CORRESPONDENCE

Personal exposure of children to nitrogen dioxide

We read with interest a recently published study on personal exposure of asthmatic children to nitrogen dioxide (NO$_2$), relative to concentrations in outdoor air. In their results, the authors did not find:

- a significant correlation between each child's weekly mean personal exposures and mean outdoor concentrations for the corresponding periods;
- marked evidence of seasonality on personal exposure.

They concluded: "...at low concentrations, changes in NO$_2$ in outdoor air...contribute little to variations in personal exposure..." We think that these conclusions cannot be drawn from the method used to evaluate outdoor concentrations. Besides, we report different findings on a seasonal trend at higher concentrations of personal exposure.

We performed a study to evaluate the annual distribution of personal exposure to NO$_2$ in school children of Novara, a small city in north west Italy (about 110 000 inhabitants) and to study determinants of this exposure. Exposure to NO$_2$ was measured with passive samplers (Palms' tubes) in 310 school children aged 5–14 years. The children wore the tubes for 5 days a week, in each season of the year.

The possible differences in personal measurements were assessed by analysis of variance (ANOVA) and Tukey's tests. Information about the sources of potential exposure was collected by a questionnaire. The relative risk for these variables was estimated with a multiple regression model (logit). The annual average of 6200 measurements was 42.7 µg/m$^3$ with a significant difference between seasons, and higher values in winter. The only factor associated with increased personal exposure was to live along trunk roads with heavy traffic. The correlation coefficient between indoor and outdoor concentrations was 0.95.

We have hypothesised that maternal exposure to NO$_2$ is associated with abnormal birthweight and preterm birth. The seasonal changes in concentrations in the home and school were studied. Exposure to NO$_2$ was measured with passive samplers (Palms' tubes) in 310 school children aged 5–14 years. The children wore the tubes for 5 days a week, in each season of the year.

The results showed that personal exposure to NO$_2$ was higher in winter than in summer, and that the difference was statistically significant.

The conclusion is that the seasonal changes in concentration in the home and school are associated with personal exposure to NO$_2$. The results support the hypothesis that maternal exposure to NO$_2$ is associated with abnormal birthweight and preterm birth.

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CORRECTION

Glutaraldehyde induced asthma in endoscopy nursing staff. E WACLAWSKI. 2001;58:544.

The last sentence should read: The presence of a control group of nurses working in areas without exposure to gluteraldehyde would have been of help in interpreting the results obtained.

BOOK REVIEWS


For graduate students trying to move beyond a basic understanding of the effects of air pollution on our health and urban environment, a book such as this is greatly needed. The volume of literature on that subject and its level of complexity is huge, and the gulf between it and basic texts is growing rapidly. This book seeks to bridge that gulf by tackling the key issues in the field of air pollution research.

A collection of work by people with expertise in each of the chosen fields, this book succeeds to varying degrees with its aim, with some chapters succeeding to a greater extent than others. Statistical issues in analysis of air pollution time series are complex indeed, and Hurley succeeds in demonstrating these complexities without making them seem intimidating. Maynard also provides a very clear introduction to the effects of non-biological particles on health, which gives readers a clear understanding of causality in epidemiological studies, and introduces the issues surrounding the key question as to who dies during episodes of particulate pollution. Cancer and air pollution is another difficult area dealt with skilfully by Rushton. People without an epidemiological background are introduced to the concepts of epidemiological studies, and confronting in particular. Other highlights are the lucid discussions of mechanisms of toxicity of gaseous pollutants, and an introduction to the concept of risk measurement and management at the population level.

Other contributions did not seem to work so well. The introductory chapter would not give a reader new to the field a clear picture as to how composition, sources, and levels of air pollution have changed, and the discussion of alternative fuels was dominated by discussion of regulations in the United States and took a long time to get down to business. The final chapter about information resources gives a basic introduction on where to find information, but essentially is a list of where to find information on any subject—an advanced reader would possibly be better served by introducing key elements against which studies in this field can be critically appraised.

Inevitably, there are some terms that are not explained by the authors, which would make some sections difficult to understand for people from a different scientific background to that of the authors. Addition of a glossary would have helped. The ordering of the chapters seemed at times to be illogical but good editing means that all sections are relatively easy to read and follow. The print quality of some of the figures is poor, which is a shame, because there are relatively few of them.

Overall, this book succeeds at a very difficult task. A graduate student will leave this little volume neither overwhelmed by the complexity of the subject, nor seeing as simple the task of unravelling the vast and growing body of knowledge in the field of air pollution research. In that, the book succeeds, and I would recommend it to my research students as a way into this fascinating subject.

S WALTERS
Patty's industrial hygiene, Volumes 1–4, 5th edition. Edited by Harris SL. (Pp 3453; £577 for all four volumes, £166 each if purchased separately.) 2000. Chichester, West Sussex, UK: John Wiley and Son. ISBN 0 471 29784 4

This is a comprehensive occupational hygiene textbook written from a North American perspective. There are 67 chapters in four separate volumes, a total of 3453 pages covering everything from hazard recognition to control of emissions from industrial processes. Each volume is available separately although there is a discount for those who decide to purchase the four volumes together.

The first edition of Patty's industrial hygiene was produced over 50 years ago, with each subsequent edition being produced at about 10 year intervals. The scope of the work has continued to expand as occupational hygienists have become involved with a wider range of problems. This edition brings together updated material that was previously published in Patty's industrial hygiene and toxicology and The theory and rationale of industrial hygiene. These books are mainly intended as a reference source for the professional occupational hygienist, but they provide such a diverse range of material that it is likely that anyone involved with occupational health would find much of interest within them.

Volume 1 comprises sections on physical agents (seven chapters), engineering control plus personal protective equipment (six chapters) and biohazards (two chapters). The chapters on biohazards are both new to this edition of Patty's industrial hygiene. Much of the material in the section on physical agents is specific to the United States, for example the use of 5 dB adjustment for noise exposure rather than 3 dB, which is used in Europe. There is also extensive reference to specific sections within United States legislation and guidance. The revised chapter on non-ionising radiation has not been included in the paper version book and we are left with a one page addendum to the chapter written for the fourth edition to describe the research on the potential adverse effects of low frequency magnetic fields and cellular telephones. An editorial note suggests that a revised chapter may be included in the CD-ROM version of the book.

Volume 2 comprises sections on physical agents (seven chapters), engineering control plus personal protective equipment (six chapters) and biohazards (two chapters). The chapters on biohazards are both new to this edition of Patty's industrial hygiene. Much of the material in the section on physical agents is specific to the United States, for example the use of 5 dB adjustment for noise exposure rather than 3 dB, which is used in Europe. There is also extensive reference to specific sections within United States legislation and guidance. The revised chapter on non-ionising radiation has not been included in the paper version book and we are left with a one page addendum to the chapter written for the fourth edition to describe the research on the potential adverse effects of low frequency magnetic fields and cellular telephones. An editorial note suggests that a revised chapter may be included in the CD-ROM version of the book.

Volume 3 contains 18 chapters on legal, regulatory, and managerial aspects of occupational hygiene practice. Most of this volume is specific to United States legislation, although three chapters are of more general interest: pharmacokinetics and unusual work schedules, the biological basis of occupational exposure limits, and a chapter on biological monitoring. The chapter on pharmacokinetics and unusual work schedules by Dr Dennis Paustenbach is a particularly useful review of this topic that is accessible to the general reader and provides practical advice about how to evaluate the risks for people who have to work very long periods or non-standard shift patterns.

Volume 4 has a further 16 chapters that cover specialised areas and associated professional topics. This book has chapters on occupational health nursing, epidemiology, occupational safety, fire and explosions, indoor air quality, air pollution, and hazardous wastes.

There is an uneven feel to these books, with the consequence that the reader is uncertain of what to expect before beginning a chapter. The level of the material varies from straightforward introductory standard to complex discussions of specific technical issues—for example, there is a long chapter on the statistical interpretation of monitoring data. Some chapters—such as the one dealing with man made mineral fibres—seem ill conceived because the material is unlikely to be relevant a few years from now. Several of the chapters use imperial units, others have either SI units or a mixture of systems, which in my opinion serves to confuse the reader. Each chapter has an extensive bibliography, but there is no standardisation of the format of the citations. A minor but annoying point when the content of a reference is not apparent from the material quoted.

One major omission is a discussion of the recent developments in assessment and control of dermal exposure. This is an area of occupational hygiene practice that has seen considerable research efforts, both to develop new techniques to measure hazardous substances contaminating the skin and to evaluate the effectiveness of gloves and clothing in protecting people at work. Otherwise these books are a comprehensive source of information about occupational hygiene in the United States. For European occupational health practitioners there are many individual chapters that are both interesting and informative. However, overall these books are not good value for money for people working outside North America.

J CHERRIE