

Book Reviews

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**Chemical Warfare Agents Toxicology
and Treatment**

John Wiley & Sons, Chichester, 1996;
243 pp.

This volume begins with an excellent discussion of the history of use of chemical warfare (CW) agents, ethics and opinions of governments and other commentators. The second chapter describes the physico-chemical properties of CW agents (the relevance of which is obscure) and their general toxicology (which, although of high relevance, is given lesser prominence)!

Three chapters focus upon the organophosphorus nerve agents. Topics include the chemistry, toxicology, symptomatology and treatment of poisoning and a description of results from human studies with these agents in the UK and USA. Missing is the provision of a historical and/or technical linkage across the studies reported and discussion highlighting the scientific and/or medical relevance of the data produced.

The volume is completed by shorter chapters on phosgene, the cyanides and riot-control substances (which are not really CW agents).

After stressing the importance of CW agent-induced incapacitation for military performance, the sections on performance effects are curiously short. Further, a difference of opinion regarding the relevance of animal studies to humans is expressed but not resolved. A notable omission is discussion of the differential diagnosis, since some symptoms of poisoning are common to two or more CW agents.

One fascinating aspect of this volume is the insight it provides into the rationale for new research. Lewisite, for example, was developed to replace mustard, the long physical persistence of which prevented attacking forces from occupying contaminated ground.

In summary, although the information presented lacks good organization in parts, some information is redundant and relevant discussion omitted, this volume provides a unique review of available information on the symptoms and treatment of CW agent poisoning in humans. It will be of significant value to both historians and health-care professionals.

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The Metabolism and Toxicity of Fluoride

(Volume 16 of Monographs of Oral Sciences, edited by H. M. Myers) S. Karger AG, Basel, 1996; 2nd revised edition, 156 pp., hard cover: US\$172.25, DEM237.00

Fluorine is the 13th most abundant element in the Earth's crust, where a significant part of this halogen element is associated with calcium in fluor spar and fluorapatite. This trend may be important because, with the exception of acute intoxication dominated by corrosiveness, the target of fluoride is the tissues rich in calcium. Thus it is not surprising that the bulk of this volume deals with the metabolism of fluoride and its effects on teeth and bones. The focus is on human aspects and related animal experiments. Effects on farm animals, insects, plants or microorganisms are outside the scope of this volume. The selection of topics was clearly influenced by the research interest of the author. There is nothing on the mechanisms of uptake of fluoride by teeth or bones or the form of binding in mineralizing tissues, but there is a section on absorption from the urinary bladder.

After a short overview of fluoride metabolism and intake, half of which is dedicated to the relationship between fluoride intake and dental fluorosis, two chapters deal with oral and gastrointestinal absorptions, plasma concentration and soft tissue distribution. The following chapter is on the renal handling of fluoride and absorption from the urinary bladder. There is an interesting chapter on factors that modify the metabolism and effects of fluoride. This chapter includes a section on the effect of the stage of skeletal development and previous fluoride uptake. Data presented in this chapter show that fluoride in enamel is ca. 7% of the level in the femur but exposure to fluoride at high altitude increases fluoride concentration in enamel by a higher factor than in bone and fluoride concentration in ribs is higher and in the skullcap is lower than in the femur. Further chapters deal with the protective effect of fluoride against caries and acute fluoride toxicity, and

the last chapter with chronic toxicity that affects bone structure.

The volume is intellectually stimulating and the claim on the back cover that it will be of particular interest to dental students and residents, dental educators and researchers, toxicologists, pharmacologists and physiologists seems to be justified. Nevertheless, some readers may miss some data, or in their unavailability at least a hypothesis, on the uptake and the form of fluoride in teeth and bones. Others perhaps may find cumbersome the excessive use of abbreviations. I frequently had to stop reading to locate the explanation for HMDS or TSAB in order to make sense of a sentence or even a paragraph. It is all right when the reader knows the meaning of PGE₂ mentioned in the introduction, but the ignorant will find the explanation only on p. 132. An appendix with a list of abbreviations and a more comprehensive index would have been a great help.

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G. O. EVANS (ed.)

**Animal Clinical Chemistry—A
Primer for Toxicologists**

Taylor & Francis, London, 1996;
216 pp., £10.95 (paperback), £45.00
(cased)

This small volume successfully fills a gap in the toxicological literature. Although it does not give methodological details, it is more than a primer for beginners. Chapters range from study designs, preanalytical (differences dependent on sex, age, species, nutritional status) and analytical variables, through statistics and general enzymology, to diagnostic tests. Separate chapters deal with hepatic, renal, neural, cardiac, endocrine and gastrointestinal toxicity, electrolyte balance, lipids and proteins. The chapter on study designs and regulatory requirements discusses not only good laboratory practice but summarizes the recommendations of the Joint Committee for the Harmonization of Clinical Pathology Testing (IHCPT) and the UK Shadow Toxicology Group of the Organization for Economic Cooperation and Development (OECD), which will shortly be embodied in the Clinical Chemistry Sections of the OECD guidelines.