Environmental Models: Emissions and Consequences edited by: J. Fenhann, H. Larsen, G.A. Mackenzie, and B. Rasmussen, Elsevier, Amsterdam, 1990, ISBN 0-444-88609-5, 500 pp., $100.00/Dfl 195.00.

This book is based on the papers presented at Risø International Conference (May 22–25, 1989). Forty oral presentations have been grouped in nine sections. A list of participants is given at the end of the book. The book is produced from the papers typed by conference participants.

The papers cover a wide range of topics in air, aquatic, and terrestrial systems. Scientific, as well as policy related papers, are included in the book. The work provides an insight into environmental modeling activities in Europe.

The purpose of the conference, and a summary of research programs by the European Commission, are very well explained by two speakers in the introduction section. Three projects on the development of air emission inventories are discussed in the section on emissions. An interesting paper on air pollution index from the U.S.S.R. also appears in this section. Some aspects of air pollution economics are given in the section on economics. Other sections describe the short-range effects of air pollutants, biological effects, energy and environmental planning, environmental models for aquatic systems, terrestrial systems, and integrated models.

The book will be of interest to a diverse group of environmental scientists. And it can be used as a reference book on applied work related to environmental modeling.

ASHOK KUMAR

Accidental explosions Vols. 1 and 2, by Louis A. Medard, Ellis Horwood, Chichester, ISBN 0-745-80403-9 (vol. 1) and 0-745-80436-5 (Vol. 2), 400 and 396 pp., £90.00 (set).

This book, which is a translation of the author's "Les Explosifs Occasionels" represents an important addition to the English language literature of the subject.

Its authoritative treatment is derived from a rigorous analysis of the physical and chemical fundamentals of the subject. It supplies an extensive bibliography which, *inter alia*, provides the English speaking reader with a considerable body of references to French authors whose work in this field may otherwise be overlooked. These authors include such distinguished scientists as Le Chatelier and Berthelot.

It has to be said that defining the subject matter presents certain difficulties, even the translation of "occasionel" is not straightforward as it has no precise English equivalent. The author cites P. Vieille in support of the concept that

the work is concerned with the hazards of those substances which are used in industry, not because of, but in spite of, their explosive properties.

There are two volumes. The first volume is concerned primarily with the fundamental physics, chemistry and thermochemistry of explosions. The second volume consists of a series of monographs on the explosive properties of individual substances or classes of substances.

Volume 1 is in three parts. The first part is concerned with the fundamental sciences. the second part deals with gas explosions, dust explosions and aerosol explosions. The third part is concerned with condensed explosives, i.e. liquids and solids.

Chapter 1 contains an interesting discussion on the meaning to be attached to terms such as "stoichiometric" and "balanced" in relation to fuel/air mixtures, a discussion which typifies the thoroughness of the author's approach. Also noteworthy is the attention given by the author to the distinction between "deflagration" and "detonation".

Volume 1 is very comprehensive in its coverage of those topics which are relevant to the fundamentals of explosions and the text is accompanied by an impressive array of tables and charts.

As has been noted Volume 2 is devoted to a series of monographs on families of explosive substances. All classes of industrial importance appear to be covered. There is an especially detailed treatment (70 pages of text, justified by the commercial importance of the materials) given to ammonium nitrate and ammonium nitrate based fertilisers. Each class of explosive substances is discussed in terms of properties such as stability and advice is given on how to handle them safely as, for example, by inert gas blanketing. In addition this volume reviews purely physical explosions such as those which arise from the rupture of cylinders of compressed gases.

The book does not concern itself to any great extent with the consequences of explosions; there is thus no treatment of scaling laws such as those of Hopkinsen. It is not very well provided with case histories and even where incidents are noted, places and dates are not always cited. There are no photographs which was the case in the French original.

No one concerned with handling explosive substances, whether in the laboratory or in the factory, can fail to learn something useful from reading this book.

VICTOR C. MARSHALL