

**Towards the Global Elimination  
of Brain Damage Due to  
Iodine Deficiency**

*A global program for human development  
with a model applicable to a variety of  
health, social and environmental problems*



Monitoring of iodine content of salt-an important aspect of the conquest of Iodine Deficiency Disorders

# **Towards the Global Elimination of Brain Damage Due to Iodine Deficiency**

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**To the Global Partnership  
Dedicated to the Elimination of  
Iodine Deficiency Disorders**

*An Ancient Scourge of Mankind*

The People of the affected countries  
The Governments of the affected countries  
The Salt Producers of each country

The International Agencies-especially  
The World Health Organization  
The United Nations Children's Fund  
The World Bank  
The Micronutrient Initiative  
Kiwanis International

The International Council for Control of  
Iodine Deficiency Disorders  
The Global Network for the Sustained Elimination of Iodine Deficiency

The Bilateral Agencies-especially  
The Australian Agency for International Development  
The Canadian International Development Agency  
The Netherlands Ministry for Development Cooperation  
The Swedish International Development Agency  
The United States Agency for International Development

## Preface

This book is addressed to a broad multidisciplinary audience from the international community concerned about the global problem of brain damage due to iodine deficiency and its elimination by the consumption of iodized salt.

Iodine Deficiency is the most common preventable cause of brain damage in the world today, with in excess of 2 billion at risk from 130 countries.

This book reports the progress of the Global Program since the elimination-goal was adopted by the World Summit for Children, meeting at the United Nations, New York in 1990.

By 2000 very significant progress had been achieved with almost 70 per cent of households having access to iodized salt. This ensured protection of close to 80 million newborns with a saving of over one billion IQ points.

However, there are still 41 million newborns who are not protected. There is therefore a continuing challenge both to increase the coverage and to sustain the coverage already achieved and so achieve the new UN elimination goal, which has been accepted for 2005.

We have the necessary knowledge for this task but there is too often a failure of political will due to ignorance of the great opportunity presented to the current generation to eliminate what is an ancient scourge of mankind going back to 3000BC.

This book aims to meet this gap in knowledge and promote the necessary political will. It has been written by representatives from the remarkable Global Partnership of Agencies who are working together with the people and governments of the affected countries towards the goal

We are indebted to Barbara McNamara of the ICCIDD Secretariat in Adelaide and the staff of the ICCIDD Office, Dr Rajesh Pandav and Mr Pritam Singh Tanwar in New Delhi, for expert secretarial support, together with our colleagues at Oxford University Press in New Delhi.

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Special thanks are due to Dr Chandrakant Pandav, who has been responsible for overall coordination and production of the book.

We are also grateful for the support and the advice from our colleagues on the Advisory Board.

**Basil S Hetzel  
for the Editorial Board**

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## Glossary

ACC/SCN	Administrative Committee on Co-ordination-Subcommittee on Nutrition of the United Nations System (SCN)
AFRO	African Regional Office (WHO)
ASEAN	Association of South East Asian Nations
AusAID	Australian Agency for International Development
CIDA	Canadian International Development Agency
CIDDS	Country Iodine Deficiency Disorders Status
CIS	Commonwealth of Independent States (former USSR)
Cretin	A corruption of the French word 'cretin' or 'Christian'-the afflicted person being referred to as 'a pauvre chretien' or 'bon chretien' because of their harmlessness or innocence.
DNA content	DNA is the basic material within a cell, which stores the genetic code and is responsible for cellular growth
ECO	European Cooperation Organization
ESA	East and Southern Africa
ESPA	European Salt Producers Association
EEC	European Economic Community
EMCOSAL	A semi-autonomous Corporation in Bolivia for building salt iodization plants

EMRO	Eastern Mediterranean Regional Office (WHO) (Middle East)
Endemia	An area where a disease is endemic
Endemic	Occurrence of a disease confined to a community
Endemic Cretinism	Brain damage to the foetus resulting from the loss of function of the maternal thyroid gland in pregnancy characterised by varying degrees of mental defect, deaf-mutism and spastic paralysis (neurological cretinism). Brain damage due to foetal hypothyroidism also occurs as a result of iodine deficiency in pregnancy (hypothyroid cretinism).
Endocrinologists	People who study endocrine glands i.e. glands that secrete hormones. Thyroid gland is one such gland.
EPI 30 Cluster	A sampling method initially proposed under the Expanded Program of Immunisation (EPI) for estimating immunisation coverage levels in a community, now being used for other purposes including estimating the prevalence of IDD
EURO	European Regional Office (WHO)
FAO	Food and Agriculture Organisation (Rome)
GAIN	Global Alliance for Improved Nutrition
Goitre	An enlarged thyroid gland
Goitrogens	A chemical capable of causing goitre by inhibiting iodine uptake by thyroid
Hyperthyroidism	The result of excessive circulating thyroid hormone causing tremor, sweating, nervousness, loss of weight

Hypothyroidism	The result of a lowered level of circulating thyroid hormone with slowing of mental and physical functions
ICCIDD	International Council for Control of Iodine Deficiency Disorders
IDD	Iodine Deficiency Disorders-the spectrum of the effects of iodine deficiency at various stages of life in a population that can be prevented by correction of the iodine deficiency
IEC	Information, Education and Communication
IIH	Iodine Induced Hyperthyroidism- a transient condition caused by increase in iodine intake to an iodine deficient population.
ILSI	International Life Sciences Institute
INACG	International Nutritional Anaemia Consultative Group
Iodization	The general term covering iodization programs using various agents (iodine, iodate) or technology (salt, oil, bread and water)
Iodized Oil	Iodine in poppy seed oil-lipiodol extensively used in radiology as a radio contrast medium. Available both by injections (Lipiodol) and by mouth (Oriodol)
Iodized Salt	Salt to which potassium iodate or potassium iodide has been added
IVACG	International Vitamin A Consultative Group
IWGIDD	International Working Group on Iodine on Iodine Deficiency Disorders (China)



Kiwanis International	A world service group with 500,000 members who have raised US\$76 million to meet the cost of country programs for the elimination of IDD, administered through UNICEF.
Median UIC	If the urinary iodine concentrations in a community survey of individuals are arranged in ascending order, median UIC refers to the one which occurs at the centre (i.e. equal number of observations on either side of it)
MI	Micronutrient Initiative
MNM	Micronutrient Malnutrition
MT	Metre Tonnes
Myxedema	An oedema (swelling) in the face and elsewhere, which occurs due to hypothyroidism. One cause is iodine deficiency (myxedematous hypothyroid cretinism)
NCCIDD	National Council for Control of Iodine Deficiency Disorders
NGOs	Non-Government Organizations
NRDC	Nutrition Research Development Centre in Bogor Indonesia
OAU	Organization for African Unity
PAMM	Program against Micronutrient Malnutrition, Atlanta USA based at Emory University, Atlanta USA
PAHO	Pan American Health Organization (part of WHO)
Phalanx	Digital bone of a finger

Prophylaxis	An intervention aimed at preventing the occurrence of a disease
Radio-immune	A technique of estimating the level of a Assay (RIA) hormone in the serum by using assay of a radioactive (e.g. I <sup>131</sup> ) element which the hormone contains
SAARC	South Asian Association for Regional Cooperation
SCN	Subcommittee on Nutrition of the UN System
SEARO	South East Asian Regional Office (WHO)
SIDA	Swedish International Development Agency
TFNC	Tanzania Food and Nutrition Centre
Thiocyanate	Chemicals known to have goitrogenic effects
TGR	Total Goitre Rate
Thyroid Size	Measured by ultrasonography-a much more sensitive and reproducible measurement than is possible by palpation
Thyroxine	Thyroid Hormone (T <sub>4</sub> ) containing 4 iodine atoms on an amino acid molecule
Triiodothyronine	A second thyroid hormone (T <sub>3</sub> ) which contains 3 iodine atoms and is the form active at tissue level.
TSH	Thyroid Stimulating Hormone secreted by the pituitary gland, which controls thyroid activity
UIC	Urinary Iodine Concentration
UNDP	United Nations Development Program
UNESCO	United National Educational, Scientific and Cultural Organisation (Paris)

UNICEF	United Nations Children's Fund (New York)
USAID	United States Agency for International Development
USI	Universal salt Iodization-iodization of all salt for human and animal consumption
WFP	World Food Program (Rome)
WHO	World Health Organization (Geneva)
WPRO	Western Pacific Regional Office (WHO)