

## CHAPTER 6

### MANAGEMENT OF CHEMICALS FOR SUSTAINABLE DEVELOPMENT

LARRY W. OLSON

*Arizona State University, Technology Center, Mesa, 85212 Arizona, USA*

*(E-mail: Larry.Olson@asu.edu)*

**Abstract.** This chapter traces the growth of global actions related to the management of chemicals and hazardous wastes since the UN Conference on Environment and Development in 1992, through the World Summit on Sustainable Development in 2002, and projections into the future as far as 2020. It is important to understand this relationship, since the groundwork for essentially all of the recommendations found in the Article 23 of the Plan of Implementation from Johannesburg is found in Chapter 19 of Agenda 21.

Significant progress has been made in understanding the risks associated with chemical exposure and in how to manage those risks to effectively reduce the threat to human health and the environment. The Plan of Implementation calls for transparency and accessibility in sharing this information with all countries and assistance to developing countries, and countries with economies in transition, in establishing the capacity for sound management of chemicals within their borders. Ratification of the Rotterdam and Stockholm Conventions is called for by 2003 and 2004, respectively. Full implementation of the new Globally Harmonised System for classifying and labelling chemicals is sought by 2008. Attention is given to risks posed by heavy metals, with a particular focus on the health and environmental effects of mercury and efforts to reduce anthropogenic releases. Finally, the Bahia Declaration and Priorities for Action beyond 2000 are used as examples of a strategic global approach to management of chemicals.

Chemistry must play a central role in reducing poverty and improving standards of living by more efficient and sustainable use of resources than is the case today as outlined in Principle 8 of the Rio Declaration. All of the actions called for in Article 23 of the Plan of Implementation are achievable and the time frames specified are reasonable. Progress to date has demonstrated the potential for effective cooperation between private industry, governments, international groups, and non-governmental organisations, yet much remains to be done, particularly in the area of Green Chemistry.

**Key words:** chemicals, classification, Globally Harmonised System, labelling, persistent organic pollutants, risk reduction, Rotterdam Convention, Stockholm Convention

**Abbreviations:** CG/HCCS – Coordinating Group for the Harmonisation of Chemical Classification Systems; COP – Conference of the Parties; DGD – Decision Guidance Document; FAO – Food and Agriculture Organisation; GHS – Globally Harmonised System; IFCS – Intergovernmental Forum on Chemical Safety; IGO – intergovernmental organisation; ILO – International Labour Organisation; INC – Intergovernmental Negotiating Committee; IOMC – Inter-Organisation Programme for the Sound Management of Chemicals; IRPTC – International Register of Potentially Toxic Chemicals; NGO – non-governmental organisation; OECD – Organisation for Economic Co-operation and Development; PIC – Prior Informed Consent; POP – Persistent Organic Pollutant; UN – United Nations; UNECE – United Nations Economic Convention for Europe; UNEP – United Nations Environmental Programme; UNIDO – UN Industrial Development Organisation; UNITAR – UN Institute for Training and Research; UNSCEGHS – United Nations Economic and Social Council's Sub-Committee of Experts on the Globally Harmonised System of Classification; WHO – World Health Organisation; WSSD – World Summit on Sustainable Development.

## 1. Introduction

The essential commitment made at the World Summit on Sustainable Development (WSSD) in Johannesburg with respect to sound management of chemicals throughout their lifecycle, was to ensure by the year 2020 “that chemicals are used and produced in ways that lead to the minimisation of significant adverse effects on human health and the environment ...” (UN, 2002). Since over 75,000 chemicals are now used in commercial products, and only a fraction of these have undergone a rigorous risk assessment process (Brown *et al*, 2000), complying with this commitment will represent a significant challenge.

The global chemicals industry had estimated sales of US\$1500 billion dollars in 1998, up from US\$171 billion in 1970. This accounted for seven percent of global income, nine percent of international trade, and the employment of over ten million people. By the year 2010, the Organisation for Economic Co-operation and Development (OECD) Reference Scenario predicts a world chemical output of US\$3920 billion (OECD, 2001). Perhaps more importantly, there is projected to be a shift in production, with OECD countries providing primarily higher value specialty and life science chemicals and developing countries producing more basic chemical feedstocks. Since the per capita consumption of chemicals in the developed world far exceeds that of developing countries, there is reason to expect increased demand in the future from non-OECD countries. As noted in the OECD Environmental Outlook for the Chemicals Industry report, “the tremendous growth rate in exports and imports of chemicals from and to non-OECD countries – as compared with the mature markets in OECD countries – represents a major change” (OECD, 2001: 33).

Since the amount of scientific and technical expertise in developing countries is typically less than in the industrialised world, there is an incumbent responsibility to help them address the risks associated with this chemical production (Hildebrandt and Schlottmann, 1998). The Plan of Implementation for WSSD made an explicit commitment in Article 23 to provide financial and technical assistance to developing countries to improve their capacity to manage chemicals and hazardous wastes.

Although considerably briefer than Chapter 19 of Agenda 21 (UN, 1999) pertaining to chemicals and hazardous waste, Article 23 of the Plan of Implementation from the WSSD outlined a number of specific actions that would contribute to protecting human health and the environment (UN, 2002). These are summarised below and discussed in the balance of this chapter.

- (a) Promote the ratification and implementation of relevant international instruments on chemicals and hazardous waste, including the Rotterdam Convention on Prior Informed Consent Procedures for Certain Hazardous Chemicals and Pesticides in International Trade so that it can enter into force by 2003 and the Stockholm Convention on Persistent Organic Pollutants so that it can enter into force by 2004 and support developing countries in their implementation.