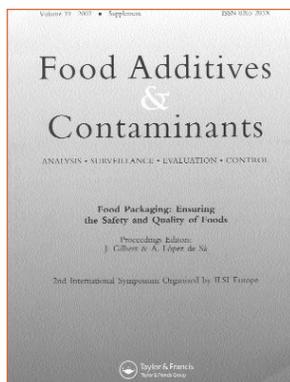


Food Packaging: Ensuring the Safety and Quality of Foods

John Gilbert and Angela López De Sá
(proceeding eds.)

Food Additives and Contaminants 2002, **19**, S1-S228



The papers presented in this Special Issue of *Food Additives and Contaminants* comprise the Proceedings of the Second ILSI Europe International Symposium on Food Packaging—Ensuring the Safety and Quality of Food, held in Vienna, Austria, from 8–10 November 2000. The First Symposium was held in 1996 in Budapest, Hungary (Published in *Food*

Additives and Contaminants 1997, **14**, 517–775).

The objectives of the second symposium were to advance the underlying science relating to the safety and quality of packaged foods, to disseminate results of ongoing research, and to stimulate debate on implications for the future. The symposium was organized in collaboration with IUPAC, the Vienna University of Technology, and the European Commission (EC). The EC has supported a number of research and technological development projects on food packaging,

migration, and development of analytical methods in the Fourth and Fifth Framework Programmes. A number of these projects, which were recently completed or are still underway, were included in the symposium, either as oral presentations or as posters. In view of the close linkage between the symposium and these EC funded projects in the Framework Programmes, the symposium was granted funding from DG Research as an Accompanying Measures Action.

More than 250 participants from Europe, North America, Asia, and Africa attended the three-day symposium. The multidisciplinary audience included food scientists, chemists, mathematicians, physicists, and microbiologists from industry, academia, and government. Twenty-two presentations were given, of which 20 are published in this proceedings. The presentations were divided into five sessions covering risk assessment of packaging materials; modeling; recycling and re-use of packaging; active, intelligent, and novel packaging; and new analytical approaches. In the proceedings, the papers are organized according to these sessions.

Following the success of the 1996 and 2000 symposia, the ILSI Europe Task Force on Packaging is currently planning a third symposium to be held in 2004 at a European venue.

 www.tandf.co.uk/journals/titles/0265203X.html

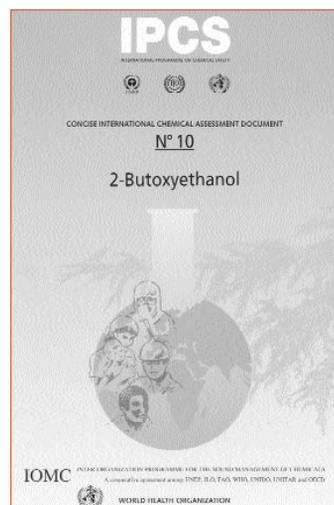
Concise International Chemical Assessment Document

A series of monographs by the International Programme on Chemical Safety
World Health Organization, Geneva (1998–2002)

reviewed by John H. Duffus

Before reviewing this series of publications, it is important to define what they are, what their purpose is, and to describe the procedure by which they are prepared. The procedure is particularly important because it is designed to ensure that the Concise International Chemical Assessment Documents (CICADs) are authoritative and trustworthy sources of the fundamental information required to carry out risk assessments. These assessments then lead to effective risk management of substances used worldwide, helping to ensure human safety and environmental protection.

The CICADs are short documents that provide summaries of the scientific information available on the potential effects of chemicals upon human health and/or the environment. These documents are based on selected national or regional evaluations or on existing International Programme on Chemical Safety (IPCS) Environmental Health Criteria Documents (EHCs). Before acceptance for publication as CICADs by IPCS, the draft documents are subjected to extensive peer review by internationally selected experts to ensure their completeness, accuracy in how the original data are represented, and the



Bookworm

validity of the conclusions drawn. Unless otherwise stated, CICADs are based on a search of the scientific literature to the date shown in the executive summary. International Chemical Safety Cards (ICSCs) on the relevant chemical(s) are attached at the end of each CICAD to provide the reader with the essential summary information on the protection of human health and on emergency action. The ICSCs are produced by a separate peer-reviewed procedure. Further information may be obtained from the Poison Information Monographs, also produced by IPCS.

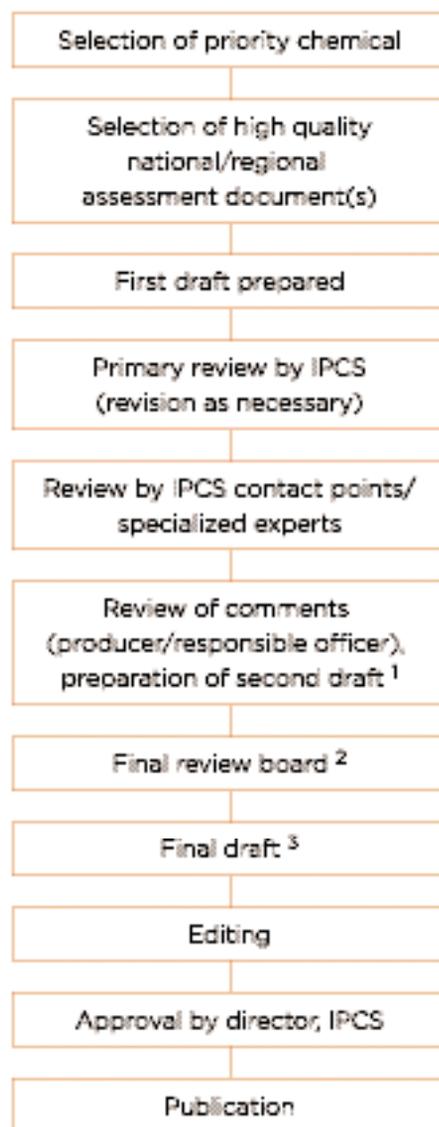
The primary objective of CICADs is to characterize the hazard and dose-response relationship associated with exposure to a chosen priority chemical. CICADs are not a summary of all available data but include only the information considered critical for characterization of risk. Critical studies are described in sufficient detail to indicate how they support the conclusions drawn. Risks to human health and the environment vary depending upon the type and extent of exposure. Users of the CICADs are encouraged to characterize risk on the basis of appropriate locally measured or predicted exposure scenarios. For the readers' guidance, examples of exposure estimation and risk characterization are provided in CICADs whenever possible.

The flow chart shows the procedures followed to produce a CICAD. The IPCS Risk Assessment Steering Group advises the coordinator, IPCS, on the selection of chemicals for an IPCS risk assessment, the appropriate form of the document (i.e., EHC or CICAD), and which institution should have the responsibility of the document production, as well as on the type and extent of the international peer review. The first draft is based on an existing national, regional, or international review. Authors of the first draft are usually, but not necessarily, from the institution that developed the original review.

The first draft undergoes primary review by IPCS and one or more experienced authors of criteria documents to ensure that it meets the specified criteria for CICADs. The draft is then sent for international peer review by scientists known for their relevant expertise and by scientists selected from an international roster compiled by IPCS through recommendations from IPCS National Contact Points and from IPCS Participating Institutions.

The CICAD Final Review Board ensures that each CICAD has been subjected to an appropriate and thorough peer review; verifies that the peer reviewers' comments have been addressed appropriately; provides guidance on how to resolve remaining issues if, in the opinion of the board, the author has not adequately addressed all comments of the reviewers; and

CICAD Preparation Flow Chart



¹ Taking into account the comments from reviewers.

² The second draft of document is submitted to the final review Board together with the reviewers' comments.

³ Includes any revisions requested by the Final Review Board.

approves CICADs for publication as trustworthy international assessments. Board members serve in their personal capacity, not as representatives of any organization, government, or industry. They are

Bookworm

selected because of their expertise in human and environmental toxicology or because of their experience in the regulation of chemicals and with regard to the need for balanced geographic representation. It is important to note that board members, authors, reviewers, consultants, and advisers who participate in the preparation of a CICAD are required to make a public declaration of any real or potential conflict of interest in relation to the subjects under discussion at any stage of the process in order to ensure impartiality. All of these rules are designed to ensure impartiality and give the CICADs and related documents their authority as the most reliable sources of information for chemical risk assessment.

But what information can you expect to find in a CICAD? The first section is an executive summary, followed by details relating to the identity and physical/chemical properties of the substance(s) considered and the analytical methods used for monitoring. Then, there are reviews of sources of human and environmental exposure, of the possibilities for environmental transport, distribution, and transformation; and of the current status of environmental and

human exposures. Next, the evidence linking exposure (dose) to effects and to population response in laboratory animals and in humans is described and assessed, including that from *in vitro* studies and from studies of toxicokinetics and fundamental metabolic processes. Case studies and epidemiological investigations are also considered.

In addition, any information on effects on other organisms in the laboratory and in the field is collated and, finally, an effects evaluation is carried out. This evaluation may lead to suggested criteria for setting tolerable exposure limits or guidance values and suggestions for further research to clarify points of importance. A final section summarizes previous evaluations by international bodies. There is then a list of the references used in preparing the document followed by appendices describing the main source document and listing the members of the peer review group and of the final review board. The relevant ICSCs and French and Spanish translations of the executive summary complete the document.

At the time of writing, more than 40 CICADs have been published and these are listed below.

The Concise International Chemical Assessment Documents

- Acrylonitrile (No. 39, 2002)
- Azodicarbonamide (No. 16, 1999)
- Barium and barium compounds (No. 33, 2001)
- Benzoic acid and sodium benzoate (No. 26, 2000)
- Benzyl butyl phthalate (No. 17, 1999)
- Beryllium and beryllium compounds (No. 32, 2001)
- Biphenyl (No. 6, 1999)
- 1,3-Butadiene: human health aspects (No. 30, 2001)
- 2-Butoxyethanol (No. 10, 1998)
- Chloral hydrate (No. 25, 2000)
- Chlorinated naphthalenes (No. 34, 2001)
- Chlorine dioxide (No. 37, 2002)
- Crystalline silica, quartz (No. 24, 2000)
- Cumene (No. 18, 1999)
- 1,2-Diaminoethane (No. 15, 1999)
- 3,3'-Dichlorobenzidine (No. 2, 1998)
- 1,2-Dichloroethane (No. 1, 1998)
- 2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123) (No. 23, 2000)
- Diethylene glycol dimethyl ether (No. 41, 2002)
- *N,N*-Dimethylformamide (No. 31, 2001)
- Diphenylmethane diisocyanate (MDI) (No. 27, 2001)
- Ethylenediamine (No. 15, 1999)
- Ethylene glycol: environmental aspects (No. 22, 2000)
- Formaldehyde (No. 40, 2002)
- 2-Furaldehyde (No. 21, 2000)
- Limonene (No. 5, 1998)
- Manganese and its compounds (No. 12, 1999)
- *N*-Methyl-2-pyrrolidone (No. 35, 2001)
- Methyl and ethyl cyanoacrylates (No. 36, 2001)
- Methyl chloride (No. 28, 2001)
- Methyl methacrylate (No. 4, 1998)
- Mononitrophenols (No. 20, 2000)
- *N*-nitrosodimethylamine (No. 38, 2002)
- Phenylhydrazine (No. 19, 2000)
- *N*-Phenyl-1-naphthylamine (No. 9, 1998)
- 1,1,2,2-Tetrachloroethane (No. 3, 1998)
- 1,1,1,2-Tetrafluoroethane (No. 11, 1998)
- *o*-Toluidine (No. 7, 1998)
- Tributyltin oxide (No. 14, 1999)
- Triglycidyl isocyanurate (No. 8, 1998)
- Triphenyltin compounds (No. 13, 1999)
- Vanadium pentoxide and other inorganic vanadium compounds (No. 29, 2001)

Bookworm

It is clear that the CICADs are extremely valuable sources of information for anyone concerned with any aspect of chemical safety. They should be the first resource for valid, independently assessed information against which to judge the often poorly founded assertions made by those who have vested interests in exaggerating risks or in playing them down. Many of the CICADs are available on the IPCS Web site

<www.inchem.org>. For those interested in the safe use of chemicals, this site contains a treasure chest of freely available information.

 www.who.int/dsa/cicads.htm | www.inchem.org

John H. Duffus <j.h.duffus@blueyonder.co.uk> worked at the **Edinburgh Centre for Toxicology in Edinburgh, United Kingdom.**

The Road to Stockholm: Nobel Prizes, Science and Scientists

István Hargittai, (Oxford University Press, Oxford, 2002, ISBN 0-19-850912-X) (xvii + 342 pp)

reviewed by Joel F. Liebman

Although István Hargittai is an internationally recognized chemist, *The Road to Stockholm* is not about chemistry or science per se, but rather about scientists. It deals with the psychological and sociological issues that have led to professional greatness and the greatest institutional recognition a scientist can achieve (i.e., the Nobel Prize). Among such issues are the following: upbringing and the effects of deprivation and family strength; education and the role of mentoring and academic pedigree; culture, both national and religious; and competing demands, intellectual, emotional, political, economic, and societal.

The word "Road" in the title is well taken. The book commences with a foreword by Nobel laureate James D. Watson (co-awardee, Physiology or Medicine, 1962) that outlines some of his path—Hargittai amplifies this at considerable length throughout the book. It is these paths that fill much of this volume. There are many roads, even if not so labeled as I so choose to label them here. Quoting the poet, there's "the road less traveled," the special, unique, ignored observation, characterization, experiment, or insight. There's "the road to Damascus," the sudden epiphany or "Aha!" and spontaneous, instantaneous change of belief, action, or understanding. Recalling the comedian in "the Road to Mandalay," the gentle, joyous excursion and adventure that includes many serendipitous trips and seeming diversions. There is "the road to

Rome," one of many but gets the traveler there fastest and first. Paraphrasing the cliché, "the road from perdition," the survival from dysfunctional families or from genocide. Asking the reader to pardon the reviewer's wordplay, there is "the Colossus of Rhodes," the sheer weight and power of achievement and activity.

We often tell our students that science, both idealized and practiced, is value free and crosses all cultures, languages, and backgrounds. Not so, Hargittai reminds us. National, religious, status, and gender issues have all contributed to winning the Nobel Prize—and not winning the prize. The final chapter is a poignant reminder that only three people can win the Nobel Prize in a given area in a given year, and so Hargittai discusses who did not win but could/should have (in other words, who was "robbed," to quote a non-recipient). The chapter also contains some prophecy on possible future recipients.

The book ends with four pages of acknowledgements (nearly a page and a half therein to Nobelists), 45 pages of notes (footnotes and references), two pages of citations to general reading, and 30 pages for the complete list of Nobelists and the associated citations in physics, chemistry, and physiology or medicine through 2001. Perhaps to underscore that the subject matter is the Nobel Prize and the scientists who won it—and some who didn't—and not the science itself, there is a 10-page name index, but there is no subject matter index. There are also some 80 photographs: two of the Nobel medal and the rest of the major persons who populate the book.

It is the reviewer's feeling that Hargittai has written an interesting and important book. *The Road to Stockholm* offers much insight and information to the reader—at the least, we are given a personalized view of scientists, their science, and the world we share.

Joel F. Liebman is professor of chemistry at the University of Maryland in Baltimore.

 www.roadtostockholm.com

