



28736

Task Group on Guideline Values for
Derived Intervention Levels

Geneva, 21-25 September 1987



SUMMARY REPORT OF THE MEETING

CONTENTS

	<u>Page</u>
I. Background	1
II. Aims of the Meeting	2
III. General Principles and Recommendations	2
IV. Special Considerations	3
V. Resulting WHO Guidelines - An Overview	3
VI. Further Action	3

I. Background

1. The nuclear accident at Chernobyl in April 1986 resulted in widespread radionuclide contamination of the environment, especially in Europe. Although international guidance on actions necessary following a nuclear accident was available, it largely concentrated on requirements relatively close to the accident and did not adequately address the problem in the "far-field". In particular, there was insufficient guidance upon which to base actions to control the levels of radionuclides in food. This resulted in considerable confusion and inconsistencies in actions taken by different countries.

2. Recognizing the need for internationally agreed guidance on the criteria for controlling levels of radionuclides in food, WHO undertook to develop guideline values for radionuclide contamination of food (Derived Intervention Levels (DILs)). This work was carried out by WHO within a framework of Interagency meetings convened during 1986 to ensure a coordinated and consistent approach to the different areas where international guidance was required.

3. An initial WHO Expert Group was convened in Geneva from 6 to 9 April 1987 and prepared the first draft of a document on DILs in Food. This was then sent to WHO focal points for comment. These comments were reviewed and a revised document was presented to the Task Group for discussion and finalization at its meeting on 21-25 September 1987.

This document is not issued to the general public, and all rights are reserved by the World Health Organization (WHO). The document may not be reviewed, abstracted, quoted, reproduced or translated, in part or in whole, without the prior written permission of WHO. No part of this document may be stored in a retrieval system or transmitted in any form or by any means - electronic, mechanical or other without the prior written permission of WHO.

Ce document n'est pas destiné à être distribué au grand public et tous les droits y afférents sont réservés par l'Organisation mondiale de la Santé (OMS). Il ne peut être commenté, résumé, cité, reproduit ou traduit, partiellement ou en totalité, sans une autorisation préalable écrite de l'OMS. Aucune partie ne doit être chargée dans un système de recherche documentaire ou diffusée sous quelque forme ou par quelque moyen que ce soit - électronique, mécanique, ou autre - sans une autorisation préalable écrite de l'OMS.

The views expressed in documents by named authors are solely the responsibility of those authors.

Les opinions exprimées dans les documents par des auteurs cités nommément n'engagent que lesdits auteurs.

II. Aims of the meeting

4. The Task Group meeting was opened by Dr Kreisel, Director of the Environmental Health Division, who welcomed the participants and emphasized the difficulties facing the Task Group in trying to arrive at guidelines for derived intervention levels for food. He said that the aims of the meeting were:

- (i) to set out clear and logical guidelines to assist national authorities in developing their own internal DILs.
- (ii) to establish general levels for the far-field that could be used by countries without their own values.
- (iii) to set out guidelines that would contribute towards a harmonised response by national authorities during an emergency.
- (iv) to base the guidance on health protection principles, taking due account of sensitive groups, late effects and the inherent uncertainties in the risk estimation procedure.
- (v) Within this framework, not to impose unrealistic burdens on populations.

5. Dr D. Beninson was elected Chairman, Dr E. Létourneau Vice-Chairman and Dr E. Rubery Rapporteur.

6. This Summary Report presents the philosophy upon which the Task Group based its approach to the development of derived guideline values. The specific derived values are detailed in the main report of the Task Group and will not be reviewed in this summary.

III. General Principles and Recommendations

7. In an accident situation the source of the contamination was, by definition, out of control and therefore the dose limitation principles for normal operation were no longer applicable. The only options available therefore related to whether or not any interventions were recommended to reduce exposures.

8. The advice from the meeting would concern only the far-field. Non-stochastic risks did not, by definition, occur in the far-field, so only stochastic risks from individual and collective doses were relevant.

9. Exposures in the far-field could come from:

- (i) External radiation
- (ii) Inhalation
- (iii) Ingestion

However, the meeting would concentrate only on advice on derived intervention levels for the ingestion of radionuclides in food and drinking-water.

10. A reference level of individual dose of 5 mSv accrued over a lifetime from the ingestion of radionuclides in the first year after an accident was accepted as the basis for the development of derived intervention levels for food. Experience following the Chernobyl accident had shown that control at such an individual dose had generally resulted in considerably lower measured levels in exposed individuals.

11. In addition it was necessary to consider collective doses received by the population in order to assess the total detriment incurred and to consider whether any further interventions to reduce the dose below 5 mSv in the first year were justified.

12. It was likely that individual doses in subsequent years would be considerably less than the dose in the first year. If, exceptionally, annual individual doses approaching 5 mSv were received by members of a population for several years, the national authorities would need to reassess the situation and decide whether further actions to reduce exposures were justified.

13. The chance of two nuclear accidents occurring, each resulting in significant contamination of food in the same time period, was remote. If such a situation should occur, then exposures from both accidents should be considered together.

IV. Special Considerations

14. Exposures to the thyroid gland from radiiodine needed to be considered separately and should be kept below 50 mSv in the first year following the accident.

15. Exposures of infants also needed to be considered separately.

16. There was strong evidence that the developing brain of the foetus between the 8-15th week of pregnancy was especially sensitive to radiation. It was not clear from the available data whether or not there was a threshold for the induced severe mental retardation. If there was no threshold then national authorities needed to consider the special sensitivity of this group when formulating advice.

V. Resulting WHO Guidelines - An overview

17. A set of DILs for seven food groups and radionuclides was developed using global food consumption data and based on a reference level of dose of 5 mSv calculated at the point of consumption for each food and radionuclide group. DILs for drinking water were also developed. A formula to allow for additivity because of exposures via several food groups or several radionuclides was also provided. A number of illustrative examples were provided using this information.

18. A separate set of guideline values for infants were calculated.

19. The calculations of DILs based on individual risk were supported by an optimisation exercise which demonstrated that DILs resulting in doses between 1 mSv and 10 mSv were likely to be justified.

20. Minor foodstuffs contributing less than 20 kg per annum to the diet could be permitted at less restrictive levels.

21. The collective detriment would be assessed by the application of the optimisation principle of ICRP at individual dose levels below 5 mSv.

VI. Further Action

22. These Guidelines will be presented to the Eighty-first Session of the WHO Executive Board and will be reported to the WHO European Regional Office Working Group on European Harmonization of Public Health Actions in relation to Nuclear Accidents in Geneva in November 1987.

TASK GROUP ON GUIDELINE VALUES FOR
DERIVED INTERVENTION LEVELS

21-25 September 1987

WHO, Geneva, Room L-56

List of Participants

Dr I. Al-Rawi, Radiation and Nuclear Medicine Hospital, Baghdad, Iraq
Dr D. Beninson, Comision Nacional de Energia Atomica, Buenos Aires, Argentina
Dr R. Gill, Center for Food Safety and Applied Nutrition, Washington, D.C. USA
Dr H. Jammet, Commissariat à l'Energie Atomique, Fontenay-aux-Roses, France
Dr E. Létourneau, Radiation Protection Bureau, Ottawa, Canada
Dr B. Michaud, Office fédéral de la Santé Publique, Bern, Switzerland
Mr K. Narayanan, Bhabha Atomic Research Centre, Bombay, India
Professor R. Ndoye, Faculté de Médecine, Dakar, Senegal
Dr E. Rubery, Department of Health and Social Security, London, U.K.
Dr G. Schmidt, US Food and Drug Administration, Rockville, USA
Mr T. Swindon, Australian Radiation Laboratory, Yallambie, Australia

Agencies

International Commission on Radiological Protection*
Mr L. Chamney, Nuclear Energy Agency/OECD, Paris, France
Mr G. Fraser, Commission of European Communities, Luxembourg
Mr J. Lupien, Food and Agriculture Organization, Rome, Italy
Ms. A. Salo, International Atomic Energy Agency, Vienna, Austria

WHO Secretariat

Dr R. Clarke, National Radiological Protection Board, U.K. (Temporary Adviser)
Dr L. Hamilton, Brookhaven National Laboratory, USA (Temporary Adviser)
Mr J. Waddington, WHO Regional Office for Europe, Copenhagen
Dr P. Waight, Prevention of Environmental Pollution, WHO, Geneva
Mr G. Ozolins, Prevention of Environmental Pollution, WHO, Geneva

Other WHO Units

Dr F. Käferstein, Food Safety

Observers

Professor J.-P. Moroni, SCPRI, Le Vesinet, France
Dr A. Shehab-Eldin, CERN

*Represented by Dr D. Beninson