National Board of Housing, Building and Planning, Swedish Council for Building Research

Buildings and Health: Educational Campaign for Healthy Buildings

Svensk Byggtjänst, Solna 1994
143 pp.; approx. SEK 250
ISBN 91-540-5409-8

Any publication that aims to set out the 'body of knowledge' on how to avoid health and comfort problems in buildings must be commended. It has been written for all professionals involved in the design, production and day-to-day running of buildings and is generally based on Swedish research, although the authors are quick to point out that these problems are worldwide. The difficulty for anyone who has to implement this knowledge is to sort out what is still conjecture and what is truly 'known', concerning the design and running of buildings and the impact on occupant well-being.

The topics covered range from consideration of possible health problems to the design, operation and owner requirements of buildings. The first chapter identifies the potential health and comfort issues of the sick-building syndrome, outdoor pollution, tobacco smoke, perfume, carbon dioxide, moisture and mould, and radon.

The two largest chapters are entitled 'Material Emissions' and 'Moisture' and identify how materials react under the influence of temperature and relative humidity. The material emissions section argues that the increased use of synthetic materials has resulted in higher levels of indoor pollutants, which may be causing occupants to become unwell. To this end the authors call for greater information concerning the emission data from building materials. Details of individual chemicals such as formaldehyde may be of some use, although the complex interactions of ventilation, adsorption, and mixing with several low concentration emissions make it extremely difficult for a practitioner to evaluate the possible impact of these chemicals. There is some good advice on how to manage building materials on site.

The need for guidelines on how to prevent indoor climate problems is essential; however, as the research base in this area is still incomplete, with little in the way of proof of cause and effect, it is extremely difficult to produce meaningful directions. It is clear that there are many occupants of buildings suffering from chronic illnesses as a direct result of living or working in these buildings. In addressing these issues, the book makes excellent use of illustration and is written in a style which makes it accessible to a wide range of building professionals. *Nick Parine,* London

B.J. Alloway, D.C. Ayres

Chemical Principles of Environmental Pollution

Blackie Academic and Professional, 1994
291 pp.; £18.99
ISBN 0-7514-0013-0

This book is written for students interested in the fundamentals of pollution of the environment and is divided into three sections: the basic principles, pollutants, and wastes and disposal.

It begins by lucidly introducing current concerns of environmental pollution citing numerous examples including the formation of the secondary gaseous pollutants: peroxyacetyl nitrate, ozone and nitrogen dioxide; the problems of pesticide pollution, energy production and expanding world populations. A simple source/target model is introduced which is expanded in detail in terms of pollutant, transport medium and mechanism. This first section goes on to describe the toxicity and basic risk assessment of pollutants and the analysis of organic compounds, with particular reference to gas chromatography, concluding with a brief section on environmental monitoring.

Pollutants are discussed in the second section of the book. Firstly, the problems posed by the inorganic pollutants which include ozone, the oxides of carbon, sulphur and nitrogen, the heavy metals and radionuclides and next by organic pollutants. This latter group of compounds is enormous and subdivision is necessary to make sense of them. Thus, solvents, as a group, are considered separately from organohalides which are really a subset but which, when pollutants, need to be considered on their own. Finally, pesticides: too often maligned as polluting but a group of compounds whose benefits should not be forgotten.

The final section of the book describes very briefly waste generation and current disposal methods. The long-term problems of land disposal of hazardous wastes is discussed which is a useful inclusion to illustrate the engineering problems of disposal of chemical wastes.

The text is very well presented, ideas are clearly expressed and the diagrams have been well selected. References are by subject headings at the end of every chapter, which is a useful device. The number of topics covered is vast, their treatment detailed and concise. My reservation with this book is that the organisation of the material is too pollutant oriented. For example, one chapter discusses gaseous pollution from oxides of nitrogen and carbon, followed by heavy metal pollution which, in the main, is concerned with the solid and liquid (aqueous) phases. Environmentally, different physical phases present very different problems. Similarly, organic solvents (benzene, toluene) in air or water present very different pollution problems in

terms of their mobility within a phase and uptake of the pollutant by that phase. The transport medium, as detailed in the source to sink model presented in the first section, is inextricably linked to the potential of the pollutant to pollute and so the more popular division of soil, water and air pollution is a more useful model for the discussion of environmental pollution.

All that said, I would recommend this book as an introductory text for both students and professionals interested in environmental pollution. It is very well referenced, easily understood and covers a wide variety of environmental topics. As a basic source of reference material, however, its use may be limited.

Benjamin E. Purcell, London

H.J.Th. Bloemen and J.Burn (eds.)

Chemistry and Analysis of Volatile Organic Hydrocarbons in the Environment

Blackie Academic & Professional, London 1993
290 pp.; £69.00
ISBN 0-7514-0000 9

Volatile organic compounds (VOCs) in the environment are the subject of world-wide concern due to their environmental and health effects. Understanding their role in producing environmental damage and health effects is, however, a complex and confusing process both for scientists and legislators. The stated aim of this book is to provide the information required to improve the communication and understanding of the various approaches to studying and controlling VOCs. It is directed at analytical and environmental scientists, policy makers in regulatory bodies and research organisations. For these interested groups, I believe it will prove an extremely useful text.

The first two sections discuss the methods by which people are exposed to VOCs and the diverse acute and chronic health effects that different exposure levels produce. One of the problems in writing about VOCs is the very large number of individual chemicals that can be included in this group. This book manages the difficult task of balancing a generalised description of the possible exposure routes and health effects with more detailed analysis of the effects of specific VOCs.

Pollution problems of air, water and soil environments by VOCs are described in the following three sections, including topics such as sources and behaviour of VOCs, sampling and analytical techniques, transport and release mechanisms. These chapters are full of useful information and give a very clear picture of the current understanding of how VOCs contribute to the pollution of these environments. The difficulty with splitting up a subject into air, water and soil pollution is that the links between these environments are often overlooked. Pollution of groundwater by VOCs from contaminated land is one of the major difficulties facing industry at present. Although partitioning of VOCs in the soil and pore water is discussed in the chapters on soil and water pollution, I would have liked to have had a more in-depth analysis of the migration between air, water and soil and the problems this can produce.

The penultimate section discusses future monitoring techniques for VOCs such as real-time analysis, passive sampling and other developing methods. This is an interesting and informative chapter and recommended reading for scientists interested in analysis but also for regulators who may be involved in future implementation of these techniques, several of which are available now although not regularly used. Finally, the problems of VOCs and occupational exposure are examined. I am unsure as to why this section has been placed at the end of the book as many of the issues it raises, such as combined exposures, are also relevant to non-occupational exposure and would have benefited from being raised earlier in the text. However, this is a very important subject and worthy of a separate chapter.

Ivor Gee, London