Effects of Pollutants at the Ecosystem Level

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Published on behalf of the
Scientific Committee on Problems of the Environment (SCOPE)
of the
International Council of Scientific Unions (ICSU)
by
JOHN WILEY AND SONS
Chichester · New York · Brisbane · Toronto · Singapore
International Council of Scientific Unions (ICSU)  
Scientific Committee on Problems of the Environment (SCOPE)

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SCOPE 22: Effects of Pollutants at the Ecosystem Level, 1984


Funds to meet SCOPE expenses are provided by contributions from SCOPE National Committees, an annual subvention from ICSU (and through ICSU, from UNESCO), an annual subvention from the French Ministere de l'Environnement et du Cadre de Vie, contracts with U. N. Bodies, particularly UNEP, and grants from Foundations and industrial enterprises.
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Preface

In its concern with major environmental problems, SCOPE was bound to consider with particular attention the impact of pollution, and especially chemical pollution, on human health as well as on nonhuman targets. Man's activities have resulted in an increasing circulation of naturally occurring substances (heavy metals, sulphur, nitrogen, etc.) and the massive introduction of synthetic chemicals (xenobiotics) in the environment as well as of radionuclides. The fate and transformation of pollutants, from source to target, and their effects on the environment and on the living things in it, constitute the subject matter of ecotoxicology, which SCOPE selected as one of its main project areas.

The first activity in the Ecotoxicology Project resulted in the publication of SCOPE 12, *Principles of Ecotoxicology* (1978), prepared by a small scientific committee and edited by Gordon Butler. An attempt was made to bring together basic concepts and methods of toxicology, the essentials of pollutant transfer and transformation in the environment, and the quantitative assessment of effects of pollutants on species, populations, communities and ecosystems in the terrestrial and aquatic environment.

The response of whole ecosystems was found to be least understood and a need for further exploration and elaboration of this problem was identified by the committee. Another subject deemed as requiring additional work was the relevance of tests to predict the environmental behaviour of chemicals. Both suggestions were accepted by the SCOPE Executive. A scientific advisory committee was appointed in November 1979 to organize the two follow-up studies.

SCOPE Scientific Advisory Committee on Ecotoxicology
- Ph. Bourdeau, Brussels, Belgium (Chairman)
- G. C. Butler, Ottawa, Canada
- F. Korte, Neuherberg-Munich, West Germany
- C. R. Krishna-Murti, Lucknow, India
- D. R. Miller, Ottawa, Canada
- R. Truhat, Paris, France

A working group was constituted for each study to prepare the reports. The present report, entitled *Effects of Pollutants at the Ecosystem Level*, has been prepared by the first group. The second report is in preparation.
As was done for SCOPE 12, experts were invited to draft chapters of an outline approved by the advisory committee. It was felt by the editors that a presentation of case studies concerning particular ecosystems which had been severely damaged or were on their way to recovery, should be included in the volume. An invitation was issued to SCOPE national committees to contribute such case studies from their respective countries, and individuals were approached for the same purpose.

The manuscripts were examined and harmonized at meetings of the writers and an editorial group. The report is very much the result of a collective effort. It focuses on the response of whole ecosystems to man-imposed stress, in terms of ecosystem structure and function, rather than primarily on damage to individuals or populations resulting from chemical insult. Ecosystem recovery is also considered inasmuch as it can throw light on the deterioration process, since it may progress through similar steps, although in reverse order.

Thanks are due primarily to the authors who enthusiastically volunteered chapters and case studies. Financial support for the project was provided by the National Research Council of Canada, the European Economic Community, the Andrew Mellon Foundation and the Mobil Foundation, Inc., and is gratefully acknowledged. The hospitality extended by NRC of Canada for a meeting of writers and editors on 30 March 1981, and by the Monitoring and Assessment Research Centre, Chelsea College, University of London for a meeting on September 2–4, 1981, is deeply appreciated.