SCOPE 22

Effects of Pollutants at the Ecosystem Level

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International Council of Scientific Unions (ICSU)
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SCOPE is one of a number of committees established by a non-governmental group of scientific organizations, the International Council of Scientific Unions (ICSU). The membership of ICSU includes representatives from 68 National Academies of Science, 18 International Unions and 12 other bodies called Scientific Associates. To cover multidisciplinary activities which include the interests of several unions, ICSU has established 10 scientific committees, of which SCOPE, founded in 1969, is one. Currently, representatives of 34 member countries and 15 Unions and Scientific Committees participate in the work of SCOPE, which directs particular attention to the needs of developing countries.

The mandate of SCOPE is to assemble, review and assess the information available on man-made environmental changes and the effects of these changes on man; to assess and evaluate the methodologies of measurement of environmental parameters; to provide an intelligence service on current research; and by the recruitment of the best available scientific information and constructive thinking to establish itself as a corpus of informed advice for the benefit of centres of fundamental research and of organizations and agencies operationally engaged in studies of the environment.

SCOPE is governed by a General Assembly, which meets every three years. Between such meetings its activities are directed by the Executive Committee.

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SCOPE 6: Environmental Pollutants: Selected Analytical Methods, 1975, 277pp (available from Butterworth & Co. (Publishers) Ltd., Sevenoaks, Kent, England)

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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

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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.

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