

Biochemical Effects of Environmental Pollutants

Edited by S. D. Lee

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This book contains 25 papers presented at a 1976 symposium on the biochemical effects of environmental pollutants and, as expected, the quality and scope of the presentations vary widely. Ten of the contributions are research papers and the remainder have the character of reviews, although they range considerably in length. The book is well produced with clear illustrations, ample references and a respectable index, and at the price is a reasonable buy for anyone with an interest in this field of research. The principal subjects covered are the effects of pollutants on the lung, with special reference to ozone, sulphur dioxide and the effects of these agents on membrane structure and pulmonary fibrosis, spectroscopic analysis of membrane perturbations by pollutants, effects of heavy metals and gaseous pollutants on enzyme function and energy metabolism, and the toxicology of mercury and lead with regard to nutritional state and effects on central nervous system function.

It is clear that two factors impede the detailed understanding of the relationship between the biochemical interactions of the pollutant substances mentioned above and their physiological and toxicological consequences. The first is that these chemicals have a wide range of biochemical effects, well illustrated by most papers in this volume, and that it is hard to pinpoint any single action as having a prime causative effect. The second is that toxicological responses of the human to these pollutants generally occur after a long sub-lethal exposure and are often influenced by

other variables such as nutrition or age. Much of the laboratory data considered in these papers concerns relatively high level short-term exposure of otherwise healthy laboratory animals and is thus of questionable significance to human toxicology. It is also surprising that there is very little data in this collection concerning the actual levels of these pollutants to which human populations are exposed, and so the non-specialist reader would find it hard to relate much of the work to human ecology.

Although few specific conclusions about the mechanisms of action of any of the pollutants under discussion emerge from this book, it serves as a valuable source of reference for recent work concerning their biochemical effects (but I should add that I would not recommend it as first reading for a student unacquainted with the subject). However, some of the newer methods used in research on pollutant biochemistry — for instance, lung explants and cultured pulmonary cells, and electron spin resonance studies of probe molecules incorporated into intact alveolar macrophages — promise to offer real insight into toxicological mechanisms. Whether these advances will help us to devise better therapies for the treatment of poisoning by these substances and to form a more rational basis for defining health and environmental standards is another matter and remains to be seen.

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