BOOK REVIEWS

Book review editor: R L Maynard

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Biological Exposure Values for Occupational Toxicants and Carcinogens. Volume 2. (Pp 190; price £60.) 1995. Federal Republic of Germany: VCH-DFG. ISBN 3-527-27034-5.

This is the second volume in a series of critical data evaluations for BAT and EKA values. The first volume was reviewed here a year or two ago and in this second volume, a further 22 compounds are dealt with and recommendations for BAT values made. The compounds considered include, as a group, acetylcholinesterase inhibitors, aniline, ethylene oxide, hydrazine, tetraethyl lead, vinyl chloride, and xylenes. The reviews are short but adequate and the reasoning leading to BAT values is well explained.

The book has a significant drawback however. This relates to the dates on which the compounds were reviewed. Most were considered in the period 1990-4 but some accounts are very much more dated: acetylcholinesterase inhibitors (1985), hexachlorobenzene (1984), nitrobenzene (1986), xylene (1984). No updating of the references to the literature on these compounds and groups of compounds is provided.

Used with care, this is still a valuable collection of short toxicological reviews. Readers are advised to look at the tables of dates of completion of the reviews before deciding on whether they also need to look elsewhere. With these reservations, this remains a useful source for any occupational medicine or toxicology library.

R L MAYNARD

Occupational Hygiene. Edited by J M HARRINGTON, K GARDINER. (Pp 442; price £65.00.) Oxford: Blackwell Science. ISBN 0-632037342.

Occupational hygiene has been defined as the application of scientific, technological, and managerial principles to protect the health of workers, and those outside the workplace, by preventing or reducing risks due to chemical, physical, and biological agents. Occupational hygienists are concerned with a broad range of problem solving activities from monitoring the risks arising from exposure to hazardous substances, to advising about the suitability of

protective clothing for those entering stressful thermal environments. Although the underlying principles of occupational hygiene are more or less universal the practice is dictated by national legislation, management culture, and local custom. In recent years there has been an increasing divergence between occupational hygiene practised in the United Kingdom and North America. It is therefore timely that there should be a major revision of this, the only United Kingdom inspired occupational hygiene textbook.

According to the editors the book is primarily aimed at students following a degree course in occupational hygiene, although it should be a useful resource for other occupational health professionals interested in this subject. There are 25 contributors all of whom are either national or international experts in their chosen topic. The book is organised into 24 chapters covering either underpinning knowledge required by an occupational hygienist or core areas of occupational hygiene. Most chapters contain suggestions for further reading and all have cited key references.

There are excellent chapters on sampling of gases and vapours, by Robert Brown from the Health and Safety Executive, and sampling aerosols, by David Mark of AEA Technology. The nature and properties of aerosols and gases are summarised in a very straightforward way, with the amount of mathematics limited as far as possible. The section on control of chemical hazards has been expanded with a new chapter on control philosophy and a completely rewritten chapter on personal protective equipment.

Physical hazards form the topic of six separate chapters. These include a brief description of effects of extremes of temperature, atmospheric pressure, and sound. Subsequent chapters provide more detailed accounts of the monitoring and control of noise, vibration, the thermal environment, and radiation exposure. Where necessary these sections expand on the effects of these agents on workers' health. Biological hazards are only briefly discussed.

A new chapter on the structure and function of the skin is appropriate as greater emphasis is now being placed on preventing occupational skin diseases and reducing dermal uptake of chemicals. However, this section would have benefited from less jargon and it should have contained some discussion of recent developments in monitoring dermal exposure. Other new material on retrospective exposure assessment, ergonomics, auditing, and biological monitoring reflects the need for occupational hygienists to become involved in an ever increasing range of problems.

There are still some notable omissions from this text book. For example, although the medical aspects of inhaled materials are dealt with there is nothing on toxicology. Neither is there any discussion of the risks to the population surrounding industrial sites. Perhaps more importantly there is nothing about risk assessment techniques—for example, in relation to the United Kingdom Control of Substances Hazardous to Health Regulations—which have occupied so much of the occupational hygienist's time in recent years.

Overall this book provides a good insight into the principles of occupational hygiene. It should fairly quickly become the textbook for students of occupational hygiene in the United Kingdom and it would be valuable

reading for physicians new to occupational health. It is excellent value for money.

JOHN W CHERRIE

Handbook of Air Toxics—Sampling, Analysis, and Properties. By LAWRENCE H KEITH, MARY M WALKER (Pp 614; price £69) 1995. Boca Raton, FL: Lewis. ISBN 1-56670-114-7.

A short browse through this book left me in some doubt as to the target audience. I eventually found in the preface a statement that the book is a printed version of an electronic database "intended to help regulators and the regulated community meet the challenges of sampling and analysis, emission reductions, and health and safety issues related to human exposure". Little the wiser, I looked again at the book and still remain in some doubt as to the potential readership. The book is in three main sections. Firstly, a short introduction deals with methods of sampling ambient air. This is followed by a more substantial chapter dealing with analytical procedures for air toxics. Surprisingly, most of these methods seem to apply to samples collected from stack gases rather than from the methods described in the first chapter relating to outside ambient air. A few do refer to ambient air, and a few to drinking water, solid waste, and soils. As the methods are only summarised rather briefly, the reader would have to refer to the cited USA EPA method for sufficient detail for practical use. The third and far the most major section of the book gives information on the physical properties and hazards of about 250 specific chemical compounds or groups of substances. The hazard data relates to fire, explosion, and human health, although the human health refers generally to relatively massive exposures rather than typical environmental levels. Unfortunately there is no means of gauging potential toxicity other than through the United States Hazardous Air Pollutant Weighting Factors, a fairly crude measure. The data is drawn from some 723 references which are listed in the book. A number of databases have come available recently for those seeking information on toxic chemicals. Although this is one of the least expensive, it is also one of the least detailed and least comprehensive, and is unlikely to satisfy the needs of many public or environmental health professionals.

ROY M HARRISON

Biological effects of low level exposures dose response relationships. Edited by EDWARD J CALABRESE. (Pp 302; price £69.00.) 1994. Boca Raton: Lewis. ISBN: 1-56670-093-0.

Just for the British—a guide to U and non-U curves, and for all of us an intriguingly infuriating introduction to "hormesis", the idea that small doses of harmful substances or irradiation may enhance health, even when large doses undoubtedly damage it.

The book is derived from talks given at a conference in 1993 on the Biological Effects of Low Level Exposure (BELLE) under the aegis of a selected group of philosophers, epidemiologists, radiation physicists, and classic and cellular toxicologists. The papers, mostly well referenced and usually clear in their goal and presentation, are based on the notion, which may be about 100 or 30 years old, depending on who is

regarded as its originator, that the dose-response curve need not always be monotonic. In other words, the one way relation, apart from instances of threshold, usually thought to show that an increase in dose leads to an increased effect in the same direction, may not be correct and that more complex patterns may occur in practice.

We are treated to many attempts to show non-monotonic—that is, U, J and B or bell shaped relations, in which a very low to low dose of a chemical toxicant or radiation produces a beneficial effect on cells (enhanced resistance), animals (better survival than untreated controls in long term toxicity tests), and people (less neoplasia induced by radiation), whereas higher doses produce harmful effects. There is a wordy attempt to bolster this by philosophising about breaching the conventional Kuhnian paradigm (a harmful heuristic in this instance).

The basic concept is very important scientifically, because of what it can show about responses to injury—for example, activated repair enzymes, heat shock proteins, changes in cell kinetics—and, as well shown here, the different ways of analysing and modelling laboratory and epidemiological data do show up misleading assumptions and hidden errors in many conventional and superficial evaluations. There is also a strong theme that United States Government style quantitative dose-response calculations for chemical toxicity, which ignore the complex shape of low dose responses, are liable to give quite erroneous risk predictions, even before ignoring the biological barriers involved in extrapolation between species. That should not be news in Europe, where we have long distrusted those who, like Trollope's Mr Minux "never thought but always counted".

The general standard of presentation and dialectic is high, but some contributors seem ignorant of modern receptor pharmacology, especially the concept of the partial agonist, and others overlook the dangers of uncontrolled molecular and cellular reaction mechanisms when arguing for the seeming "stimulation" of health by very low doses of chemicals and radiation.

There are many examples here of the diverse shapes of quantal and quantitative dose-response relations in the laboratory, the clinic, and the factory. In this way it affords an excellent training in the problems of analysing and interpreting results. That alone would be a good reason for buying the book, and another is its exemplification of the need to look hard at the complexity of biological findings. It also shows the stupidity of trying to force all toxicological data into the legislative convenience of a uniform model. However, it does so with a solemnity and persistence that should be unnecessary for any rational biologist. Perhaps the BELLE has had her ball and now can seek a better balance?

A D DAYAN

Advances in Occupational Medicine and Rehabilitation, Vol 1, No 2. Update on Benzene. Edited by M IMBRIANI, S GHITTORI, G PEZZAGNO, E CAPODAGLIO. (Pp 265.) 1995. Pavia 27100, Italy: Fondazione Salvatore Maugeri Edizioni and PI-ME Press. ISBN: 88-7963-038-5.

This is the second publication of a quarterly series. The issue of setting limits for benzene exposure in the workplace and the environ-

ment is both topical and controversial, so the timing of this volume is appropriate. The book consists of 22 chapters, all written by different contributors, with the aim of providing an update on the current state of knowledge about the effects of benzene. The first four chapters review exposures in the workplace, in ambient and in indoor air, and through environmental tobacco smoke, and the factors which affect the biological levels of benzene in humans. Chapter 5, the longest in the volume, surveys studies on human leukaemogenesis induced by benzene, and includes descriptions of the pathophysiology, human studies, the controversial risk assessments carried out on data from rubber manufacturing workers, animal studies, metabolism, and a long section of cytogenetic changes. Several of the later chapters contain material which overlap with chapter 5 although Paustenbach's contribution on the acute and chronic effects in humans is a good summary of the epidemiological work to date.

Other chapters cover experimental studies, and haematological changes and 11 chapters report various aspects of biological monitoring and biomarkers. The topics of risk assessment and pharmacokinetics are barely touched upon in this book, and yet these are the areas of research in which there is much work being currently carried out. The volume begins well with an attempt to coordinate the chapters. However, by the middle of the book there has begun to be obvious repetition and overlap and the second half consists of a series of papers on more specialist topics. The volume would be of more use to the reader if it had been structured more formally and the articles grouped under definite headings. It is not clear whether the editors intended it to be literally an update in that they assume the reader to have considerable knowledge of the topic or whether they wished it to be a thorough review. The chapters vary in their achievements towards these two different aims. Someone with little knowledge of the effects of benzene would obtain a rather patchy picture from this book. However, there is no doubt that sections of it would be useful to those with an interest in this specialist area. The reader would also need to be aware that this volume is probably already out of date and likely to become even more so very quickly. There are already several new studies reported in the scientific literature and in particular, the recently commissioned European Union risk characterisation will soon be available.

LESLEY RUSHTON

NOTICES

Diagnostic approaches to lymphoproliferative disorders. 24–28 March 1997. The Grand Wailea Resort and Spa, Maui, Hawaii

This continuing medical education course is sponsored by Scripps Clinic and Research Foundation and designed for haematologists, oncologists and pathologists who are involved in the histological diagnosis or clinical evaluation of patients with malignancies of the lymphopoietic system. The course will offer 26 credit hours of category 1 CME credit.

For further information contact: Department of Academic Affairs, 403C, Scripps Clinic and Research Foundation, 10666 N Torrey Pines Road, La Jolla, CA 92037, USA. Tel (619) 554-8556; Fax (619) 554-6310.

12th International Symposium: Epidemiology in Occupational Health ISEOH 1997. 16–19 September 1997. Harare, Zimbabwe

This symposium is organised by the National Social Security Authority of Zimbabwe, and the National Centre for Occupational Health, South Africa, on behalf of The Scientific Committee on Occupational Epidemiology (ICOH).

The conference aims to bring together people working in occupational epidemiology globally and to discuss methodological issues and practical applications of their research. The programme will include keynote lectures, oral presentations and posters. The conference will be held in southern Africa, where new development and social challenges provide fertile ground for advances in occupational health. We look forward to seeing you in the warm and friendly city of Harare in Zimbabwe!

For further information, contact: Ms M Mashigaidze, Att: ISEOH, National Social Security Authority, Box CY 1387, Causeway, Harare, Zimbabwe. Tel 263-4-728 931/722 047-9/723 822-4, Fax 263-4-796 320.

Sixth International Symposium on Neurobehavioural Methods and Effects In Occupational and Environmental Health. 15–18 October, 1997. Shanghai, China.

The symposium is organised by the Sanlian Accident Prevention Institute and the Shanghai Medical University.

For further information send a fax to: The Secretariat, 6th International Symposium on Neurobehavioural Methods and Effects in Occupational and Environmental Health, Sanlian Accident Prevention Institute, Hefei, Anhui province, PR China. Fax: +86-5515319266.

International Course on Modern Epidemiology, 12–15 May, 1997. Lunteren, The Netherlands.

This advanced course is about the principles of epidemiological research. The lecturer is KJ Rothman. Among others, the topics will be: case-control research principles, interaction in aetiology, statistics *v* epidemiological analyses. Enrolment is open to researchers with a basic knowledge of epidemiology and biostatistics and at least some work experience. Closing date for enrollment is 13 January 1997. Course fee is DFL 1895, including a single room with shower and toilet, breakfast, lunches, dinner, coffee or tea during breaks, the textbook *Modern Epidemiology*, and other course materials.

For further information please contact: Mrs Astrid van Alst, course secretary, Department of Epidemiology, University of Nijmegen, PO Box 9101, NL-6500 HB Nijmegen, The Netherlands. Tel. +31-24-3619132; Fax. +31-24-3613505; E-mail: A.vanAlst@mie.kun.nl