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Book Reviews: Technical Books Section

VALUABLE INFORMATION ON ESSENTIAL TRACE ELEMENTS

Principles and Methods for the Assessment of Risk factors from Essential Trace Elements (Environmental Health Criteria 228) IPCS (International Program On Chemical Safety)
World Health Organization, Avenue Appia 20, 1211 Geneva 27, Switzerland, Publication Date 2002, xviii + 60 pages, ISBN 92 4 157228 0: NLM Classification: QU 130: Price: Sw.fr. 26.00; in developing countries: Sw.fr. 18.20

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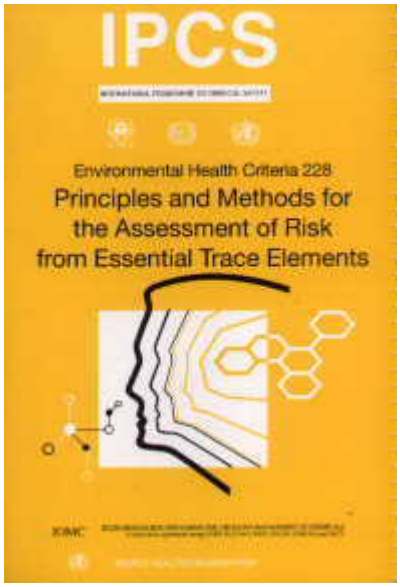

In today's health era there is a tremendous use of antioxidants and vitamins, which are of doubtful efficacy in the treatment of almost every medical ailment and hence the gravity of the trace elements, have declined. These trace elements are extremely important and can act as a two-way sword, perilous in insufficiency and superfluous quantity. The WHO environment Health criteria have noticed these trace elements as conspicuous pollutants with serious health implications on humans.

This report contains collective views of international group of experts of United Nations Environment programme, International Labour Organization and World Health Organization on

assessment of risk from essential trace elements. *Trace elements currently regarded as essential by WHO are iron, zinc, copper, chromium, iodine, cobalt, molybdenum and selenium.*

The book has been designed to provide critical reviews of direct relevance on the effect on human health and environmental physical agents the essential trace elements with biological effects. The various monographs in the book are intended to assist national and international authorities in making risk assessment and subsequent risk management decisions. They represent a thorough evaluation of the associated risks with their consumption and this vital piece of information may serve as the purview of government worldwide for initiating a drive against this.

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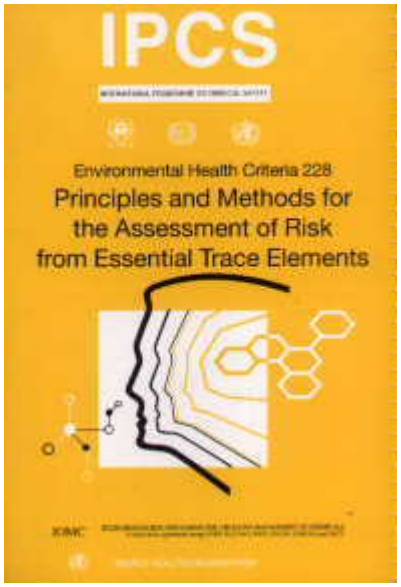
The contents are divided into various chapters including summary. This book begins with the introduction laying emphasis on the definition of essentially trace elements, their importance, dietary reference intakes, recommendations on dietary allowance and the safe range of consumption in terms of minimal toxicity. On the basis of supporting evidences it establishes a threshold dose for tolerability.



...The book has been designed to provide critical reviews of direct relevance on the effect on human health and environmental physical agents the essential trace elements with biological effects. The various monographs in the book are intended to assist national and international authorities in making risk assessment and subsequent risk management decisions. ...

The book focuses on the concepts of the acceptable range of oral intake (AROI). The AROI is designed to limit deficient and excess intakes in healthy populations, which is marked for various age groups & physiological states like pregnancy and lactation. The different homeostatic mechanisms are considered while establishing an AROI for a particular trace element.

The next chapter defines AROI and its limit on these elements. At the same time it evaluates safety from the published data presented to this committee.

Chapter four deals with the variability of these trace elements on human populations in reference to age, sex and special conditions like pregnancy and lactation. The important interaction between important elements like copper and zinc and selenium and iodine is also reported.

Chapter five signifies the severity of effects observed with deficiency and excess exposure to these elements. It has also stated that these observations are just imperative and is hindered by lots of confounding factors especially when data is analysed for excess exposure. One may realize from their findings the importance of these elements in correct dose and duration. It further states that if the consumption of these trace elements are less or exceeds AROI it could be detrimental increasing the probability and severity of adverse effects increases.

The last chapter deals with different homeostatic models for the health risk assessment to essential trace elements for deriving AROI.

In conclusion WHO has laid certain recommendations that these monographs should be considered for evaluation of associated risk, frequent updating of this information & harmonization of this risk assessment & definition of AROI of essential trace elements is required. The strengths and weakness in interpretation of data for foreseeing it as a health hazard should be identified. It supports further clarification and research on the unavailable information on these elements.

The book lacks the information on certain elements i.e silicon, magnese, nickel and vanadium which may not be essential trace elements but the recent evidences indicate they are of potential health importance especially in clinical conditions like diabetes, eczema etc.

Nevertheless, this thin literature of 60 pages gives sufficient information on the essential trace elements and its involvement in human risk.

-Dr Anshu Sethi & Dr BK Bajaj
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