

**Experimental Toxicology—The Basic Principles.** Edited by Diane Anderson and D. M. Conning. Royal Society of Chemistry, London, 1988, xiv + 536 pp., \$138.00

This book is intended to provide the general toxicologist, students, and scientists in related areas with an overview of the basic issues involved in the practice of experimental toxicology. It is comprised of 25 chapters, ranging in subject area from the most basic science (biochemical principles, animal husbandry), through specialized presentations (molecular toxicology, immunotoxicology), and on to practical aspects of the toxicological sciences (the influence of environmentalism on toxicology, ethics in animal experimentation).

After the introductory chapter, the second chapter gives a general overview of the major causes of variability in toxicology testing, including the physical form of the test article, and the effects of route of administration and choice of species. It touches upon subjects as diverse as the effect of test material concentration in the vehicle and the design of inhalation experiments; many of these subjects are presented in more detail later in the book. Chapter 3 discusses again the consequences of choice of species, including the effects of age and hormonal and nutritional status on study outcome. A basic discussion of study design (use of control groups, selection of dose levels, etc.), which includes outlines of typical toxicology study designs, follows in Chapter 4. Chapter 5 presents very basic biochemical principles of toxicology, discussing, among other subjects, concepts of selective toxicity, metabolism and detoxification, interactions with target tissues, and dose-response relationships. Animal husbandry techniques are described in detail in Chapter 6. The technical requirements of inhalation toxicology, including the basics of equipment design and mechanisms of lung clearance of inhaled materials, are addressed briefly in Chapter 7. In Chapter 8, the role of histopathology in toxicology studies is discussed and the general principles and terminology of histology are presented. Chapters 9 and 10 cover the areas of metabolism and disposition of xenobiotics and the theory and practice of studies on the metabolic fate and disposition of compounds. Both are excellent treatments of their respective subject areas. Basic concepts of immunotoxicology are covered in Chapter 11, which briefly describes various potential immunological consequences of exposure to xenobiotics and the relevance of animal models to man. Chapter 12 discusses the evaluation of reproductive toxicity and teratogenicity, with an emphasis on teratological studies. A general, but excellent, discussion of the principles of genetic toxicology follows in Chapter 13 and is followed by a well-written discussion of the molecular aspects of genetic toxicology in Chapter 14. Carcinogenicity

testing, including the effects of dose route and level and the choice of species and experimental design, is described and discussed in Chapter 15. The subjects of teratogenesis and reproductive toxicity are returned to in Chapters 16 and 17. The former presents a general overview of *in vitro* alternatives for teratology testing, and the latter is a thoughtful presentation of the basic aspects of male and female reproductive toxicity testing. A practical treatment of the use of statistics in toxicology testing appears in Chapter 18. Chapter 19 discusses principles of risk assessment, including a brief introduction to the concepts of safety factors and the uses of mathematical modeling. The basics of epidemiology are described and discussed in Chapter 20. A brief discussion of information services and their use in toxicology appears in Chapter 21. Regulations and advisory requirements relating to foods are discussed in Chapter 22, which focuses primarily on the those from the United Kingdom. Environmental safety in the laboratory is discussed in some detail in Chapter 23, which provides information about laboratory design, fume hoods and safety cabinets, isolators, and ventilation. Good laboratory practice concepts, from the OECD point of view, are elaborated upon in the useful Chapter 24. The book concludes with a chapter devoted to the ethics of experimentation in animals.

The editors have assembled a diverse group of authors, many from the British Industrial Biological Research Association (BIBRA), to address a dizzying array of subjects. The chapters range from simple introductory overviews to very detailed and useful treatments of complex subjects. There is some repetition of subject coverage, particularly in aspects of study design and its effect on study outcome, some areas are covered too briefly, and some chapters appear out of place in their order of presentation (Chapter 12, for example, would have been better placed either just before or just after Chapters 16 and 17). The chapters on immunotoxicology, histopathology, and teratology could have been expanded, and certain chapters toward the end of the book could have been eliminated without affecting the overall quality of the volume.

This book is a comprehensive treatment of experimental toxicology, and the minor problems cited above notwithstanding, serves as a useful introductory volume. It is well referenced and will provide a good starting point for the student, as well as for the research scientist who wishes to know more about this field.

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