



# Summary of Principles for Evaluating Health Risks in Children Associated with Exposure to Chemicals



#### WHO Library Cataloguing-in-Publication Data

Summary of principles for evaluating health risks in children associated with exposure to chemicals.

"This document provides a summary of the findings from Environmental Health Criteria 237 and was prepared for use by a wider audience..."
-- Preface.

1.Environmental health. 2.Risk assessment. 3.Child. 4.Organic chemicals - adverse effects. 5.Inorganic chemicals - adverse effects. 6.Environmental exposure. I.World Health Organization.

ISBN 978 92 4 150117 0 (NLM classification: WA 30.5)

#### © World Health Organization 2011

All rights reserved. Publications of the World Health Organization can be obtained from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). Requests for permission to reproduce or translate WHO publications — whether for sale or for noncommercial distribution — should be addressed to WHO Press, at the above address (fax: +41 22 791 4806; e-mail: permissions@who.int).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

This publication contains the collective views of an international group of experts and does not necessarily represent the decisions or the policies of the World Health Organization.

Printed by the WHO Document Production Services, Geneva, Switzerland.

### **Contents**

Contributors	1
Acronyms and abbreviations	3
Preface	5
Summary	6
Introduction and background	6
Unique biologic characteristics of children	9
Developmental stage-specific susceptibilities  and outcomes in children	12
Exposure assessment of children	20
Methodologies to assess health outcomes in children	25
Implications and strategies for risk assessment for children	27
References	36

# Contributors to Environmental Health Criteria 237

#### **Experts**

Tom Burbacher, Department of Environmental and Occupational Health Sciences, University of Washington, Seattle, Washington, USA

George Daston, Procter & Gamble Company, Cincinnati, Ohio, USA

Rodney Dietert, Department of Microbiology and Immunology, College of Veterinary Medicine, Cornell University, Ithaca, New York, USA

Agneta Falk-Filipsson, Karolinska Institutet, Stockholm, Sweden

Fernando Froes, USP School of Medicine, Sao Paulo, Brazil

Gonzalo Gerardo Garcia Vargas, Universidad Juarez del Estado de Durango, Gomez Palacio, Mexico

Kimberly Grant, University of Washington, Seattle, Washington, USA

Tony Myres, Ottawa, Ontario, Canada

Asher Ornoy, Hebrew University, Jerusalem, Israel

Susan Ozanne, University of Cambridge, Cambridge, United Kingdom Jerry Rice, Washington, D.C., USA

Peter Sly, Department of Pediatrics and Physiology, Telethon Institute, Perth, Australia

Jorma Toppari, University of Turku, Turku, Finland

#### Advisory group members

Patric Amcoff, Organisation for Economic Co-operation and Development, Paris, France

Bingheng Chen, Environmental Health, Fudan University School of Public Health, Shanghai, People's Republic of China

Thea De Wet, Department of Anthropology and Developmental Studies, Rand Afrikaans University, Auckland Park, South Africa

Agneta Falk-Filipsson, Utredningssekretariatet, Institutet förmiljömedicin (IMM), Karolinska Institutet, Stockholm, Sweden

Elaine Faustman, Pediatric Environmental Health Research Center, University of Washington, Seattle, Washington, USA

Ryuichi Hasegawa, Division of Medicinal Safety Science, National Institute of Health Sciences, Tokyo, Japan

Carole Kimmel, Office of Research and Development, National Center for Environmental Assessment, Environmental Protection Agency, Washington, D.C., USA

Kannan Krishnan, University of Montreal, Montreal, Quebec, Canada

Irma Makalinao, National Poisons Control & Information Service, Philippines General Hospital, Manila, Philippines

Mathuros Ruchirawat, Chulabhorn Research Institute, Bangkok, Thailand

Radim J. Sram, Institute of Experimental Medicine, Academy of Sciences of the Czech Republic, Prague, Czech Republic

William Suk, Division of Extramural Research and Training, National Institute for Environmental Health Sciences, Department of Health and Human Services, Research Triangle Park, North Carolina, USA

Jan E. Zejda, Department of Epidemiology, Medical University of Silesia, Katowice, Poland

#### Secretariat

Terri Damstra, World Health Organization, Research Triangle Park, North Carolina, USA (deceased)

#### **Contributors to Summary document**

Miao Yu, New Haven, Connecticut, USA James Listorti, Washington, DC, USA

#### Secretariat

Nida Besbelli, Department of Public Health and Environment, World Health Organization, Geneva, Switzerland

Ruth A Etzel, Department of Public Health and Environment, World Health Organization, Geneva, Switzerland

Marie Noel Brune, Department of Public Health and Environment, World Health Organisation, Geneva, Switzerland.

The development and publication of this summary was funded by the National Institute of Environmental Health Sciences through cooperative agreement 1 U01 ES02617 to the World Health Organization and its contents are solely the responsability of the authors and do not necessarily represent the official views of the NIEHS.

# **Acronyms and Abbreviations**

ACE angiotensin converting enzyme

AGD anogenital distance

ATSDR Agency for Toxic Substances and Disease Registry

BMD benchmark dose

DDE dichlorodiphenyldichloroethene

DDT dichlorodiphenyltrichloroethane

DES diethylstilbestrol

EHC Environmental Health Criteria

EPA Environmental Protection Agency (USA)

EU European Union

hCG human chorionic gonadotropin

IARC International Agency for Research on Cancer

IPCS International Programme on Chemical Safety

IUGR intrauterine growth restriction

NRC National Research Council

OECD Organisation for Economic Co-operation and Development

PAH polycyclic aromatic hydrocarbon

PBB polybrominated biphenyl

DRDK shveislagically based sharmacakinetic

# 预览已结束,完整报告链接和二维码如下:

https://www.yunbaogao.cn/report/index/report?reportId=5\_28614



