Environmental Health Criteria 144

Principles for evaluating the effects of chemicals on the aged population

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INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY

ENVIRONMENTAL HEALTH CRITERIA 144

PRINCIPLES OF EVALUATING CHEMICAL EFFECT ON THE AGED POPULATION

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The International Programme on Chemical Safety (IPCS) is a joint venture of the United Nations Environment Programme, the International Labour Organisation, and the World Health Organization. The main objective of the IPCS is to carry out and disseminate evaluations of the effects of chemicals on human health and the quality of the environment. Supporting activities include the development of epidemiological, experimental laboratory, and risk-assessment methods that could produce internationally comparable results, and the development of manpower in the field of toxicology. Other activities carried out by the IPCS include the development of know-how for coping with chemical accidents, coordination of laboratory testing and epidemiological studies, and promotion of research on the mechanisms of the biological action of chemicals.

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[c] Submitted background information for planning meeting

[d] Prepared background paper for the preparation of the first draft

* Invited but unable to attend

NOTE TO READERS OF THE CRITERIA MONOGRAPHS

Every effort has been made to present information in the criteria monographs as accurately as possible without unduly delaying their publication. In the interest of all users of the Environmental Health Criteria monographs, readers are kindly requested to communicate any errors that may have occurred to the Director of the International Programme on Chemical Safety, World Health Organization, Geneva, Switzerland, in order that they may be included in corrigenda.

INTRODUCTION

The aged population and the number of chemicals in the environment have been increasing and will undoubtedly continue to increase. It is estimated that there will be 612 millon people aged 60 years and over by the year 2000, and of these 61% will live in developing countries. The numerous physiological and biochemical changes occurring during aging can modify the pharmacokinetics and pharmacodynamics of chemicals in the elderly, resulting in either higher or lower levels of toxicity. It is expected that the adverse effects of chemical exposure on the elderly will increase in importance as a health care issue. IPCS has been active in the development and validation of methodology for the assessment of risks from exposure to chemicals. One area of concern has been the evaluation of methodology appropriate for the assessment of risks in "high-risk" groups. The fifth meeting of the IPCS Programme Advisory Committee endorsed the need for an Environmental Health Criteria monograph dealing with the effects of chemicals on the aged population and the aging processes. This monograph integrates relevant studies of toxicology and gerontology; toxicology examines the potential health effects of exposure to chemicals, while gerontology focuses on the scientific explanations for the phenomena and mechanism of aging.

A planning meeting was held in St Petersburg from 5 to 9 September 1988 and was organized locally by the N.N. Petrov Research Institute of Oncology, Ministry of Health, Russian Federation. Financial support through the UNEP Country Projects was provided by the Centre for International Projects (CIP), State Committee for the Protection of the Environment, Moscow, Russian Federation. Dr M.I. Gounar, CIP, formally opened the meeting, and Dr V. Anisimov, on behalf of Dr N.P. Napalkov, former Director of the Petrov Research Institute of Oncology, welcomed the participants. Dr G.C. Becking welcomed the participants on behalf of the Executive Heads of the three IPCS cooperating organizations (UNEP/ILO/WHO). Dr V. Anisimov and Dr L. Birnbaum were Joint Chairmen and Dr P.K. Ray and Dr A. Likhachev were Joint Rapporteurs.

After discussing the scientific issues relevant to both the aged population and aging processes, the committee considered that there was sufficient epidemiological, clinical and experimental data to support the preparation of an Environmental Health Criteria monograph to evaluate chemical effects on the aged population. However, the differing views on the mechanisms of aging and how chemical exposure might alter such mechanisms preclude at present the preparation of an evaluation of the chemical effects on the aging process. It was decided to prepare a monograph on principles for evaluating chemical effects on the aged population, with only a brief discussion of the present concept of aging. An outline of the