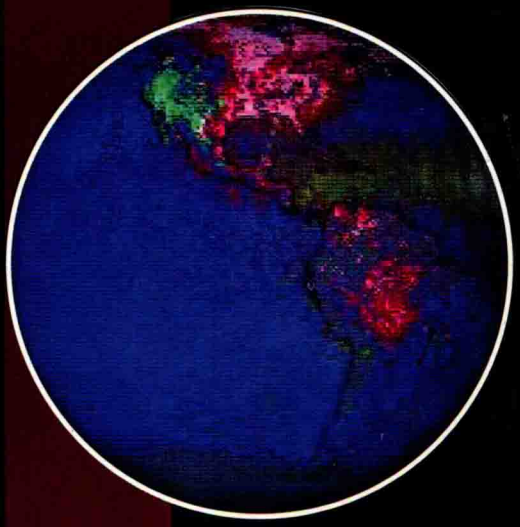
Third Edition

ENVIRONMENTAL TOXICANTS

Human Exposures and Their Health Effects



Edited by

Morton Lippmann

WILEY

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PREFACE

This is the third edition of *Environmental Toxicants: Human Exposures and Their Health Effects*. It provides updated versions of chapters that appeared in the first (1992) and second (2000) editions, and it broadens the coverage to include two new toxicant categories (one is arsenic and its compounds, and the other is endocrine disrupting chemicals). As before, it is focused on providing current knowledge on environmental health challenges to people in our homes and communities resulting from exposures to chemical and physical agents that they encounter in the course of their daily lives. This book remains unique in terms of its depth of coverage on a limited number of environmental agents that are known to have, or are highly likely to have, adverse health effects following exposures that are within the ranges that occur in contemporary populations in economically developed countries. Extrapolation of likely effects in developing countries, where toxicant exposures may be substantially higher, need to be made with caution, since susceptibility to adverse effects may differ as a result of differences in diet, pre-existing diseases, thermal stresses, and access to modern health care. Chapter 1 has been expanded to include discussions of study options for increasing our knowledge of biological responses to environmental toxicant exposures, as well as of new and developing methods for the elucidation of responses at the molecular level.

I gratefully acknowledge the outstanding contributions of the other chapter authors who are my colleagues and peers. They are all outstanding and widely recognized professionals with many demands on their time, and this unique book would not have been possible without their generous commitment.

Periodic revisions of the content of the chapters herein are necessary because of our ever-increasing knowledge base, which has been facilitated by the development of new and improved measurement and modeling, and data management technologies. These technologies, and the growth of interdisciplinary investigations of complex phenomena, have enabled investigatory teams to go beyond the identification of statistically significant associations between environmental exposures and health-related responses in human populations, laboratory animal cohorts, and cell cultures *in vitro*, to the underlying biological pathways and mechanisms that are applicable to realistic exposure levels. While

notable progress has been made in environmental health sciences in recent years, significant challenges remain, not the least of which is access to research funding from government and private sources at a time when our collective capacities are increasing for characterizing (1) exposures and their geographic and temporal distributions; (2) biological mechanisms responsible for the adverse effects produced by environmental exposures; (3) susceptibility factors that account for the generally large interindividual variability in responses to exposure; and (4) exposure–response relationships for sensitive population segments. Another challenge is that the populations of both the general public and the environmental health research community are aging. Older people are clearly a susceptible population to many environmental toxicants, and the research needed to identify means of recognizing, evaluating, and controlling exposures to these toxicants will require both additional research funding and recruitment and training of young investigators who can carry out such research over at least several decades into the future. Some of these new trainees may well be the authors of chapters in future editions of this reference volume.

I hereby recognize the contributions of those who, in addition to writing chapters, made substantial contributions to the completion of this edition. In particular, I want to recognize Toni Moore, Anita Parkhurst, and Angela Muniz for their diligent and effective management of the text preparation and presentation, and Gordon Cook for the preparation of many of the figures. Finally, my own contributions would not have been possible without the cooperation and patience of my wife, Janet.

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