

6. Land Application and Liners
7. Resource Recovery
8. Hazardous Wastes
9. Metals and Industrial Wastes
10. Sludge Management
11. Safety and Right-to-know

This book, which is an outgrowth of the conference, provides a state-of-the-art synopsis of contemporary practice in the control of industrial, toxic and hazardous wastes.

G.F. BENNETT

Polycyclic Hydrocarbons and Carcinogenesis, by R.G. Harvey (Ed.), ACS Symposium Series 283, American Chemical Society, Washington, DC 20036, 1985, 406 pages, US and Canada, \$74.95, export \$89.95.

This volume of 15 chapters was developed from a symposium sponsored by the Division of Organic Chemistry of the American Chemical Society, Philadelphia, August 1984. It reviews what is known or suspected about the relationship between chemical structure, reactions, and metabolisms of polycyclic aromatic hydrocarbons (PAHs) and carcinogenic action in animals and humans. The ubiquitous distribution of these compounds in polluted air, automobile exhausts, tobacco smoke, and many common foods have created much attention to these compounds, but since only certain PAHs exhibit tumorigenic activity, and the level of activity is highly dependent upon molecular structure, much has yet to be learned.

This collected work assembles the reports from leading experts to review these advances and report their latest findings. While major emphasis is placed on PAH activation via diol epoxide metabolites, evidence for other potential mechanisms is also reviewed.

The volume should be of interest and value to anyone interested in the causes and prevention of cancer, including graduate students and environmental control technical personnel.

H.H. FAWCETT

Handbook of Reactive Chemical Hazards: An indexed guide to published data, 3rd edn., L. Bretherick (Ed.), Butterworths, Borough Green, Sevenoaks, Kent TN15 8PH U.K. and 80 Montvale Avenue, Stoneham, MA 02180 U.S.A., 1985, 1852 pages, \$99.95, £85.00.

Leslie Bretherick, a chemist recently retired from the BP Research Center, has compiled a monumental volume, first published in 1972 and later in

1979. This third volume updates the literature of the world on this subject through December 1984, and gives essential information and references for over 9000 elements and compounds, each accompanied by its IUPAC-based name, the CAS number, the empirical formula and its structure. Each listing is referenced for stability hazards, as well as by reactivity in mixtures with other substances. Each chemical is classified on the basis of similarity in structure or reactivity and each class is further referenced in a separate section in groups and by topics (such as dusts, explosions, haloalkenes, exothermic and endothermic compounds). The index is meticulous.

To illustrate the timeliness of this volume, the essential factors known in the Bhopal release, including water, are discussed, including the 1979 incident of overpressure in sealed cans of MIC.

This volume should be in the hands and actually used by every laboratory chemist where the research or development work is undertaken, as well as by students and managers. Too many of the reported "chemical booby-traps" were unearthed in an unexpected incident. In addition, emergency personnel, such as fire, security, and paramedic, should have the book available to assist in unusual or unrecognized chemical incidents during off-hours or when technical personnel and library resources are not available.

While the reactions may be academic, the cost is significant. As Bretherick notes, one incident involving perchloric acid involved damage to 116 buildings and a loss of approximately 3 million 1947 dollars; 600 deaths occurred from ammonium nitrate at Oppau in 1923, and 492 deaths and 50 million 1947 dollars from the detonation of coated material at Texas City, Texas (after coated material had been plainly identified as an explosive in a 1943 Canadian patent); to the 1984 Bhopal incident, whose toll may never be accurately known but is currently listed by the Indian government as 1,747 dead and over 100,000 injured. If we do not learn from the past, we are likely to repeat our mistakes. Bretherick has assembled the factual records; now they should be widely read and their implications fully noted.

H.H. FAWCETT