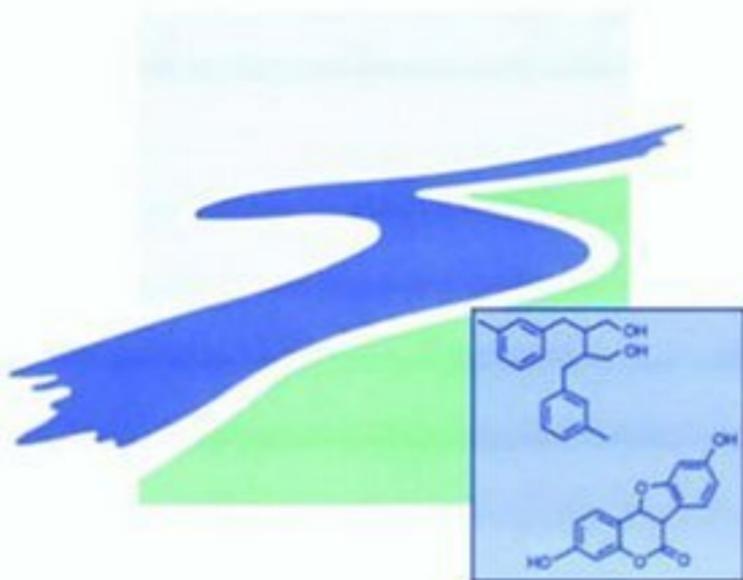




Endocrine Disrupting Chemicals



ISSUES IN ENVIRONMENTAL SCIENCE
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EDITORS: R. E. HESTER AND R. M. HARRISON

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Preface

It is fortunate that most environmental catastrophes have been of limited geographic extent and therefore have affected only relatively modest numbers of people. Of the better quantified episodes, the London smog of December 1952 stands out as one of the more significant, with around 4000 premature deaths. This proved a turning point in the setting of environmental policy in the developed world and, despite much increased energy usage, concentrations of toxic air pollutants within major cities in the developed world today are far below those of decades past. The Chernobyl nuclear accident affected a much greater geographic area than the London smog and may ultimately harm the health of a greater number of people. Nonetheless, despite difficulties in quantifying the impact, it is still likely to prove modest in relation to other kinds of human catastrophe such as warfare and natural disasters.

The human race has now interfered with the environment of its planet to an extent that global environmental catastrophes are a possible consequence. Foremost in the mind of many is the problem of global warming which, if it occurred as rapidly as seems possible, the resultant climatic change, local weather modifications and rises in sea level would overwhelm the institutional capabilities of society to manage change. Other potential environmental catastrophes may be more subtle, however, and the issue of endocrine disrupting chemicals might ultimately prove to be of that kind. It has now been known for more than a decade that some widely used chemicals, when dispersed within the environment, cause changes to the sexual development of exposed organisms. The most acute of these problems, such as that caused by the use of TBTO anti-fouling paint, are fairly well defined and are controllable. What is more worrying is that low level exposure to a wide range of chemicals may be affecting endocrine function, leading to serious outcomes such as reduced fertility and increased reproductive cancers. Some of the chemicals implicated are extremely long-lived, and the ultimate nightmare would be a discovery that contemporary concentrations of an extremely persistent substance could lead to such problems for a large proportion of the global population. At present the evidence to substantiate such fears is weak, but the current level of knowledge is poor and it is unclear what as yet unrecognized problems may arise in the next few years. The endocrine disrupting chemicals issue is undoubtedly a very important one and should be a major concern for all of those producing, distributing or utilizing chemicals in any form.

Preface

This volume of *Issues in Environmental Science and Technology* seeks to review the scientific evidence on endocrine disrupting chemicals and to put the subject into a context. We have been fortunate in attracting some leading experts who give authoritative accounts of their specialist areas. The volume starts with an overview of the endocrine disrupter issue written by Barry Phillips and Paul Harrison who are members of the Medical Research Council's Institute for Environment and Health, which has taken a major interest in this subject. The following chapters go into more specialized aspects in relation to wildlife. David Kime deals with endocrine disruption in fish; Michael Depledge, Tamara Galloway and Zoe Billingham deal with invertebrates; and Cathy Botham and colleagues cover endocrine disruption in mammals, birds and reptiles. Perhaps the most interesting topic for the majority of readers will be environmental oestrogens and male reproduction, a topic addressed by Katie Turner of the MRC Reproductive Biology Unit. This is followed by the third of the contributions from the Institute for Environment and Health (by Phillip Holmes and Barry Phillips), which deals with the intriguing issue of oestrogenic substances which occur naturally in plants. Finally, a United States perspective on the endocrine disrupting chemicals issue is given by Tony Maciorowski and Gary Timm of the US Environmental Protection Agency, which complements the predominantly European perspective of the earlier papers.

In combination, these papers provide a comprehensive and detailed review of current knowledge and of the important issues for policy makers in the future. The volume will be of interest to a wide readership, including industrial and environmental scientists, managers and policymakers. We hope that our readers will find this as illuminating as we have during the editorial work.

Roy M. Harrison
Ronald E. Hester

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