WHO Chemicals Safety - Activity Report 2008

This document presents a summary of WHO activities undertaken in 2008 which have contributed to the International Programme of Chemical Safety (IPCS).

It covers the following areas:

(1) Applied Risk Assessment (including Food Safety-related assessments, Concise International Chemical Assessment Documents (CICADs), and International Chemical Safety Cards (ICSC))
(2) Risk Assessment Methodology (including the IPCS Harmonisation Project; Environmental Health Criteria Documents)
(3) Poisons Prevention, Information and Management
(4) Environmental Emergencies
(5) Children's Environmental Health
(6) International Conventions and Agreements, including SAICM
(7) Capacity Building

A list of IPCS publications is given in Annex 1 and a list of IPCS Events in 2008 is given in Annex 2.

1. APPLIED RISK ASSESSMENT

1.1 Food Safety-related assessments

Since mid-2008 this work has been undertaken within the Department of Food Safety, Zoonoses and Foodborne Diseases.

1.1.1 JECFA (Joint FAO/WHO Expert Committee on Food Additives)

69th JECFA meeting was held in June 2008

The Committee made recommendations on the safety of a number of food additives. Acceptable daily intakes (ADI) or other safety advice were given for nine food additives and 10 groups of related flavourings. The report of the meeting also contains several general recommendations, in particular further considerations on the intake assessment of flavours.

The first part of the meeting report contains a general discussion of the principles governing the toxicological evaluation and assessment of intake of food additives (in particular, flavouring agents). A summary follows of the Committee’s evaluations of technical, toxicological and intake data for certain food additives (asparaginase from Aspergillus niger expressed in A. niger, calcium lignosulfonate (40–65), ethyl lauroyl arginate, paprika extract, phospholipase C expressed in Pichia pastoris, phytosterols, phytostanols and their esters, polydimethylsiloxane, steviol glycosides and sulfites [assessment of dietary exposure]) and 10 groups of related flavouring agents (aliphatic branched-chain saturated and unsaturated
alcohols, aldehydes, acids and related esters; aliphatic linear \(\alpha,\beta\)-unsaturated aldehydes, acids and related alcohols, acetals and esters; aliphatic secondary alcohols, ketones and related esters; alkoxy-substituted allylbenzenes present in foods and essential oils and used as flavouring agents; esters of aliphatic acyclic primary alcohols with aliphatic linear saturated carboxylic acids; furan-substituted aliphatic hydrocarbons, alcohols, aldehydes, ketones, carboxylic acids and related esters, sulfides, disulfides and ethers; miscellaneous nitrogen-containing substances; monocyclic and bicyclic secondary alcohols, ketones and related esters; hydroxy- and alkoxy-substituted benzyl derivatives; and substances structurally related to menthol).

Specifications for the following food additives were revised: canthaxanthin; carob bean gum and carob bean gum (clarified); chlorophyllin copper complexes, sodium and potassium salts; Fast Green FCF; guar gum and guar gum (clarified); iron oxides; isomalt; monomagnesium phosphate; Patent Blue V; Sunset Yellow FCF; and trisodium diphosphate. Re-evaluation of flavouring agents for which estimated intake was based on anticipated poundage data was carried out for 2-isopropyl-N,2,3-trimethylbutyramide (No. 1595) and L-monomenthyl glutarate (No. 1414).

70th JECFA meeting was held in October 2008

The Committee evaluated the safety of nine veterinary drugs leading to residues in food. The Committee established acceptable daily intake levels or provided other safety advise, and recommended maximum residue levels that are compatible with these safety standards.

The Committee also reported on several general considerations, in particular on a first draft paper on a new hypothesis-driven decision-tree approach for the evaluation of veterinary drugs.

The Committee’s work identifies and if possible quantifies the public health significance of additives, flavours and contaminants in food through an international consensus scientific risk assessment. It highlights the complexity of the process, which includes assembling and analysing all relevant data; interpreting studies of general toxicity, carcinogenicity, genotoxicity, reproductive toxicity, teratogenicity, etc.; extrapolating to humans the effects observed in experimental animals; and characterizing hazards to humans based on available toxicological and epidemiological data.

The Committee’s recommendations are used by the Codex Alimentarius Commission for setting international food safety standards. Such standards are established only for substances that have been evaluated by the Committee and have been allocated an ADI, tolerable intake or other relevant safety statement. This ensures that food commodities in international trade meet strict safety standards. The advice provided by the Committee is also considered by Member States directly when setting national/regional food safety standards.

Reports of JECFA Evaluations are available free-of-charge on the IPCS web site http://www.who.int/ipcs/publications/jecfa/en/; toxicological monographs are also available on the INCHEM web site (http://www.inchem.org).

JECFA publications include the WHO Technical Report Series and the WHO Food Additive Series providing concise toxicological evaluations and detailed descriptions of the biological and toxicological data as well as intake assessments. A brief electronic summary and conclusion from each JECFA meeting is also published on the IPCS web site pending publication of the official reports. A compendium of food additive specifications as established by JECFA is published by FAO.
1.1.2 JMPR

The 2008 Joint FAO/WHO Meeting on Pesticides Residues (JMPR) (September 2008) evaluated 28 pesticides, of which 6 were new compounds, and 5 were re-evaluated within the periodic review programme of the Codex Committee on Pesticide Residues (CCPR).

The Meeting established acceptable daily intakes (ADIs) and acute reference doses (ARfDs). The Meeting estimated maximum residue levels, which it recommended for use as maximum residue limits (MRLs) by the CCPR. It also estimated supervised trials median residue (STMR) and highest residue (HR) levels as a basis for estimation of the dietary intake of residues of the pesticides reviewed.

Pesticides for which the estimated dietary intakes might, on the basis of the available information, exceed their ADIs are marked with footnotes, as explained in detail in the report of the 1999 Meeting (section 2.2). Footnotes are also applied to specific commodities when the available information indicated that the ARfD of a pesticide might be exceeded when the commodity was consumed.

The JMPR also reported on a number of important general considerations, including further considerations related to work-sharing; considerations regarding a pilot process for JMPR to recommend maximum residue levels prior to national government registration.

The Meeting's recommendations are used by the Codex Alimentarius Commission for setting international food safety standards. Such standards are established only for substances that have been evaluated by the Committee and have been allocated an ADI, and ARfD (if necessary) or other relevant safety statement. This ensures that food commodities in international trade meet strict safety standards. The advice provided by the Meeting is also considered by Member States directly when setting national/regional food safety standards.

JMPR Evaluations are available free-of-charge on the IPCS web site http://www.who.int/ipcs/publications/jmpr/en/ and also the INCHEM web site. Electronic summaries of the conclusions and recommendations from the JMPR meetings are available on the IPCS web site shortly after the meeting and pending publication of the official full report.
1.1.3 Risk-Benefit of use of chlorine-containing compounds in food production and food processing

This Joint FAO/WHO Project to assess the benefits and risks of the use of “active chlorine” in food production and food processing was initiated following a request by the Codex Alimentarius Commission and Member States.

The main goals of this project are to consider the risk of chemical residues in products (excluding environmental impact), following the use of active chlorine for disinfection purposes in food production versus the benefit of lowering the risk of microbial hazards. The efficacy of active chlorine treatment needs to be considered, taking into account different treatment scenarios, different chlorine-containing substances and different pathogens and pathogen/food combinations. These considerations need to be based on current practices, as well as take into account proposed new practices, including the relevance and feasibility of potential alternative approaches.

The main areas to be considered relate to the treatment of irrigation water (only as it relates to hydroponic production systems and production of sprouts but not for agricultural field use), processing water, food contact surfaces as well as direct treatment of foods, with fresh produce, fish and seafood, meat and poultry as main food categories.

This project is a joint activity between several departments, at WHO, the Departments of Food Safety, Foodborne Diseases and Zoonoses, and of Public Health and the Environment (with water sanitation and health and chemical safety) are collaborating on this project, together with the FAO Departments of Agriculture and Consumer Protection, Fisheries and Aquaculture.

The expert meeting was held in May 2008. The expert group developed a semi-quantitative approach for comparing reduction of microbial risks with increased chemical risks from residues following treatment. The final report is being finalized and will be published later in 2009.

More information on the project is available from the web site: http://www.who.int/ipcs/food/active_chlorine/en/index.html
1.2 Non-food related assessments

1.2.1 Concise International Chemical Assessment Documents (CICADS)

Recruitment action has been initiated for a staff member to work on CICAD activities. Pending completion of this action, work on new CICADs in 2008 has not been possible.

One new CICAD emanating from the work of the 14th CICAD Final Review Board, held in Helsinki from 26 to 29 March 2007 was published in 2008 (CICAD No.74) and a further two of these documents were in the printing process (CICAD No.75 and CICAD No. 77). The remaining three CICADs approved at this meeting will be subject to further consultation.

A regular progress report is updated on specific CICADs on the IPCS web site http://www.who.int/ipcs/publications/cicad/progress/en/index.html. The new publication was disseminated through the IPCS web site. Further dissemination through print and the INCHEM web site, free-of-charge (http://www.inchem.org.) will take place in early 2009.

CICAD (No 74) 2-Butenal (Crotonaldehyde)
http://www.who.int/entity/ipcs/publications/cicad/cicad74.pdf

Discussion at the Final Review Board meeting in March 2007 on the draft DDT assessment concluded that there was a need for additional work particularly to better characterize and understand sources and extent of exposure under conditions of use during indoor residual spraying for vector control. In 2008 an updated draft hazard assessment was prepared, incorporating studies published up to December 2008. Public and peer review of this draft document will take place in early 2009, following which an expert meeting in June 2009 will finalize the hazard assessment. In parallel, the WHO Pesticide Evaluation Scheme (WHOPES) has led work to develop a generic model for the risk assessment of chemicals used in Indoor Residual Spraying (IRS). This generic model was released for public and peer review in 2008. Following finalization of the model, it will be employed, along with the DDT hazard assessment, in finalizing the updated WHO DDT risk assessment.

1.2.2 International Chemical Safety Cards (ICSC)

The IPCS work on the International Chemical Safety Cards (ICSCs) continues to be one of the major points of collaboration with the International Labour Organization (ILO). ICSCs have been translated into 24 languages and are available on the Internet in 17 languages, through the ILO web site (www.ilo.org/public/english/protection/safework/cis/products/icsc/index.htm), the INCHEM Databank (www.inchem.org) and the web sites of participating institutions such as US NIOSH. In 2008 the average number of monthly downloads for the English versions of the Cards from the INCHEM web site was 64,500.

Work has continued on harmonizing the criteria and the precautionary information provided in the ICSCs with that of the GHS. In addition, GHS classifications are now included in new and updated ICSCs.

Development work is continuing on a new ICSC database. This will enable a move from the current process of producing ICSCs on individual standalone PCs in different institutions to working from a single database server. This will make the production of the ICSCs more efficient and will simplify the tracking and management process. The new database will also facilitate translation of the ICSC by providing compilers and translators with a library of
standard sentences, rather than sentence phrases. Ultimately all language versions of the ICSCs will be provided from a single server, rather than, as now, from a number of different web sites.

A total of 60 ICSCs were produced or fully revised in 2008. A further 236 ICSCs were updated using a fast-track procedure. This procedure is used for updating individual elements of ICSC such as Occupational Exposure Limits.

The ICSC Compiler’s Guide which sets out the list of standard phrases on identity, hazardous effects and precautionary statements is continually updated by IPCS

http://www.who.int/ipcs/publications/icsc/comp_guide.pdf

1.2.3 IPCS INCHEM web site (http://www.inchem.org)

This web site which contains a number of peer-reviewed collections of risk assessment documents now includes a new collection: Kemi-Riskline. This is a collection of more than 60 documents produced by the Swedish Criteria Group (SCG) and the Nordic Expert Group (NEG). The SCG consists of about 15 scientific experts representing different fields of science. The NEG consists of scientific experts from the Nordic countries (Denmark, Finland, Norway and Sweden) representing different fields of science, such as toxicology, epidemiology and occupational medicine.

2. RISK ASSESSMENT METHODOLOGY

2.1 The IPCS Harmonization Project

The IPCS “Project on the Harmonization of Approaches to the Assessment of Risk from Exposure to Chemicals” (commonly referred to as the “Harmonization Project”) aims to harmonize global approaches to risk assessment through both increased understanding and agreement on basic principles, and to develop international guidance documents on specific issues.

The Project has a global Steering Committee, which includes experts drawn from national risk assessment agencies, representatives of supra-national bodies (such as the EU (ECB/JRC), EFSA, and the OECD), and representatives of non-governmental organizations in official relations with WHO and working in the field of chemical risk assessment (ECETOC and ILSI/RSI). The Steering Committee meets every 2-3 years to recommend the Project workplan.

In 2008, a number of activities the Steering Committee in the workplan for 2007-2009 were implemented. The Harmonization Project web site (http://www.who.int/ipcs/methods/harmonization/en/index.html) contains, inter alia, both the current Project workplan and Brochure (http://www.who.int/entity/ipcs/methods/harmonization/brochure2007.pdf).

Harmonization Project publications continue to be taken up across the range of assessment sectors, i.e. industrial chemicals, biocides, pesticides, veterinary products, pharmaceuticals, occupational and public health, and are known to be used by many national and supra-national risk assessment bodies, e.g. Australia, EFSA, the European Union, Canada, Japan, OECD, UNECE (GHS guidance), United Kingdom, and the United States. In 2008, a new
Training Group was established to collaborate on the training aspects of the Harmonization Project. Membership of the Training Group comprises: interested members of the Harmonization Steering Group or experts from their organizations; and a number of NGOs in official relations with WHO (ECETOC; ILSI Research Foundation; IUPAC and IUTOX).

The Training Group discusses ways to gather experience to date in training under the Harmonization Project and to implement this in new activities. As well as facilitating uptake and use of the products of the Harmonization Project through communication, outreach and training activities, the Group aims to: collaborate in and lead the development and maintenance of training materials, including distance learning tools; and form partnerships with others (e.g. professional societies, organizations conducting training) to support the above and to facilitate integration of the products into general training on risk assessment.

A summary report on workplan activities in 2008 follows:

- **Non-Cancer Human Relevance Framework.** The article on the IPCS non-cancer human relevance framework was published in *Critical Reviews in Toxicology* in March 2008 (see http://dx.doi.org/10.1080/10408440701749421). The two-part Harmonization Project document No. 4 (Part 1: Cancer; Part 2: Non-cancer) is now fully available on the IPCS web site.

- **Aggregate/cumulative Risk Assessment.** The objective of this activity is to focus on methods for assessing the combined risk from exposure to one or more agents via all relevant routes and pathways and to review approaches employed to date in different sectors (e.g., pesticides, industrial chemicals, therapeutics) and disciplines (e.g., consumer exposure, occupational exposure, environmental exposure). In 2008, a draft Framework to Consider Combined Exposures in risk assessment was prepared for release for public and peer review. An illustrative case study will accompany the initial draft and additional case studies will be developed later to assist the further refinement of the framework. An international workshop to finalize the framework is planned for late 2009.

- **Exposure assessment:** The guidance document on “Data Quality in Chemical Exposure Assessment” was finalized in 2008 and was prepared for publication. It is co-published with the guidance on “Characterizing and Communicating Uncertainty in Exposure Assessment” (Harmonization Project Document No. 6, available on the internet). A Continuing Education Course on Characterizing and Communicating Uncertainty in Exposure Assessment was delivered at EUTOTOX2008, in October 2008, in Rhodes, Greece. The course was well attended and very well received. As a consequence, the organizing committee for EUROTOX 2009 (in Dresden) requested a similar course.

- **Update of the IPCS Qualitative Scheme for Mutagenicity.** The 1996 IPCS Qualitative Scheme for Mutagenicity Testing was updated. The new guidance on “Mutagenicity Testing for Chemical Risk Assessment” was finalized for publication in a journal. Its publication as a WHO document will follow.

- **Skin sensitization.** The report of the 2006 Berlin Sensitization workshop was published in *Regulatory Toxicology and Pharmacology* (see http://dx.doi.org/10.1016/j.yrtph.2007.11.008). It was also published as a Harmonization Project document No. 5.

- **Development of Harmonized Guidance for Immunotoxicity Risk Assessment.** Draft guidance on Immunotoxicity Risk Assessment was in development, following a
scoping meeting at RIVM, The Netherlands in February 2008. A meeting to discuss the draft document will take place at RIVM, Bilthoven, The Netherlands, in April 2009.

- **PBPK modelling in risk assessment.** The Harmonization Project activity on PBPK (physiologically-based pharmacokinetic) modelling aims to promote best practice in PBPK modelling, including transparency, and will result in a high-level guidance document on "Principles of Characterizing and Applying PBPK Models". The draft PBPK guidance (along with illustrative case studies) was released for public and peer review in the second half of 2008. An international workshop is planned for mid-2009 to finalize the guidance.

- **Risk Assessment Toolkit for Country Use.** A draft risk assessment toolkit was prepared following an expert meeting in March 2008 in Montreux, Switzerland. This activity marks a new emphasis of the Harmonization Project to make the international tools and guidance available on chemical risk assessment more readily-accessible in the form of a "toolkit" and to provide related training materials including case study examples of use of the tools. Key target groups and audience for the toolkit are developing countries and countries with economies in transition. The toolkit will deliver practical tools for risk assessment in a user-friendly format. The draft toolkit was being refined by the expert group in late 2008. The next phase of the project will involve pilot testing in countries, to inform further development of the toolkit.

- **Guidance on Interpreting Effects that may be modest or adaptive.** The development of a thought-starter on the interpretation of effects that may be modest or adaptive started in 2008. The Fraunhofer Institute, Hanover, is preparing the first draft.

- **Identifying important life stages for monitoring and assessing risks from exposures to environmental contaminants.** An international workshop is planned to address this topic. A workshop planning group meeting is scheduled for March 2009.

- **Characterizing and communicating uncertainty and variability in hazard assessment.** The development of the thought-starter on this topic continued to progress in 2008, under the joint authorship of experts from the US EPA and RIVM, Netherlands.

- **Reproductive and developmental toxicity:** development of harmonized morphological terms (by the WHO Collaborating Centre on Developmental Toxicology in Berlin). This activity continues to progress with regular Expert Workshops.

- **Dermal absorption.** IPCS contributed to an OECD led process on this topic, with a view to development of harmonized international guidance. The work, which complements the IPCS Environmental Health Criteria Document on this topic, will continue in 2008, with the assistance of the Fraunhofer Institute, Hanover.

- A **Risk Assessment Workshop** took place at the University of Bradford, United Kingdom, 26-27 March 2008. The workshop was aimed at risk assessors in the UK and the European Institutions, to facilitate uptake and use of the Harmonization Project products on Mode of Action and Chemical Specific Adjustment Factors.
New publications issued in 2008:


### 2.2. Environmental Health Criteria Documents (EHC)

In 2008, two Environmental Health Criteria in the (yellow cover) methodology series were in development or final preparation for publication, i.e.: Dermal Exposure (first draft being prepared by the Fraunhofer Institute, Hanover); Dose-Response Characterization (in press).


### 2.3. Harmonization and update of the principles and methods for the risk assessment of chemicals in food

JECFA and JMPR have served as scientific advisory bodies to the Codex Alimentarius Commission, to WHO and FAO Member States, as well as to the organizations themselves since its inception in the early 1960s. In response to requests by JECFA and JMPR for general guidance for risk assessments, the International Programme on Chemical Safety (IPCS) sponsored in the 1980s the preparation of two Environmental Health Criteria (EHC) monographs, EHC 70 (Principles for the safety assessment of food additives and contaminants in food) and EHC 104 (Principles for the toxicological assessment of pesticide residues in food). JECFA has regularly held meetings at which veterinary drug residues in foods were assessed. While general principles have been developed in these meetings, they have not been consolidated in a similar document.

In light of the advances in the science of risk assessment and the recognition that the evaluations performed by JECFA and JMPR serve as the scientific foundation for international food standards that are of increasing importance within the Codex Alimentarius Commission and the World Trade Organization, FAO and WHO have initiated a joint Project
to Update and Consolidate Principles and Methods for the Risk Assessment of Chemicals in Food.

Through a series of workshops and smaller expert consultation chapters on various subjects were developed. Two consultants have now been hired to draft a final consolidated document which were posted on the web site for public comments in June 2008. A final expert consultation was held in November 2008 to address the public comments develop a plan to finalize the document. Final chapters are in preparation and the document will be Published as Environmental Health Criteria document in late 2009 and will serve as the guide for good risk assessment practices of chemicals in food.

http://www.who.int/ipcs/food/principles/en/

3. POISONS PREVENTION, INFORMATION AND MANAGEMENT

3.1 Poisons Information and Management.

Three one-week training placements at the Stockholm National Poisons Centre in Sweden were provided for one delegate each from Sudan, Tanzania and Zimbabwe. In addition training in the management of common poisonings was provided to staff of the poisons centre in Dakar, Senegal. Training in the management of lead poisoning was provided to poisons centre and medical staff in Dakar, Senegal in response to an outbreak of lead poisoning in a local community.

IPCS provided membership of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) or the American Academy of Clinical Toxicology (AACT) to individuals working at 23 poisons centres in developing countries. Membership benefits include a subscription to the journal Clinical Toxicology, a monthly current awareness bulletin on toxicology and reduced registration fees to scientific congresses.

Free access to the INTOX Databank via the Internet continues to be provided. This databank contains information on chemicals, antidotes, and management of poisoning and chemical accidents. The web site is currently averaging over 68,000 unique visitors per month resulting in an average of 110,600 sessions monthly.

3.2. Network of poisons centres and INTOX

Ten subscriptions to the INTOX Data Management System were provided to poisons centres in developing countries and countries with economies in transition.

Work was completed on an EC DG SANCO co-funded project to assess the feasibility of poisons centres providing alerts of chemical release (the ASHT project). The outcomes of the project were an assessment of the requirements for establishing a EU-wide surveillance database for poisonings and a prototype electronic alert network (RAS-CHEM). (http://ec.europa.eu/health/ph_projects/2004/action2/action2_2004_03_en.htm).
4. CHEMICAL INCIDENTS AND EMERGENCIES

A total of 281 chemical incidents of potential public health concern were detected in 2008 through daily screening of global public health intelligence, including GPHIN, ProMed, WHO sources, and external sources. All events detected were reviewed and their public health risks assessed. In 106 cases, information was disseminated to relevant counterparts and partners for further action. Significant support was provided in 9 events, through the provision of technical advice, the identification of relevant expertise and analytical laboratories, the facilitation of provision of antidotes, or the organization of emergency response missions, of which there were two. WHO deployed a team in Mongolia in March 2008 to investigate health concerns related to a spill of mercury and cyanide, and to assess national capacities for the sound management of chemicals. Another full-scale mission was conducted in June 2008, WHO in Dakar, Senegal, to investigate and respond to a mass lead intoxication from informal lead battery recycling. Executive summaries of the missions are available online. Draft scientific publications for both incidents were prepared and should be published in peer-reviewed literature in 2009. Information on additional chemical incidents managed by WHO are available on the environmental health in emergencies web site: http://www.who.int/environmental_health_emergencies/events/en/index.html

Debriefing of WHO emergency response mission to Mongolia: http://www.who.int/environmental_health_emergencies/events/Mission%20d ebriefing%20%20v.9April%20for%20web.pdf


Efforts were undertaken to further strengthen WHO Global Chemical Incident Emergency Response Network (ChemiNet) through the revision of arrangements with existing partners and the identification of additional supporting institutions, laboratories and experts. The structure and scope of ChemiNet is described on the WHO environmental health in emergencies web site: http://www.who.int/environmental_health_emergencies/ChemiNet3.pdf

A draft Manual for the Public Health Management of Chemical Incidents and Emergencies was further reviewed and revised during a number of meetings and teleconferences. The document is currently undergoing final editing and will be published in 2009. Work on developing a manual on the investigation of outbreaks of possible chemical etiology was started towards the end of 2008.

Further activities were undertaken in support of the implementation of the International Health Regulations (IHR2005). This included technical contributions to the IHR core document on Recommended Core Capacities for Surveillance and Response in States Parties.

Regular coordination meetings took place in 2008 with partners involved in the prevention and management of chemical incidents and emergencies, including with the OECD Working Group on Chemical Accidents, the Global Health Security Initiative (GHSI), the Working Group on Chemical Events, the IASC Health and WASH Cluster, UNEP/OCHA, UNEP, and relevant NGOs.
5. CHILDREN AND CHEMICALS

The training package on children's environmental health (CEH) has been used for the implementation of capacity building activities in several countries. Some modules are also available online and can be accessed by a wide audience at http://www.who.int/ceh/capacity/training_modules/en/index.html. Power-point versions of the modules can also be requested at the same link.

In 2008, the training modules were used as an integral part of the following events:

- Children's Environmental Health Training Workshop at the meeting of the Euro-Asian Association for CEH, Istanbul, Turkey (25-30 March 2008).
- Building South-South Cooperation on Capacity Building on Chemicals and Health “Protecting Children from Chemicals: Tools, Strategies and Successful Experiences”, Dakar, Senegal (14 September 2008).

A CEH side event took place at the High Level Meeting of Ministers of Health and Environment. Libreville, Gabon (25 August 2008). The Libreville Declaration on Health and Environment in Africa (Libreville 29 August 2008) refers to both children as vulnerable groups and the need for “further research to increase understanding of the vulnerability of humans to environmental risk factors, particularly in Africa”.

Information materials on heavy metals and children's health and development and also on persistent organic pollutants are going into the WHO web site in early 2009.

The promotion of longitudinal cohort studies on children's environmental health is advancing and the document addressing the needs of developing countries is being made available in March 2009.

Guidance materials on specialized children's environmental health centres are under review.

6. IMPLEMENTATION OF INTERNATIONAL CONVENTIONS AND AGREEMENTS, INCLUDING SAICM

Activities in this area in 2008 have focused on the GHS, SAICM and International Health Regulations, as outlined below.

**Work to align relevant WHO instruments to the Globally Harmonized System for Classification and Labelling (the GHS) and to support health-sector participation.** The work in 2008 focused on the system for International Chemical Safety Cards (ICSC). GHS classifications have now been assigned to x chemicals. Updates on the work being undertaken by WHO to implement the GHS were provided to the UN Sub-Committee of Experts on the GHS as part of the work programme of the Sub-Committee for 2007-2008.

A one-day health-sector workshop on the GHS and SAICM was held immediately before the joint UNITAR, ILO and WHO Regional Workshop on Chemical Hazard Communication and GHS Implementation for ECOWAS Countries, in Abuja, Nigeria on 12 May 2008. There were 23 representatives from 13 ECOWAS countries. These participants then joined the regional workshop on GHS implementation on 13-15 May 2008, which had over 100 participants.
participants from 15 countries. The report of the regional workshop, which includes a summary report of the health sector workshop, can be downloaded from http://www2.unitar.org/cwm/ghs_partnership/events/index.aspx.

**Strengthening the support, awareness and the need for engagement of the health-sector in the Strategic Approach to International Chemicals Management (SAICM).** The work in 2008 has continued to facilitate the engagement of the health-sector in SAICM activities. This has focused on:

- SAICM regional and sub-regional meetings in Africa, Central and Eastern Europe, and Latin America and the Caribbean; and to meetings of EU-JUSSCANNZ countries. Side-events at these meetings have presented delegates with information on the relevance of poisons centres for chemical incident, preparedness, alert and response; and implementation of chemical and wastes-related multi-lateral environment agreements; on the implementation of the International Health Regulations (2005); and on the European Environment Health Information System. WHO Regional advisers have participated and taken the lead on behalf of WHO in all SAICM Regional meetings held in 2008.

- SAICM has been reflected in work supporting Ministerial Health and Environment initiatives in South-east and East Asia, the European region and most recently in the African region, at the first Inter-Ministerial Conference for Health and Environment, held in Libreville, Gabon, from 26 to 29 August 2008. This will provide a basis for increased interaction in the future.

- WHO has supported the development of successful project proposals under the SAICM Quick-Start Programme in Côte d’Ivoire (in conjunction with the secretariat to the Basel Convention), Indonesia, Madagascar, Morocco, Sri Lanka and Thailand, on projects relating to strengthening the capacity to control transboundary movement of hazardous wastes and chemicals, sound management of priority industrial carcinogens, recycling and disposal of insecticide treated bednets used for vector control, and the safe management of public health pesticides. A proposal is under consideration in relation to strengthening of national capacities for the public health management of chemicals incidents and emergencies in Angola.

- Since the third quarter of 2007, WHO has contributed directly to the work of the SAICM secretariat through the provision of a staff member. This directly implements resolution I/1 of the International Conference on Chemicals Management. Secretariat work has focused on preparations for the second session of the Conference which will include a significant element on public health, chemicals and the environment in the high-level segment. WHO has also supported the development of the SAICM Information Clearinghouse, involving the integration of the SAICM web site together with a reconstituted Information Exchange Network on Capacity-building for the Sound Management of Chemicals (INFOCAP). The first part of this work was completed in October 2008, with a launch of the Information Clearinghouse on track by May 2009.

**Strengthening awareness of the revised International Health Regulations (2005) (IHR).** The revised IHR have a broader remit than previously and now cover all events of potential international public health concern, including disease outbreaks of known, or suspected, chemical etiology. Countries are required to build capacities for the detection and surveillance of such outbreaks, and can call upon the support of the WHO and the international community to manage the outbreaks. An IPCS symposium on the IHR was held at the North American Congress of Clinical Toxicology, held in Toronto, Canada, 11-16 September.
7. **CAPACITY BUILDING**

**Presentations and Training Courses:**

**Mongolia**
National capacities for the sound management of chemicals, including capacities for the public health management of chemical incidents, were assessed in March 2008. Recommendations were presented to national experts and officials and will be used to prepare an action plan to strengthen sound chemicals management in Mongolia.

A three-day national training course on the public health management of chemical incidents was held in Ulan Bator, Mongolia in March 2008 and was attended by 80 participants.

Public health professionals were trained during a one-day workshop on the health aspects of mercury poisoning, including on analytical techniques to determine mercury in urine.

**Senegal**
Medical professionals were trained on the diagnosis and treatment of lead intoxication during a half-day training workshop.

**Tunisia and Geneva**
Emergency responders were trained during sessions of WHO Pre-deployment training courses in Tunisia and Geneva on the international public health response to chemical incidents and emergencies.

**Toronto, Canada**
A series of presentations about the IPCS INTOX Data Management System was held during the National Library of Medicine Symposium at the North American Congress of Clinical Toxicology, held in Toronto, Canada, 11-16 September. These included presentations made by users of the INTOX system in Chile and Brazil, highlighting the value of the data collection system for poisons centres.

**Rhodes, Greece**
A Continuing Education Course on Characterizing and Communicating Uncertainty in Exposure Assessment was delivered at EUTOTOX2008, in October 2008, in Rhodes, Greece.

**Bradford, United Kingdom**
A Risk Assessment Workshop took place at the University of Bradford, United Kingdom, 26-27 March 2008. The workshop was aimed at risk assessors in the UK and the European Institutions, to facilitate uptake and use of the Harmonization Project products on Mode of Action and Chemical Specific Adjustment Factors.

**Development of training materials**
Five additional chapters were prepared for the IPCS Poisons Centre Training Manual. These are currently being formatted for publication on the IPCS web site.

**Geneva, Switzerland**
Session given on reproductive health and the environment and fetal origins of disease. Course co-organized by WHO and the Geneva Foundation for Medical Education and Research for scientists from all over the world at WHO Headquarters in Geneva, Switzerland during February 2008.

**Istanbul, Turkey**
The one-day workshop addressed the local needs of regional health care providers. The training modules on children's environmental health (CEH) were presented and then given to
participants ("train the trainers") at the meeting of the Euro-Asian Association for CEH in Istanbul, Turkey in March 2008.

**Dakar, Senegal**
Several CEH training modules were used to train future trainers in the region (one day workshop) in Dakar, Senegal in September 2008.

**Cluj, Romania**
Training modules in Russian were used to train the trainers on CEH (one-day workshop) in Cluj, Romania in October 2008. Materials available in Russian.
List of IPCS Publications during 2008

Monographs in a series

JECFA publications

[URL](http://whqlibdoc.who.int/publications/2007/9789241209472_eng.pdf)


Safety evaluation of certain food additives and contaminants.  
WHO Food Additives Series No. 59, 2008.  
[URL](http://whqlibdoc.who.int/publications/2008/9789241660594_eng.pdf)

Safety evaluation of certain food additives.  
WHO Food Additives Series No. 60, 2009 (in press).

JECFA Summary Reports, including from the 69th and the 70th Meetings  
[URL](http://www.who.int/ipcs/food/jecfa/summaries/en/index.html)

JMPR Publications

[URL](http://www.fao.org/ag/agp/agpp/pesticid/jmpr/pm_jmpr.htm)


JMPR Summary from the 2007 meeting  
[URL](http://www.who.int/ipcs/food/jmpr/summaries/en/index.html)

Concise International Chemical Risk Assessment Documents (CICADs)

[URL](http://www.who.int/entity/ipcs/publications/cicad/cicad74.pdf)
**Harmonization Project**

- **Report of a WHO/IPCS International Workshop on Skin Sensitization in Chemical Risk Assessment (Harmonization Project document No. 5).** The full report workshop report also appears in *Regulatory Toxicology and Pharmacology.*
  

- **Guidance on Principles of Characterizing and Applying PBPK Models in Risk Assessment** (Draft for public and peer review)
  

- **Guidance Document on Characterizing and Communicating Uncertainty in Exposure Assessment** (Harmonization Project document No. 6).
  

  
  

**International Chemical Safety Cards (ICSCs)**

- 61 new and updated cards have been published in 2008. These are listed in Appendix 1.

**Articles published in scientific journals.**


Appendix 1

List of International Chemical Safety Cards published in 2008

Available online

http://www.inchem.org

<table>
<thead>
<tr>
<th>ICSC No.</th>
<th>new/ upd</th>
<th>Chemical</th>
<th>CAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0030</td>
<td>upd</td>
<td>o-Cresol</td>
<td>95-48-7</td>
</tr>
<tr>
<td>0031</td>
<td>upd</td>
<td>p-Cresol</td>
<td>106-44-5</td>
</tr>
<tr>
<td>0041</td>
<td>upd</td>
<td>1,4-Dioxane</td>
<td>123-91-1</td>
</tr>
<tr>
<td>0071</td>
<td>upd</td>
<td>Quinoline</td>
<td>91-22-5</td>
</tr>
<tr>
<td>0105</td>
<td>upd</td>
<td>Benzotrichloride</td>
<td>98-07-7</td>
</tr>
<tr>
<td>0107</td>
<td>upd</td>
<td>Bromine</td>
<td>7726-95-6</td>
</tr>
<tr>
<td>0114</td>
<td>upd</td>
<td>Tert-butanol</td>
<td>75-65-0</td>
</tr>
<tr>
<td>0126</td>
<td>upd</td>
<td>Chlorine</td>
<td>7782-50-5</td>
</tr>
<tr>
<td>0147</td>
<td>upd</td>
<td>1,1-Dimethylhydrazine</td>
<td>57-14-7</td>
</tr>
<tr>
<td>0148</td>
<td>upd</td>
<td>Dimethyl sulfate</td>
<td>77-78-1</td>
</tr>
<tr>
<td>0242</td>
<td>upd</td>
<td>Cyclohexane</td>
<td>110-82-7</td>
</tr>
<tr>
<td>0251</td>
<td>upd</td>
<td>2,3-Dichloro-1-nitrobenzene</td>
<td>3209-22-1</td>
</tr>
<tr>
<td>0252</td>
<td>upd</td>
<td>1,3-Dichloro-4-nitrobenzene</td>
<td>611-06-3</td>
</tr>
<tr>
<td>0253</td>
<td>upd</td>
<td>1,3-Dichloro-2-nitrobenzene</td>
<td>601-88-7</td>
</tr>
<tr>
<td>0254</td>
<td>upd</td>
<td>1,2-Dichloro-4-nitrobenzene</td>
<td>99-54-7</td>
</tr>
<tr>
<td>0255</td>
<td>upd</td>
<td>1,3-Dichloro-5-nitrobenzene</td>
<td>618-62-2</td>
</tr>
<tr>
<td>0316</td>
<td>upd</td>
<td>Picric acid</td>
<td>88-89-1</td>
</tr>
<tr>
<td>0378</td>
<td>upd</td>
<td>Arsenic trioxide</td>
<td>1327-53-3</td>
</tr>
<tr>
<td>0444</td>
<td>upd</td>
<td>Diethyamine</td>
<td>109-89-7</td>
</tr>
<tr>
<td>0499</td>
<td>upd</td>
<td>Isophorone disocyanate</td>
<td>4098-71-9</td>
</tr>
<tr>
<td>0646</td>
<td>upd</td>
<td>m-Cresol</td>
<td>108-39-4</td>
</tr>
<tr>
<td>0753</td>
<td>upd</td>
<td>EPN</td>
<td>2104-64-5</td>
</tr>
<tr>
<td>0776</td>
<td>upd</td>
<td>Stibine</td>
<td>7803-52-3</td>
</tr>
<tr>
<td>0886</td>
<td>upd</td>
<td>Edetic acid</td>
<td>60-00-4</td>
</tr>
<tr>
<td>0924</td>
<td>upd</td>
<td>Mevinphos (isomer mixture)</td>
<td>7786-34-7</td>
</tr>
<tr>
<td>0943</td>
<td>new</td>
<td>Alpha Propylene glycol diacetate</td>
<td>623-84-7</td>
</tr>
<tr>
<td>0964</td>
<td>new</td>
<td>Tris(nonylphenyl)phosphate</td>
<td>26523-78-4</td>
</tr>
<tr>
<td>1291</td>
<td>upd</td>
<td>2-(2-(2-Methoxyethoxy) ethoxy ethanol</td>
<td>112-35-6</td>
</tr>
<tr>
<td>1295</td>
<td>upd</td>
<td>Anthranilic acid</td>
<td>118-92-3</td>
</tr>
<tr>
<td>1330</td>
<td>upd</td>
<td>Paracetamol</td>
<td>103-90-2</td>
</tr>
<tr>
<td>1341</td>
<td>upd</td>
<td>3-Chloro-2-methyl-1-propene</td>
<td>563-47-3</td>
</tr>
<tr>
<td>1618</td>
<td>upd</td>
<td>1,4-Dichloro-2-nitrobenzene</td>
<td>89-61-2</td>
</tr>
<tr>
<td>1645</td>
<td>new</td>
<td>Methyltetrahydrophthalic anhydride</td>
<td>26590-20-5</td>
</tr>
<tr>
<td>1655</td>
<td>new</td>
<td>HN1 (Nitrogen mustard)</td>
<td>538-07-8</td>
</tr>
<tr>
<td>1667</td>
<td>new</td>
<td>Diphenyl ether,octabromo derivative</td>
<td>32536-52-0</td>
</tr>
<tr>
<td>1684</td>
<td>new</td>
<td>4-Nitrobenzoic acid</td>
<td>62-23-7</td>
</tr>
<tr>
<td>1685</td>
<td>new</td>
<td>Sebacic acid</td>
<td>111-20-6</td>
</tr>
<tr>
<td>1689</td>
<td>new</td>
<td>Bis(pentabromophenyl)ether</td>
<td>1163-19-5</td>
</tr>
<tr>
<td>1697</td>
<td>new</td>
<td>Perfluorobutylethylene</td>
<td>19430-93-4</td>
</tr>
<tr>
<td>1699</td>
<td>new</td>
<td>Neodecanoic acid</td>
<td>26896-20-8</td>
</tr>
<tr>
<td>ICSC No.</td>
<td>new/upd</td>
<td>Chemical</td>
<td>CAS</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>----------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>1701</td>
<td>new</td>
<td>Pentaerythritol tetrakis(3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate)</td>
<td>6683-19-8</td>
</tr>
<tr>
<td>1702</td>
<td>new</td>
<td>Nicotinic acid</td>
<td>59-67-6</td>
</tr>
<tr>
<td>1703</td>
<td>new</td>
<td>Nicotinamide</td>
<td>98-92-0</td>
</tr>
<tr>
<td>1704</td>
<td>new</td>
<td>Camphene</td>
<td>79-92-5</td>
</tr>
<tr>
<td>1705</td>
<td>new</td>
<td>Dibutyl adipate</td>
<td>105-99-7</td>
</tr>
<tr>
<td>1707</td>
<td>new</td>
<td>1-Chloronaphthalene</td>
<td>90-13-1</td>
</tr>
<tr>
<td>1710</td>
<td>new</td>
<td>Sodium hydrogen sulphide</td>
<td>16721-80-5</td>
</tr>
<tr>
<td>1711</td>
<td>new</td>
<td>1,3-Dichloro-2-propanol</td>
<td>96-23-1</td>
</tr>
<tr>
<td>1712</td>
<td>new</td>
<td>1,1'-Dichloro-1-fluoroethane (HCFC 141b)</td>
<td>1717-00-6</td>
</tr>
<tr>
<td>1714</td>
<td>new</td>
<td>Diisopropylbenzene</td>
<td>25321-09-9</td>
</tr>
<tr>
<td>1717</td>
<td>new</td>
<td>Sodium dithionite</td>
<td>7775-14-6</td>
</tr>
<tr>
<td>1718</td>
<td>new</td>
<td>Tetraethylenepentamine</td>
<td>112-57-2</td>
</tr>
<tr>
<td>1719</td>
<td>new</td>
<td>3-Buten-2-ol,2-methyl</td>
<td>115-18-4</td>
</tr>
<tr>
<td>1720</td>
<td>new</td>
<td>p-Phenetidine</td>
<td>156-43-4</td>
</tr>
<tr>
<td>1721</td>
<td>new</td>
<td>Imidazole</td>
<td>288-32-4</td>
</tr>
<tr>
<td>1722</td>
<td>new</td>
<td>1,3-Pentadiene</td>
<td>504-60-9</td>
</tr>
<tr>
<td>1723</td>
<td>new</td>
<td>Hydroxyethyl acrylate</td>
<td>818-61-1</td>
</tr>
<tr>
<td>1724</td>
<td>new</td>
<td>2-Hydroxyethyl methacrylate</td>
<td>868-77-9</td>
</tr>
<tr>
<td>1725</td>
<td>new</td>
<td>Citral</td>
<td>5392-40-5</td>
</tr>
<tr>
<td>1733</td>
<td>new</td>
<td>But-2-yne-1,4 diol</td>
<td>110-65-6</td>
</tr>
</tbody>
</table>
IPCS Meetings held in 2008

14-15 January 2008
Aggregate/cumulative Risk Assessment Drafting Group Meeting
London, United Kingdom

28-29 February 2008
Guidance on Immunotoxicity Risk Assessment Scoping Meeting
Bilthoven, The Netherlands

5-7 March 2008
Risk Assessment Toolkit and Problem Identification Tool Meeting
Montreux, Switzerland

11-13 March 2008
National workshop on the sound management of chemicals and chemical incidents
Ulan Bator, Mongolia

12-14 March 2008
Peer-review meeting for Poisons Information Monographs (PIMs)
Cardiff, United Kingdom

26-27 March 2008
WHO/IPCS Continuing Education Workshop on Risk Assessment Methodology
Bradford, United Kingdom

7-11 April 2008
International Chemical Safety Cards Peer-Review Meeting
Helsinki, Finland

12 May 2008
WHO/AFRO/UNITAR Health Sector Day on the GHS and SAICM for Countries of the ECOWAS Region
Abuja, Nigeria

13-15 May 2008
WHO/UNITAR/ILO Regional Workshop on Chemical Hazard Communication and GHS Implementation for ECOWAS Countries
Abuja, Nigeria

27-30 May 2008
Expert Consultation on Active Chlorine
Ann Arbor, USA

16-18 June 2008
Working Group on the IPCS Poisons Centre Training Manual
Stockholm, Sweden
17-26 June 2008
69th Meeting of the Joint FAO/WHO Expert Committee on Food Additives and Contaminants (JECFA)
Rome, Italy

30 June-1 July 2008
WHO/IPCS Harmonization Project Review meeting on mutagenicity testing
Bradford, United Kingdom

9-18 September 2008
Joint FAO/WHO Meeting on Pesticide Residues (JMPR)
Rome, Italy

5 October 2008
Continuing Education Course on Characterizing and Communicating Uncertainty in Exposure Assessment
EUROTOX 2008
Rhodes, Greece

21-30 October 2008
70th Meeting of the Joint FAO/WHO Expert Committee on Food Additives and Contaminants (JECFA)
Geneva, Switzerland

10-14 November 2008
International Chemical Safety Cards Peer-Review Meeting
WHO Headquarters, Geneva, Switzerland