These include sulfur dioxide, nitrogen dioxide, carbon monoxide and ozone. Professor Ayres has been at the centre of activity in the UK designed to research and interpret data on the health impacts of air pollution, having chaired a government-appointed committee set the task of quantifying the public health impacts of air pollution exposure in the UK. The second article addresses the very topical issue of airborne particulate matter, widely measured as the fraction known as PM_{10} . Ken Donaldson and William MacNee have been at the forefront of research to understand the mechanisms by which PM_{10} causes lung injury, and their paper reviews research from around the world on this complex issue. It demonstrates clearly that inhaled particles can have profound impacts on physiology and biochemistry and it is therefore unsurprising that epidemiological studies show major impacts of PM_{10} exposure.

Public concern over pollution tends to focus very much on chemical carcinogens. The third article by John Christian Larsen and Poul Bo Larsen provides an extensive and authoritative review of the health effects of important airborne chemical carcinogens. By means of unit risk factors, very approximate estimates may be made of the public health impact of exposure to chemical carcinogens. This article serves well to put the issue into perspective. In the further article by Roy Harrison on setting health-based air quality standards, much of the earlier information is drawn together in an overall introduction to the methodology used to set standards, and to the standards available in Europe

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and North America. The methodology and approach used in standard setting depends very much on the nature of the pollutant, and this is brought out clearly by case studies of individual pollutants. The following article by Morton Lippmann deals specifically with the standards set for particulate matter and ozone by the US EPA in 1997. The North American standard setting process is both protracted and extremely thorough, and Professor Lippmann, who was personally involved in this process as well as participating in World Health Organization activities in the field, does a masterful job in summarizing the very complex issues within this article. The major part of the article deals with particulate matter and well complements the more mechanistic article by Donaldson and MacNee. Professor Lippmann concentrates especially on the epidemiological evidence and how that can be used to evaluate the risk from particulate matter exposure.

Air quality standards normally relate to outdoor air and the fact is often ignored that the air inside the home can be significantly more polluted than that outdoors. Whilst the mechanisms of effect are likely to be the same for indoor pollutants as for those outdoors, the pollutant mix is different, and quite independent studies have been made of the effects of indoor pollution. These are comprehensively reviewed by Paul Harrison, who draws his reviews of individual pollutants together into very helpful conclusions relating to each of the major pollutants. He also reviews policy and research initiatives.

We are delighted to have attracted such a distinguished group of authors in this very topical field. We feel that overall they have produced a superb overview of the subject, which will be of lasting value.

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