

ICS/PI/88.5

IPCS

International Programme on Chemical Safety

INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY

RECORD OF A MEETING OF DIRECTORS OF IPCS
PARTICIPATING INSTITUTIONS (PIs)

Held 13-17 September 1988,
National Institute of Environmental Health Sciences,
Research Triangle Park, NC, USA

Programme international sur la Sécurité des Substances Chimiques

Internal Technical Report Rapport Technique Interne



United Nations Environment Programme
Programme des Nations Unies pour l'Environnement



International Labour Organization
Bureau international du Travail



World Health Organization
Organisation mondiale de la Santé

TABLE OF CONTENTS

1	OPENING REMARKS	1
2	ELECTION OF OFFICERS	2
3	IPCS DURING THE PERIOD 1982-88	2
4	INTERRELATIONSHIP OF THE WORK OF THE COOPERATING ORGANIZATIONS	7
	World Health Organization	7
	International Labour Organization	8
	United Nations Environment Program	9
	International Agency for Research on Cancer (IARC)	9
	Food and Agriculture Organization	10
5	SELECTED TOPICS REGARDING OUTPUTS OF IPCS	11
	Proposed Approach to the Development of Health and Safety Guides	12
	Chemical Data Dissemination	14
6	PROPOSED FUTURE ACTIVITIES OF IPCS	15
	Risk Evaluation of Priority Chemicals	16
	Methodology	17
	Chemical Accidents and Prevention and Treatment of Poisoning	21
	Manpower Development	23
7	CONCLUSIONS AND RECOMMENDATIONS	24
	ANNEX I - LIST OF PARTICIPANTS	
	ANNEX II - CONTRIBUTIONS OF THE PARTICIPATING INSTITUTIONS (PIs) TO THE IPCS DURING THE PERIOD 1982-1988, by Dr R. Lönngren	
	ANNEX III - RISK ASSESSMENT - COOPERATION WITH IPCS (ICS/PI/Room Document 3, September 1988)	
	ANNEX IV - PLANNED TRAINING MODULES FOR CHEMICAL SAFETY TO BE DEVELOPED 1988-1990	

ABBREVIATIONS USED

PAC	Programme Advisory Committee
PIs	Participating Institutions
CCTTE	Computerized Listing of Chemicals Being Tested for Toxic Effects
EHCs	Environmental Health Criteria documents
HSGs	Health and Safety Guides
ICSCs	International Chemical Safety Cards
PIMs	Poison Information Monographs
CEC	Commission of the European Communities
CEFIC	Conseil Européen des Fédérations des Industries chimiques
CMEA	Council for Mutual Economic Assistance
ECETOC	The European Chemical Industry Ecology and Toxicology Centre
GIFAP	International Group of National Associations of Agrochemical Manufacturers
ICSU	International Council of Scientific Unions
ILSI	International Life Sciences Institute
IRPTC	International Register of Potentially Toxic Chemicals
IUPAC	International Union of Pure and Applied Chemistry
IUTOX	International Union of Toxicology
MARC	Monitoring and Assessment Research Centre
OECD	Organization for Economic Cooperation and Development
SGOMSEC	Scientific Group on Methodologies for the Safety Evaluation of Chemicals
SCOPE	Scientific Committee on the Problems of Environment

REPORT OF THE MEETING OF DIRECTORS
OF IPCS PARTICIPATING INSTITUTIONS

1 OPENING REMARKS

1.1 A meeting of Directors of IPCS Participating Institutions was held at the National Institute of Environmental Health Sciences (NIEHS), Research Triangle Park, North Carolina, USA, on 13-17 September 1988. A list of participants is given in Annex I.

1.2 Dr. D. Rall, Director of the National Institute of Environmental Health Sciences, welcomed the participants, noting that NIEHS has been able to play a continuing role in the development of the International Programme on Chemical Safety, and his pleasure at the significant progress that has been made.

1.3 Dr. W. Kreisel, Director of the Division of Environmental Health, welcomed participants on behalf of the Director General of WHO. He thanked Dr. Rall for the support and assistance provided to the IPCS programme over many years, and especially for arrangements made to host the meeting.

1.4 Dr. Kreisel noted that the task of the meeting, namely to review past achievements and to discuss the extent and form of future participation by PIs, was a challenging one. He informed the meeting that the international organisations participating in the programme (UNEP, ILO and WHO) have recently reviewed the objectives of the programme in order to achieve a sharper focus on its purpose and that these are encompassed in a revised Memorandum of Understanding recently concluded by these organizations. He reviewed the particular need for the participants in the meeting to consider a number of technical issues including: collaborative studies aimed at the development and validation of methods in toxicology; evaluation of the effects of chemicals on human and non-human biota; and how the products of the programme can be made more useful and conspicuous, especially for the benefit of developing countries.

1.5 Dr. Kreisel noted the way in which the IPCS programme has matured and expressed thanks to Dr. Mercier and staff of the Central Unit, and to the Participating Institutions for the results obtained which have proved both timely and relevant to needs.

2 ELECTION OF OFFICERS

2.1 Dr. B. MacGibbon was invited to Chair the meeting. Academician J. I. Kundiev was unanimously elected Vice-Chairman. On the recommendation of the Secretariat, Mr. J. R. Hickman was designated as Rapporteur.

3 IPCS DURING THE PERIOD 1982-88 (ICS/PI/88.2)

3.1 The Manager of IPCS (Dr. M. Mercier) reviewed the progress that had been made in implementing the Programme during the period 1982-88. He noted that IPCS represents a scientifically-based response to the health and environment problems, which are becoming of greater concern with the expanding use of toxic chemicals. He described the programme as a cooperative venture of WHO, ILO and UNEP. Special arrangements exist for cooperation with FAO in undertaking evaluation for chemicals in food, including food additives, contaminants, residues of pesticides and of veterinary drugs. IPCS cooperates closely with other inter-governmental organizations such as OECD, CMEA, and CEC, and with several non-governmental organizations (ICSU/SCOPE in SGOMSEC, the International Association of Environmental Mutagen Societies, GIFAP, ILSI, IUPAC, the World Federation of Associations of Clinical Toxicology Centres and Poison Control Centres, ECETOC, CEFIC and IUTOX) and undertakes a number of joint activities with them.

3.2 Arrangements for management of the programme were described by the Manager. Twenty-three Member States and agencies have entered into formal agreements with IPCS through Memorandums of Understanding. Forty-eight institutions form a network of IPCS Participating Institutions (PIs) to undertake IPCS-related activities. Member States and Institutions contribute both "in

kind" and directly to the IPCS central fund, as well as through funds made available within their own countries. The IPCS Central Unit has a staff of 9 professional and 13 general staff, plus 4 consultants working on a more-or-less permanent basis. The budget of the programme increased in nominal terms from \$5.2 million in the 1982-83 biennium to an estimated \$7.7 million in the current 1988-89 biennium but this fails to reflect the effects of either inflation or the fluctuating value of the US dollar, which have, in effect, reduced resources available to the programme significantly.

3.3 The outputs of the programme were described in relation to the basic objectives of the programme:

- risk evaluation of priority chemicals;
- methodology for health risk assessment;
- technical cooperation;
- management of chemical emergencies;
- prevention and treatment of chemical poisonings; and
- manpower development.

3.4 Priorities for risk evaluation were established at three consultations, the last of which identified 201 priority chemicals for future evaluation. Eighty-two Environmental Health Criteria documents were published. It was reported that 22 more were in an advanced stage with another 23 in preparation. Twenty-three Health and Safety Guides had been published and another 23 were in preparation. A pilot activity to launch the preparation of International Chemical Safety Cards was well advanced. Since 1985, over 110 intentional food additives and 14 food contaminants had been evaluated. Each biennium, about 30 pesticides are evaluated by the Joint FAO/WHO Expert Meeting on Pesticide Residues in Food; work started on the evaluation of residues of veterinary drugs in food.

3.5 Three consultations were held to advise on methodology activities in relation to health risk assessment. Eleven documents on methodology had been prepared. Nine workshops on

methodology were organized by IPCS, often in collaboration with other organizations, and the proceedings published. Three coordinated collaborative studies aimed at validating test methods were undertaken and the results published. IPCS plays a role in harmonizing approaches to toxicity testing and risk assessment. Recommendations on operating procedures for toxicological laboratories and on the safe use and disposal of chemicals in laboratories were prepared.

3.6 Three regional intercountry workshops on chemical safety and chemical hazards were held and a fourth was reported to be under preparation. Guidelines for strengthening national capabilities in chemical safety were in an advanced stage of drafting. A check list for use in identifying potential chemical accident hazards was being prepared. A conference on chemical accidents had been supported. A monograph on methods for reducing injury due to chemical accidents is being prepared by SGOMSEC. Guidelines were being developed on how to set up a poison control programme in support of national programmes on prevention and treatment of chemical poisoning. It was reported that antidotes used in treatment of chemicals were being evaluated, that a computerized poison information package was being prepared and that a manual on analytical toxicology for developing country hospitals and a handbook on poisonings for informing health care workers were being drafted.

3.7 The Manager noted that IPCS has concentrated its activities in manpower development toward a few target groups in support of the scientific programme objectives such as toxicologists, clinicians treating poisoned patients, pesticide operators and administrators making and implementing chemical safety policy decisions. Eighteen courses were organised during the period June 1984 to December 1987.

3.8 The activities and outputs of the IPCS are promoted by several means, including a brochure (currently being revised), the Sentinel (a quarterly newsletter produced by Monitoring and Assessment Research Centre) and the IRPTC Bulletin. A slide and tape presentation on IPCS is available. Further effort is needed

to ensure the IPCS documents and other outputs reach those requiring them at the country level.

3.9 Dr. Lönngren discussed the contributions of PIs during the period 1982-88. He also summarized the responses to a questionnaire distributed by the Central Unit to PIs earlier in the year. His presentation is in Annex II.

3.10 An analysis of past contributions to the preparation of EHCs by PIs showed that a group of 5 PIs has carried the major burden in the past, with some participation by a further 11. Two-thirds of the PIs had not actively participated in this activity. More than half of the PIs had, however, submitted comments on some of the documents submitted to them, and eight of 48 PIs had organized and/or hosted Task Groups convened to evaluate EHCs prior to final editing and distribution.

3.11 With respect to methodology activities, almost one-half of PIs had been involved. Several PIs had been also active in supporting the activities of JECFA and JMPR. However, there had been little PI involvement in activities related to the management of chemical emergencies or to the prevention and treatment of chemical poisonings. Only a few PIs had taken an active part in the manpower development component of the programme.

3.12 In an analysis based on past experience and replies to the questionnaire, Dr. Lönngren concluded that PIs are not fulfilling the role originally foreseen for several reasons, primarily because of resource constraints on PIs which limit the activities they can undertake for IPCS. Also, the original "networking" of PIs originally foreseen has not occurred. Indeed, the replies to the questionnaire indicated that contacts between PIs are very limited. The original idea of creating collaborating networks of PIs had proved to be not realistic because of scheduling and logistic difficulties. Most of the respondents to the questionnaire suggested that a periodic information sheet could serve to keep PIs better informed about IPCS and PIs activities.

3.13 In the ensuing discussion, a number of points emerged:

- The scientific excellence of the work of IPCS is unchallenged, but the usefulness of its outputs need to be better recognized by decision makers (regulators, politicians) as an input to national policy decisions. Such recognition would be helpful in assuring the adequate funding of PIs and, possibly, in obtaining increased financial support for the programme.
- As the programme matures, more emphasis will be required on ensuring that the program outputs be used in implementing national programmes. PIs must look more to the practical usefulness of IPCS outputs within their national context, and influence the direction of IPCS accordingly.
- It was suggested that more frequent contacts between PIs would be to mutual benefit. In this context, more frequent meetings of Directors of Participating Institutions and regional meetings of PIs were suggested for fostering a sense of cooperation and commitment on behalf of PIs to the IPCS programme. However, it was recognized that arranging meetings of PIs could place undue demand on the limited resources of the Central Unit of IPCS; it was suggested that PIs might consider this as a task they could undertake on behalf of IPCS, especially at the regional level.
- It was noted that many governments have not provided additional resources to PIs to undertake activities on behalf of IPCS, although this need was clearly foreseen in the M.O.U. signed with Member States.
- Better communication of plans for forthcoming activities between individual PIs and the IPCS Central Unit might facilitate development of opportunities for collaboration which are currently overlooked.

- A number of institutions other than PIs participate actively in the work of IPCS; it was suggested that a list of such institutions be established and their contributions appropriately recognized.

4 INTERRELATIONSHIP OF THE WORK OF THE COOPERATING ORGANIZATIONS

World Health Organization

4.1 In reviewing the new Memorandum of Understanding between WHO, UNEP and ILO, Dr. Kreisel pointed out that each of these organizations serve different constituencies having a common concern about the effects of chemicals on health and environmental quality. He compared IPCS to a confederation in which the individual interest seek cooperation for the mutual benefit of all.

4.2 Dr. Kreisel outlined attempts by the cooperating organizations to better coordinate their other activities on chemical safety with IPCS. For example, activities in food safety, occupational health, cancer research, pesticide development and safe use, pharmaceuticals and the control of environmental health hazards can benefit from the outputs of IPCS and make contributions to it. Efforts are underway within WHO to improve coordination between these programmes particularly through the work of the Intra-WHO Coordinating Committee on Chemical Safety.

4.3 As examples of WHO commitment to chemical safety activities, Dr. Kreisel summarized some proposed outputs in the Eighth General Program of work for WHO as:

- 450 potentially toxic chemicals will have been assessed, and the findings disseminated to Member States, by 1995;
- the use of these assessments by Member States will be promoted;

- 39 pesticides used in public health programmes will be tested in the field;
- data sheets on pesticides (in collaboration with FAO) will continue to be produced at the rate of about 20 per year;
- WHO will continue developing manuals and other training aids to promote the safe use of pesticides;
- a network of field epidemiologists interested in studying the effects of environmental contamination by chemicals will be trained and established.

International Labour Organization

4.4 Mr. Kliesch reviewed the history and current philosophy of ILO toward IPCS. Its tripartite representation and current objectives are reflected in its support for IPCS and in expectations for the nature and form of its outputs. He pointed out that ILO's role is consistent with objectives (iii) to (vi) of IPCS¹, but that ILO has no mandate for scientific research activities. Among activities carried out by ILO, those related to information collection and dissemination, on the development of model codes of practice (e.g., on major hazard control) and on technical cooperation activities related to health and safety at work, are supportive of the aims and objectives of IPCS. Of special relevance are current activities expected to lead to a convention on chemical safety which will be based on eight principles covering topics such as hazard classification, labelling, material safety data sheets (MSDS).

4.5 Mr. Kliesch expressed concerns that IPCS, through its major new products (HSGs, ICSCs) is moving into new fields in which the target audience is no longer the scientist, but rather administrators and legislators, workers, and employers. He cautioned that these are fields of tension and potential conflict; there are differences in national legislation and regulations to protect workers and it will be difficult to provide advice which is universally acceptable when interpreted

¹ Annex I to the Memorandum of Understanding between the Executive Heads of the Cooperating Organizations

within the framework of national laws. Mr. Kliesch also stressed the importance of clear communication in ways that are readily understood by the recipient audience. This will be different for the different potential user group of IPCS products.

United Nations Environment Program

4.6 In its role as a catalyst to promote programmes to deal with environmental problems, UNEP has cooperated fully in IPCS since its inception. Mr. D. McBain (UNEP/IRPTC) noted the special relationship of the International Register of Potentially Toxic Chemicals (IRPTC) in its role as an IPCS Participating Institution and also referred to all the UNEP efforts, such as those of the Industry and Environment Office, that relate to chemical safety. The activities covered include:

- scientific reviews of Soviet literature (IRPTC);
- lists of selected environmentally harmful substances, processes and phenomena of global significance (IRPTC);
- London Guidelines for the exchange of information on chemicals in international trade, and the U.N. consolidated list (IRPTC);
- development of national registers to enable orderly data collection and exchange (IRPTC);
- preparation of a Handbook of Awareness and Preparedness for Emergencies at the Local Level (APELL) (IEO);
- technical guides focusing on the environmental aspects of different industry sectors, including guides on chemical storage, wood preservation and metal finishing (IEO).

International Agency for Research on Cancer (IARC)

4.7 In the absence of Dr. R. Montesano, who was unable to attend, the contribution of IARC was described by Dr. G. Becking on behalf of the Agency.

4.8 As a Participating Institute in IPCS, IARC has assisted in the preparation of documents and in organizing meetings on a

number of chemicals and related topics (e.g. drinking water) with a particular focus on carcinogenicity. It has established a network of laboratories undertaking carcinogenicity tests, and has contributed to method development, especially in relation to the assessment of exposure to carcinogens. IARC has participated in IPCS education and training activities by organizing courses on health monitoring in populations exposed to carcinogens and mutagens.

Food and Agriculture Organization

4.9 Many of the activities of the Food and Agriculture Organization (FAO) are related to the work of IPCS. Mr. J. Lupien (FAO) estimated that FAO devotes about \$0.5 million annually to such programs which include a number of joint activities, notably JECFA and JMPR. FAO has supported the concept of IPCS since its inception and expects to join the other cooperating agencies (WHO, UNEP, ILO) in the programme, in the near future, upon conclusion of a formal agreement between the organizations concerned.

4.10 In the discussion following presentations by the cooperating organizations the following points were made:

- Where evaluation of chemical hazards is a prerequisite for ILO activities, it was urged that IPCS evaluations be utilized.
- The co-operation of ILO, in formulating the advice contained in HSG and ICSC, will be important for minimising the possible problems identified by Mr. Kliesch.
- Some PIs stated that there is urgent need for international harmonization of the classification of toxic chemicals, and that evaluations carried out by IPCS provide the scientific basis for such harmonization. It was suggested that labelling is an administrative rather than a scientific exercise, and, as such, not for IPCS.

While welcoming the interest and significant support provided for the programme to date by Cooperating Organizations, PIs found it appropriate to encourage even greater and, if possible, more active and concrete participation on the part of all of the organizations that made presentations (ILO, UNEP, WHO and FAO). In the view of several PIs that expressed an opinion, their collaborative efforts can be made still more effective and more effective use made of the outputs if the financial and operational resources of IPCS were to be strengthened.

5 SELECTED TOPICS REGARDING OUTPUTS OF IPCS

5.1 When the IPCS became operational in 1980, it assumed responsibility for continuing preparation of the EHCs relating to chemicals and to methodology aspects. The development of EHCs had begun in 1973 as a collaborative venture of UNEP and WHO in response to one of the needs recognized by the Stockholm Conference on the Human Environment in 1972.

5.2 From the outset, procedures were adopted which involved consultation with eminent, unbiased experts and extensive peer-review in order that EHCs would be of the highest possible standards in quality and objectivity. While this has resulted in a series of documents that are widely acknowledged as one of the best information sources available on a wide range of environmental pollutants, the time required for their production with resources available in both PIs and the IPCS Central Unit is such that less than 100 EHCs have been produced to date.

5.3 At the PAC meeting in 1986, the concept of Health and Safety Guides (HSGs) was discussed as a means of accelerating the dissemination of risk evaluations on a much larger number of chemicals than can be achieved through the production of EHCs. It was also decided to prepare HSGs in a form that would be amenable to use by a much wider readership than that targeted by the EHC series. The production of HSGs would replace the earlier practice of publishing executive summaries of the EHCs, and it

was decided to shift the programme toward the production of larger numbers of HSGs while maintaining the current level of production of EHCs.

Proposed Approach to the Development of Health and Safety Guides

5.4 Dr. Damstra reported on a consultation with 13 PIs represented, which was held immediately prior to the meeting. The purpose was to develop a strategy for producing HSGs, especially when no EHC exists as a primary source of information on effects. She reported that experience gained in both Sweden and the United States shows that it is feasible to produce HSGs in such circumstances and that about 1 person-month of effort is required for each substance considered.

5.5 In proposing a series of procedures for drafting, reviewing and publishing HSGs in the absence of an EHC, the consultation recommended the following:

- 5.5.1 IPCS and IRPTC should assist the PI to identify and obtain critical reviews and other relevant information on the substances involved;
- 5.5.2 a background companion document providing the scientific and technical basis for the HSG should be prepared to support the evaluation and recommendations in the HSG. The purpose of this document is primarily to facilitate subsequent review. Format, content, etc., will be at the discretion of the PI that prepares it;
- 5.5.3 a two-level review process will be used, the first level review being undertaken within a limited period of time by a consultant or a PI with appropriate expertise in order to identify, at an early stage, potential scientific issues related to the evaluation and thus reduce the time needed for subsequent stages in the review process;
- 5.5.4 circulation for review to a small number (6-10) of contact points recognized by IPCS as having appropriate expertise;

5.5.5 Task Groups would meet to peer-review and finalize 5 or 6 HSGs at a time prior to publication. Task Groups must include expertise in areas such as industrial hygiene, medical treatment, waste disposal, etc., as well as in toxicology, because of the broader scope of HSGs, compared to EHCs.

PI's were invited to comment on the proposed procedures. They are also invited to provide views on the Revised Guidelines for the Preparation of Health and Safety Guides (distributed at the meeting) and specifically on: (1) how the quality of information/data to be used for the HSGs can be assessed; (2) additional core reference sources; and (3) the adequacy of these draft guidelines for use by PIs. Replies to Dr. Gilbert were requested not later than October 12, 1988.

5.6 IRPTC can assist other PIs involved in the preparation of EHCs, HSGs and ICSCs by providing basic scientific and legal information. Through its collaboration in CCTTE, IRPTC serves to identify and collect critical reviews generated by international or national authorities. IRPTC's chemical data profiles, which exist in fairly complete form for about 600 chemicals, provide concise overviews of scientific data necessary to initiate an evaluation of the hazard that a chemical may pose for human health and the environment. The legal file contains information on legislation, regulations, and recommendations for about 7000 chemicals. A Register index is maintained to identify gaps either in the data profile itself, or in the scientific literature.

5.7 One PI which has made extensive use of the IRPTC data profiles in preparing ecotoxicological sections of EHCs commented that even if data profiles are not available, the IRPTC data input forms provide a very useful way of assembling the information required and serve the dual role of ensuring its future availability through IRPTC to other users. It was estimated that the time needed to prepare the data input form was not more than 50% greater than otherwise and this was considered a worthwhile investment. It was recommended that other PIs be

encouraged to adopt a similar procedure. In this context, the UNEP/IRPTC representative was asked to send additional details about the data profile worksheets used within IRPTC to all PIs to enable them to evaluate their utility in their own activities, and in their contribution to IPCS.

Chemical Data Dissemination

5.8 Dr. M. Gilbert presented information on the facilities available at IPCS for electronic data processing. PIs were asked to consider the use of machine readable media for the exchange of data and other information between the IPCS Central Unit and the PIs². The Central Unit requested that PIs provide micro-computer facilities (IBM-compatible) for use by the Secretariat when they host meetings on behalf of IPCS.

5.9 The programmes relating to the processing of the International Chemicals Safety Cards (ICSCs) have been developed for the IPCS by the U.S. National Institute of Occupational Safety and Health (NIOSH). This includes the on-line preparation, the processing and the preparation of camera-ready copies.

5.10 The ICSCs and the CCTTE Registry will be made available in machine readable form in the future.

5.11 Dr. Gilbert reported that discussions were taking place with NIOSH and the Canadian Centre for Occupational Safety and Health with a view to including IPCS documents (EHCs, HSGs, ICSCs and Poison Information Monographs) on CD-ROM. The use of CD-ROM technology is being considered also in a broader context by the Environmental Health Division of WHO.

²WHO has standardized on Samna as its word-processing software (October 1988). Microsoft Word, Multimate and WordPerfect are also available. PIs using other word-processing software may need to provide diskettes in ASCII format.

5.12 IPCS is connected to BITNET; PIs that are connected to BITNET were asked to communicate their user-identification to the IPCS secretariat. In addition, IPCS intends to nominate all PIs as external users of a WHO-Electronic-Mail system that is being implemented. The secretariat will keep the PIs informed of future developments in this respect.

6 PROPOSED FUTURE ACTIVITIES OF IPCS

6.1 The Manager outlined the proposed programme of work for the current (1988-89) and forthcoming (1990-91) biennia (Document ICS/PI/88.3). He pointed out that many of the proposed activities are dependent upon PIs and that many of the proposed activities can be carried out only if the assistance provided by PIs to the programme is significantly strengthened. He noted that some important aspects of the programme, notably activities related to JECFA and JMPR were not being discussed in detail at this meeting, but he acknowledged the dynamic support of 8 PIs which has enabled IPCS to cope with the increasing requests from Codex communities, including the recent request to evaluate the safety of veterinary drug residues in food commodities.

6.2 In asking Directors of PIs to review the proposed programme, the Manager of IPCS recognized that it would be unreasonable to seek firm commitments of future contributions to the programme by individual PIs at the meeting. He announced that PIs would be contacted soon after the meeting requesting details of proposed future participation in order to allow for orderly planning to proceed.

6.3 PIs were also urged to inform IPCS of activities at the national level that might result in outputs that could be "internationalized" through IPCS to the benefit of everyone. These could include preparation of criteria documents, research on methods to assess the risk posed by chemicals, or training activities.

Risk Evaluation of Priority Chemicals

6.4 Dr. Gilbert presented a comparative analysis of the various steps of the preparation of EHCs, HSGs and ICSCs. He underlined those steps for which the IPCS mostly needs assistance. He reiterated the high priority being accorded to HSGs in IPCS because of the need for them, especially in developing countries. For this reason, PIs were asked to give particular support and assistance in the preparation of HSGs.

6.5 Several PIs indicated their willingness to assist in the preparation of EHCs and HSGs. This assistance was offered to IPCS in various forms:

- drafting of documents;
- reviewing documents prepared by other PIs;
- translation of documents into other languages, and assuring the accuracy and quality of translations prepared elsewhere; and
- organizing and/or hosting Task Group meetings.

A few PIs expressed interest in seconding staff to work with the Central Unit to assist in its work and, at the same time, gain a better appreciation of the work of IPCS to determine how they could better participate in the future.

6.6 It was noted, however, that most of the PIs volunteering substantial assistance toward the risk evaluation of priority chemicals were those which had actively participated in this way in earlier years. The underlying reason why other PIs are not able to support the programme as strongly appeared usually to be a lack of resources for IPCS activities at the PI. Several PIs noted their interest and willingness but that additional support would be necessary before they could participate to a greater degree. However, a few PIs reported that resources available to them to undertake tasks on behalf of IPCS were to be modestly increased in the near future.

6.7 Several PIs reported that they have experienced difficulty in meeting the specified deadlines when several documents are received for review within a short time. It was suggested that there might be a better response from PIs, and that a more complete and thorough review might result if the Central Unit could arrange for documents to be sent out for review on a more regular basis. Alternatively, the Central Unit might consider the feasibility of giving advance notice of its intent to solicit reviews to focal points and PIs so that they can plan accordingly. It was noted that the use of a limited number of contact points only to review each HSG would permit the load to be spread more evenly.

6.8 It was suggested that biannual updating of the CCTTE is unnecessary and that IPCS should consider updating it annually. This would reduce cost, release IPCS manpower for other activities, and be less burdensome for PIs.

Methodology

6.9 Drs. Becking and Smith presented an overview of ongoing and planned activities on methodology for health risk assessment (see document ICS/PI/88.3 paras. 56 to 125). The following points emerged from the discussions about collaborative studies:

- the proposed collaborative study to evaluate neurobehavioural methods as a means of identifying potential neurotoxic agents can proceed only if an institution, suitably experienced in the field, is willing to undertake a lead role. PIs were urged to assist in identifying institutions within their countries which might have the expertise and be willing to undertake the lead role in collaborative studies by taking responsibility for such tasks as purchasing, analyzing and distributing the chemicals chosen for study, interpretation of results, and reporting.
- No decision had been taken to undertake collaborative studies on methods to detect nephrotoxicity. The

meeting was informed that the likely success of such a study would be dependent upon the development of better markers for the diagnosis and prognosis of toxic effects on the kidney and on the availability and willingness of an institution to assume the lead role.

- With financial support from the Ministry of the Environment of the Federal Republic of Germany, and in collaboration with several partners including the CEC and the International Commission on Occupational Health (ICOH), IPCS has embarked upon collaborative studies on selected immunotoxicologic methods. The UK DoH Department of Toxicology will take a lead role for these studies which involve several PIs. The Ministry of Health of Czechoslovakia will provide a focus for human health effects. A workshop is planned for 1989 in Hannover to review the results of experimental in vivo and in vitro studies on immunotoxicity, the histopathology of the immune system and human health effects of immunomodulation by chemicals.

6.10 It was noted that requests to PIs and focal points to review monographs on methodology frequently elicited a poor response. For example, the draft guidance document on recommended procedures for toxicological laboratories attracted only 12 responses. PIs were encouraged to make special efforts to ensure that monographs relating to methodology receive a comprehensive review; in particular, Dr. Smith requested that PIs contribute especially to the review of a forthcoming monograph on nephrotoxicity and to the revised monograph on quality assurance methods in toxicology. He pointed out that the latter will be considerably expanded to include a section on quality assurance for chemical analyses of biological and environmental media which will be extremely useful to developing countries. Quality assurance procedures developed for the WHO/UNEP Global Environment Monitoring System (GEMS) will be incorporated into the document.

6.11 Dr. J. R. Fowle reported on a Consultation on Methodology for Health Risk Assessment held immediately prior to the meeting. Participants were asked to provide advice about the future course that IPCS should follow in methodology activities after 1991.

6.12 The eleven monographs in the Environmental Health Criteria series that deal with methodology were reviewed (No. 6, 27, 30, 46, 47, 51, 57, 59, 60, 70 and 72). It was noted that revision of No. 6 (Principles and Methods for Evaluating the Toxicity of Chemicals. Part I) is already begun. It was recommended that the sections on exposure assessment need a more comprehensive treatment, especially with respect to complex mixtures and low-level exposures. It was noted that No. 30 (Principles for Evaluating Health Risks to Progeny Associated with Exposure to Chemicals During Pregnancy) does not deal with functional teratology (e.g., neurobehavioural teratology); it was recommended that a separate document be prepared on this topic. It was suggested that EHC No. 59 (Principles for Evaluating Health Risks from Chemicals during Infancy and Early Childhood) might require early updating with respect to how chemical exposures affect lactation but it was recommended that this await the outcome current studies on this topic expected to be completed by 1990. At present, the other monographs on methodology were considered adequate and no recommendations were made to update them. However, it was noted that EHC No. 57 (Principles of Toxicokinetic Studies) fails to stress adequately the importance of considering physiologically-based pharmacokinetic information in risk assessment. It was recommended that this topic be included in the monograph on "Principles and Methods for Assessment of Risk from Chemical Exposures" currently being developed.

6.13 Directors of PIs also endorsed the preparation of monographs on principles and methods for assessing the effects of chemicals on the pulmonary and reproductive systems (male and female). Several PIs expressed an interest in assisting in the preparation of these documents.

6.14 A need to devote more attention to methods for evaluating the ecological effects of chemicals was recognized, but it was recognized that this is a difficult field because the basic information on variations in ecosystems is lacking. The suggestion of the Consultation to convene a working group of experts (in collaboration with OECD and other interested international organizations) to prepare a document on the principles of methods for evaluating ecological effects (similar to EHC No. 6 for effects on human health) was noted.

6.15 Directors of PIs also noted the recommendations of the Consultation that further collaborative studies not be undertaken before a work group has reviewed available information and developed specific recommendations on how studies should proceed. They also noted the recommendation to convene a work group to consider the development of in vitro tests as possible replacements for in vivo methods, especially for detecting teratogenic and nephrotoxic effects using the monograph on in vitro test methodology scheduled for publication by IPCS in 1990 as a basis for discussions about possible collaborative studies.

6.16 It was recognized that little progress has been made in relating data from studies using biomarkers to risk assessment. Directors of PIs took note of the recommendation that biomarkers should be better recognized as useful tools in assessment of exposure to, effects of, or susceptibility to chemicals. The recommendation to convene a work group to evaluate biomarkers, emphasizing non-cancer risks, and their utility in assessing risk was endorsed. Directors of PIs noted the recommendation of the Consultation that no collaborative study of biomarkers should be undertaken if the work group is unable to arrive at specific principles for how biomarkers can be used to evaluate risk and/or if it cannot develop specific recommendations on how to proceed

6.17 In view of rapid advancements in the field of biotechnology, the Consultation recommended that IPCS needs to keep abreast of developments, especially as these relate to assessing the possible risks in the production and use of the products of

biotechnology and their impact on human health and ecosystems. The Directors of PIs endorsed this view, drawing attention to the need to consider that highly reactive chemicals are used in genetic engineering, as well as considering the risks posed by the products themselves. However, it was noted that activities on biotechnology are already being undertaken by other international organizations, including preparation of an inventory of activities currently being prepared by OECD. It was suggested that IPCS engage a consultant to document work already being done by others as a basis for deciding the best course of future action. The need to co-ordinate any proposed IPCS activities with other on-going international initiatives in the field of biotechnology was stressed.

6.18 In addition to the topics discussed by the Consultation, PIs identified a need for activities related to assuring the quality of data in epidemiology studies. The meeting also noted that a new International Centre for Birth Defects is being established in Norway and that data to be collected and analyzed by this Centre may prove useful in relation to IPCS activities in the future.

6.19 In generally endorsing the recommendations of the Consultation, several PIs expressed interest in undertaking various proposed future activities.

Chemical Accidents and Prevention and Treatment of Poisoning

6.20 Dr. J. Haines summarized the activities, past and planned, of IPCS that relate to the management of chemical emergencies and the prevention and treatment of chemical poisonings. The close cooperation and collaboration with other international organizations undertaking related programmes was noted.

6.21 Dr. Haines drew attention to the need for information regarding:

- case histories of past chemical disasters, with particular reference to the medical responses involved, and the role played by poison control centres;
- names and fields of expertise of experts who could be called on, at short notice, to render assistance elsewhere in the world in the event of chemical emergencies; and
- information on accident prevention programmes and training materials that are available relating to accident prevention.

PIs were asked to assist IPCS by providing this information for their countries, or by notifying IPCS of other institutions or organizations in their country that might be able to provide the information.

6.22 PIs were also requested to assist in translating and disseminating the annotated checklist to identify chemical hazards (see ICS/PI/88.2 para. 211) when it is completed, and to encourage its use in training courses on chemical safety in their countries.

6.23 The assistance of PIs was also requested in activities aimed at the prevention and treatment of poisonings. Many of the chemicals commonly involved in poisonings are those for which it is intended to prepare EHCs and HSGs (Annex III). The information upon which these will be prepared is also that necessary to prepare the Poison Information Monographs (PIMs) which form part of the IPCS computerized Poison Information System for use by poison information centres in responding to enquiries about poisonings involving chemicals that are described in document IPCS/IDRC/88.11. It was agreed that:

- PIs would prepare the physio-chemical and toxicological sections of PIMs (if required) for substances for which they were preparing EHCs or HSGs;

- the network of PIs would be used to review the toxicological sections of PIMs.

It was agreed that the same mechanisms for seeking assistance of PIs in preparing EHCs and HSGs would be used to seek assistance in preparing PIMs.

6.24 Dr. Haines asked PIs to consider seconding staff for the preparation of PIMs either to the Central Unit or within their own institutions. He also requested that PIs consider hosting meetings to evaluate the monographs, and to edit and translate them (English, French and Spanish).

Manpower Development

6.25 Dr. E. Smith pointed out the continuing limitation of funding for manpower training. This has caused IPCS to seek more effective means of training. Most manpower training activities consist of workshops, seminars and courses; attempts to improve cost-effectiveness by increasing the numbers of participants in each course have proved ineffective due to dilution of the student-teacher ratio.

6.26 Participants selected for training are carefully selected to ensure that they represent the most critical groups needing training. Candidates are also selected with a view to their potential ability to train others in their country. In the past, attention has been focused on training activities aimed at risk assessors and governmental scientific advisors concerned with chemical safety. However, as the IPCS outputs in the future will be expanded in the direction of practical information documents such as HSGs and ICSCs, attention will need to be given to other target groups using these and other IPCS evaluation documents. Clinical toxicologists, chemical emergency personnel, public health inspectors and environmental epidemiologists were also identified as target groups for manpower training activities. Again emphasis must be on training those who can pass on the acquired knowledge to others in their country and thus achieve national self-reliance in chemical safety matters.

6.27 In the future, much more emphasis will be placed on the development of training materials for distance learning (such as audiovisual materials, chemical safety manuals and modular training courses), which can be widely used within countries as a basis for national training activities. This will be done in collaboration with WHO Regional Offices. Annex IV lists the subjects for which training modules will be prepared during the period 1988-90. It was also noted that attention to training needs for the assessment of chemical pollution of food, water and air should be given by IPCS in collaboration with other appropriate WHO units, FAO and UNEP.

6.28 Several PIs indicated their willingness to participate in manpower training activities in one or more of the following ways:

- developing training materials, including audio-visual aids;
- translation of training materials into local languages;
- providing staff to serve as short-term consultants in developing countries;
- assisting in the preparation and presentation of training seminars, workshops and courses;
- hosting training meetings;
- by providing funding or facilities (or both) to enable scientists and administrators from developing countries to visit PIs or other institutions for training and experience.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 The Directors of Participating Institutions concluded that:

- The programme of work undertaken during the period 1982 to 1988 is impressive and represents a significant achievement, especially when considered in relation to the limited resources available both at the Central Unit and the Participating Institutions.

- Past achievements are testimony to the validity of the original concept of IPCS, i.e., that by cooperative efforts of Member States, organized and coordinated through the Central Unit, the IPCS can achieve much more in its chemical safety programme than would have been possible through individual national efforts.

- The major constraint on even greater progress and productivity by both the Central Unit and PIs is a lack of adequate funding and manpower.

- IPCS has, in the past, mainly benefited the scientific and technical community through its Environmental Health Criteria series of publications, collaborative studies on methods used in toxicology and epidemiology and in its manpower training efforts. In the future, considerable effort will need to be devoted to serving a much wider community of persons involved with chemical safety, including administrators, workers, employers, and emergency response, environmental health and primary health care personnel.

- More frequent contacts between PIs would be to mutual benefit. In this context, more frequent meetings of PIs, including meetings between PIs of a few countries in the same area, were suggested for fostering a sense of cooperation and commitment on behalf of these institutions to the IPCS. It was recognized that PIs might consider this as a task they could undertake on behalf of IPCS especially at the country level or among a few countries in the same area.

7.2 The Directors of Participating Institutions make the following recommendations to the Cooperating Organizations (WHO, ILO, and UNEP) and to the Food and Agriculture Organization:

- Each of the cooperating organizations should make efforts to increase the prominence of the programme and to reinforce its credibility. Such recognition would help to assure adequate funding of PIs and might be helpful in obtaining increased financial support for the programme as a whole.
- The cooperating organizations are encouraged to enhance their contribution to IPCS in terms of both financial and operational support.

7.3 Directors of Participating Institutions endorsed the proposal that IPCS should move quickly in the production of HSGs and welcomed increased activity in this respect. Since employers and employees are among the primary intended recipients of these outputs, the special role for ILO in the preparation, review and dissemination of HSBs was emphasized.

7.4 Directors of Participating Institutions bring the following concern to the attention of the Programme Advisory Committee (PAC) and to participating Member States and institutions:

- It was noted that many governments have not yet been able to provide additional resources to PIs to undertake activities on behalf of IPCS although this need was generally foreseen in the Memorandums of Understanding signed with IPCS. While recognizing that economic circumstances vary among participating Member States and that there is less possibility for some countries to augment their support for IPCS activities than for others, it is recommended that the PAC seek a greater commitment on the part of governments for

increased resources specifically designated for expansion of activities undertaken on behalf of IPCS.

7.5 The following recommendations are made to the Manager, IPCS:

- Better communication of plans for forthcoming activities between individual PIs (and other institutions/organizations involved in the programme) and the IPCS Central Unit might facilitate development of opportunities for collaboration within existing resources, which are currently overlooked. One suggestion which the Central Unit was asked to consider was an information sheet which would periodically feature plans and activities of IPCS and the PIs.
- More attention be given to scheduling the transmission of documents for review (e.g., draft EHCs) from the Central Unit to PIs and vice versa. This would permit PIs to plan for reviewing documents; a more orderly process might ensure a more thorough and complete review.
- Biannual updating of the CCTTE is unnecessary; IPCS should consider reducing the frequency to annually.

7.6 For specific activities of the programme, the Directors of Participating Institutions agreed to the following:

In relation to risk evaluation activities

- To accelerate the preparation and publication of risk evaluations on a much larger number of chemicals by becoming actively involved in drafting, reviewing and publishing HSGs using the procedures outlined in paragraph 5.5.
- Because of the intent to restrict the circulation of draft HSGs to only a small number of contact points, to

give special attention to the timely review of these documents when requested.

- To seek the help of other Institutions in their countries for the drafting and review of sections of documents for which they may not have expertise themselves.

In relation to methodology

- to assist the Central Unit in identifying institutions within their countries which might be willing to assist IPCS in specific collaborative studies to validate methods (see paragraph 6.9).
- to give special attention to reviewing the second drafts of monographs on nephrotoxicity and on operating procedures for laboratories when these are available.

In relation to activities related to chemical accidents

- to provide the Central Unit with information requested in paragraph 6.21.

In relation to activities for the prevention and treatment of poisonings

- to assist in the preparation and review of the physico-chemical and toxicological sections of PIMs, especially for those chemicals for which an EHC or HSG is being prepared.

In relation to manpower development

- to assist in the development of training materials, and their translation into local languages;

- to assist in the preparation and organization of training seminars, workshops and courses (including assistance in obtaining funding);
- to provide suitably qualified staff to undertake short-term assignments to assist developing countries develop their programmes in chemical safety;
- to provide funding, or facilities (or both) to enable scientists and administrators from developing countries to obtain training and experience by visiting or working in the PIs or at other institutions within their countries.

7.7 In general, the Directors of Participating Institutions expressed support and willingness to continue to participate in all facets of the planned IPCS programme during the current and forthcoming biennia; endorsed the recommendations for proposed future activities in methodology beyond 1991; and agreed:

- to ensure that the programme outputs of IPCS are used in implementing national programmes (with the assistance of the Central Unit if required and whenever possible).
- to provide feedback to the Central Unit on the practical usefulness of IPCS outputs within their country, with suggestions for improvement.
- to ascertain the feasibility of obtaining increased resources for their IPCS activities.
- to consider ways of advancing the work of IPCS through, for example, seconding staff to the programme (either at the Central Unit or within the PI), hosting

meetings, providing translations of IPCS documents (or providing quality assurance for translations done elsewhere), or undertaking the editing and publication of documents.

- to respond promptly, when requested by the Manager, regarding specific tasks that might be undertaken as part of the future IPCS programme and, in making commitments to the programme, to pay particular attention to the need for strict scheduling and for assuring the high quality of work during its implementation.

It was noted that the Manager, IPCS, would contact PIs shortly following the meeting to follow up on the various possibilities for future collaboration that were discussed (in this context, the Manager will carefully review the transcripts/recordings made at the meeting); PIs were requested to respond as a matter of some urgency.

ANNEX I

LIST OF PARTICIPANTS

INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY

MEETING OF DIRECTORS OF IPCS PARTICIPATING INSTITUTIONS

USA National Institute of Environmental Health Sciences
 Research Triangle Park, North Carolina, USA
 13-17 September, 1988

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17 September 1988

ANNEX II

CONTRIBUTIONS OF THE PARTICIPATING INSTITUTIONS (PIs) TO THE IPCS
DURING THE PERIOD 1982 - 1988

By Rune Lönngren, Pharm.D.,
Member of the IPCS PAC

Introductory remarks

We have just had the pleasure of listening to the Manager of IPCS highlightning important parts of the document ICS/PI/88.2: Review of the IPCS during the period 1982 - 1988. It is my task here today to discuss at some detail specific items with regard to the Participating Institutions.

In this intervention I will refer to some of the documents you have in your file for this meeting, I will draw on some other papers from the WHO activities and I will report on the survey on selected issues regarding PIs which was initiated by the Manager early this summer.

As you recall you have received a short questionnaire with the request to give some information on three topics:

- (i) Past Experience of Cooperation in the Network of IPCS PIs;
- (ii) Future Cooperation in the Network of IPCS PIs; and
- (iii) Criteria for Defining a PI.

By mid-August the Central Unit had received replies from 17 PIs, located in 13 countries. I will report on trends in these replies.

Current PIs, Distribution and Commitments

To begin with I would like to make reference to Annex X of document ICS/PI/88.2. It comprises a list of the current 48 PIs. They represent 19 countries.

In most cases the Memoranda of Understanding have been signed by the Ministry of Health of the participating countries or by an agency from that branch of the government. In a few cases, however, other sectors of the government are involved alternatively or additionally. This is the case in the Federal Republic of Germany, Japan, the Netherlands, Sweden and the United States. The number of PIs in the 19 countries is rather different. In most countries we find one, two or three PIs, but in a few countries there are more: four in the US, six in the UK, seven in Czechoslovakia and nine in the USSR to mention the four countries with the highest number of PIs. Full information on the distribution of the 48 PIs is given in Table 1.

Table 1. Distribution of PIs

Australia	1
Belgium	1
Bulgaria	1
Chile	1
Finland	1
Italy	1
Japan	1
the Netherlands	1
Norway	1
Thailand	1
Canada	2
Germany, Federal Republic of	2
Israel	2
India	3
Sweden	3
USA	4
UK	6
Czechoslovakia	7
USSR	9

Earlier today the Manager commented on the current Memorandum of Understanding between the Executive Heads of the organizations cooperating in the IPCS.

Annex II of that Memorandum of Understanding is devoted to IPCS Participating Institutions. The introductory paragraph reads:

A network of national and international institutions is being established which participate in IPCS activities and are responsible for particular tasks. Their technical and coordinating functions, within the framework of the IPCS, include the collection of information, the preparation of reviews, the evaluation of reports and their possible publication, as well as training. These institutions are designated by the Director-General of WHO on behalf of the three Executive Heads of the Cooperating Organizations and on the advice of the Programme Advisory Committee. Their designation will be made on the basis of the following criteria:

- (i) Internationally recognized excellence in the parts of the programme in which they participate;
- (ii) Full support by the government of their role as an IPCS Participating Institution and recognition of this role by relevant, competent national authorities;
- (iii) Adequate staff and facilities to fulfill its commitments as Participating Institution of the IPCS, and willingness and ability to devote adequate resources (staff time and funds) to the task.

The prerequisites for being designated as a PI, as spelled out in the text, go back to a recommendation by the PAC at its Fifth Meeting held in 1986. I will put this in its historical context later on. Right now I would like to say a few words on the part of the survey which refers to the criteria just quoted.

You were asked to give your comments on how the criteria described under (iii) are met by your Institution, and if applicable, what kind of strengthening of your capabilities would increase your contribution to the IPCS.

In more than half of the replies, the answer is that the criteria are being met. In the rest there are indications that the criteria are not met. These indications are given in a more or less precise form. The most frequent complain is shortage of staff and funds. One director says that

he has more expertise than equipment. Another director says that his particular institution has had no resources for IPCS since June 1987 but will have a resource of half a man-year for IPCS from 1989.

A strengthening of the capability to increase the contribution to IPCS seems theoretically possible at almost all PIs. Most frequently the recipe is increase of staff and funds, but in no case there is an indication of how this could be done. Special support from the Central Unit in the form of consultancy, creation of chemical data information networks, and in other ways are on the wish-list of a few institutions. One precise and specific proposal for strengthening the capabilities for IPCS contribution reads: Quick translation facilities for Russian and Japanese publications would be most helpful.

I will be back on other items of the survey later on.

Active Participation of PIs

Paragraphs 249-303 of ICS/PI/88.2 comprise a broad information by category of activity on the active inputs from the PIs to the IPCS since 1982. Let us now quickly analyse this information.

The first category of activity I would like to deal with is the preparation of Environmental Health Criteria Documents. This activity involves as major steps the drafting of the documents, reviewing of the drafts, and holding meetings for finalization of the risk evaluation.

Paras 253 and 254 indicate to which extent PIs have participated in drafting EHCs and updates to EHCs and given support for hosting/organizing working group and task group meetings in this context.

A study of this information shows that out of 48 PIs, 16 have been active as drafters. Within the one third of the PIs to which these drafters belong there is a group of five PIs which has carried the great burdens. Each of these five PIs has drafted 12 or more documents. Of the rest, three PIs have together drafted 16 documents and the remaining eight are responsible for 15 documents. More details can be seen in Table 2.

Table 2. Involvement of PIs in the drafting of EHCs

Number of documents drafted by one PI	Number of PIs	Number of documents drafted totally
0	32	0
1	3	3
2	3	6
3	2	6
4	1	4
5	1	5
7	1	7
12	1	12
14	1	14
15	2	30
16	1	16
	<u>48</u>	<u>103</u>

11
 5

As far as the involvement of PIs in the reviewing process is concerned the background paper ICS/PI/88.2 does not give full information. In paras 291-294 an attempt has been made to give a rough idea of the situation.

A choice of 12 draft documents circulated for comment from January 1983 through November 1987 has been made and it has been indicated to which extent comments have been received. It is pointed out that the study has not been done to draw any comparisons between the PIs and several reasons are given for that. So we must be very careful in drawing conclusions, but what the table in pp 124-127 contains is the following.

Of the 19 countries all but three have given comments on some occasion. Ten countries have given comments on at least half of the documents. Focusing the PIs, 25 of all the 48 PIs have given comments at least once.

In the finalizing process, holding evaluation meetings, eight PIs have been involved as organizers and/or hosts.

The development of methodology for health risk assessment is covered in paras 263-281. It should first of all be emphasized that a considerable number of activities dealt with in this section are undertaken in other ways than by the assistance of PIs. Concentrating now on the contribution by PIs, 19 of the 48 PIs have been actively involved. Four of these 19 PIs have contributed in three or more exercises.

Problems concerning chemicals in food represent an important component of the IPCS. They are mainly dealt with in the context of JECFA and JMPR. I am sure that all countries which participate in the IPCS also take part in the JECFA and JMPR work. However, normally this seems to be done through other channels than IPCS Participating Institutions. Only nine PIs representing eight countries are reported to have given special support to the IPCS work on chemicals in food.

There is a certain relationship between the area Management of Chemical Emergencies and the area Prevention and Treatment of Chemical Poisonings. In IPCS work within these two areas participation from classical PIs is rather limited.

In the first area the Istituto Superiore di Sanità in Rome as the only PI has provided some contributions. The second area has relatively recently been part of the IPCS activities. Collaboration has been established with the World Federation of Associations of Clinical Toxicology and with national Poison Control Centres. Out of the 48 PIs listed in Annex X only two, the Poisons Unit, New Cross Hospital, London, and the Institute of Hygiene and Epidemiology in Brussels, have contributed. However, support for the work has been provided by several countries which participate in the IPCS work, although through other channels than PIs, mainly poison control centres in the countries.

Manpower Development is a component of the IPCS which is of increasing importance. As can be seen from para 290 only few PIs have taken active part in this work so far.

To summarize, there are without any doubt two categories of activity within which the heaviest contributions have been made by the PIs: Preparation of Environmental Health Criteria documents and the Development of Methodology for Health Risk Assessment. At least 26 PIs have contributed in this work and some of them in a most substantial way. Within the other categories of activity the participation is still sporadic although the contribution has been quite significant in single cases.

With some reservation regarding possible participation in the reviewing process it can be stated that out of the 48 listed Participating Institutions 17 have not taken active part in any of the activities I have discussed. Among the 31 PIs which have contributed there are about 10 institutions which have provided work of quite another order of magnitude than the other ones.

PIs in the design of IPCS

At an early stage of planning for what we now know as IPCS the concept of Participating Institution became a key issue.

How successful has the arrangement with PIs been? This is a crucial question, which has to be discussed before further planning takes place. As a basis for such a discussion let us take a retrospective view.

The origin of the process to create the Programme was Resolution WHA 30.47 which was passed by the World Health Assembly in May 1977. The Assembly expressed great concern on the consequences of the growing use of chemicals in public health, industry, agriculture, food production and in the home, together with environmental pollution resulting from rapid industrialization and new technologies. Arising problems would need recognition in the health policies and strategies of all countries, according to the Assembly who requested the Director-General "to study the problem and long-term strategies in this field; and, in collaboration with appropriate national institutions and international organizations, to examine the possible options for international cooperation, including the financial and organizational implications."

As a step in the process of implementing resolution WHA30.47, a meeting of WHO temporary advisers and representatives of international organizations was convened in Geneva in May 1978. The group proposed the establishment of an international programme on chemical safety based on and incorporating current WHO activities. The proposed programme would be concerned primarily with evaluations of health risks from exposure to chemicals. Other priority tasks of the programme would include the promotion of appropriate methods for laboratory testing, epidemiological studies and risk and hazard assessments; promotion of effective international cooperation in emergencies and accidents involving chemicals; promotion of technical cooperation among Member States, and training of manpower.

The 1978 Consultation based its proposals on the following principles:

- i. The programme should ensure wide and direct participation of national institutions and international governmental and non-governmental organizations as well as industry.
- ii. The programme should be useful and relevant to both developing and industrialized countries, and should be global in scope.
- iii. The programme should incorporate only those components that are considered useful by Member States and which can be effectively carried out on an international scale.
- iv. To be effective, the programme should start with sufficient resources to produce results in the near future.

The Consultation discussed several options for the structure of the planned international programme. The final proposal comprised the following components: a network of participating institutions, a central unit, an advisory board and a technical committee.

The participating institutions were considered crucial for the programme. They would be selected on the basis of internationally recognized expertise and capability in areas relevant to the activities of the programme, in relation for example, to categories of substances by use or by chemical classes, to effects being evaluated, and to the media involved. It was estimated that there would be about 10 to 15 such national collaborating institutions.

Participating institutions would be designated for specific programme areas, and each of them would cooperate with other institutions possessing the relevant expertise to form ad hoc sub-networks.

It was foreseen that the structure of work at the different participating institutes may vary considerably. After mentioning examples of different ways of carrying out the work the following statement was made: "In any case, the designation of a participating institution must include an undertaking by that institution to ensure that adequate personnel is committed to its collaborative work with WHO."

It was stated that the programme must depend largely on national resources but the ability of national institutions to participate in the international activities would have to be strengthened. That would require funds from the central programme budget.

The expectations were high as far as financial commitments are concerned. This comes through in the report from the Consultation by the following statements.

Operational arrangements will have to be made between WHO and the participating institutions by special formal agreements differing from the arrangements normally applied by WHO when designating collaborating centres. In this case it is essential for the agreements to be negotiated with the respective Governments to ensure that the participating institutions can function and fulfil their commitments, as opposed to the normal procedure of WHO when Governments are only consulted as to the designation of an institute as a WHO collaborating centre.

The group was unable to study in detail the manpower and budget requirements of the proposed programme, but considered that, in addition to the national resources, a central fund of the order of \$ 2.5 million would be needed initially, rising to about \$ 6 million per year when the programme was fully operational (1978 figures).

I would like to stress furthermore how much the PIs were thought to be the carriers of the programme by mentioning a discussion on the location of the Central Unit. It was by no means given that the Central Unit had to be located at the WHO Headquarters. It was said that the unit could be located either on WHO premises or at a national institution active in research, testing or evaluation. It was recognized that this option may involve considerable management problems, but they would probably be offset by the benefit of direct and active participation of national institutions in the programme.

At a planning meeting held in Geneva by the end of October 1978 the term "Lead Institution" was proposed for those institutions which were going to form the permanent network of national institutions responsible for particular programme areas. If a Lead Institution might wish to use other

institutions, in its own country or elsewhere, to collaborate in the work assigned to it, it would be possible to designate "participating institutions".

This terminology was included in the proposals for the International Programme on Chemical Safety which the Director-General transmitted to the WHO Executive Board in November 1978 (EB63/20). The Executive Board endorsed the proposals in its Resolution EB63.R19 in January 1979.

It was to take another one and a half year until IPCS was established as a cooperative United Nations venture. As is mentioned in para 1 of IPC/PI/88.2, this happened in June 1980 by the signing of the Memorandum of Understanding between UNEP, ILO and WHO concerning collaboration in the Programme.

In the meantime the first meeting of the Programme Advisory Committee was held at the NIEHS here in North Carolina (April 1980). A second PAC meeting was held in Luxembourg in December 1980. At these meetings offers for Lead Institutions were examined and criteria for nomination and designation of Lead Institutions were elaborated.

Early experience of PIs

In mid 1982, the PAC at its Third Meeting held in Kiev, concluded that IPCS had entered a phase of increasing operational activity and was becoming more firmly established with increasing experience. The number of participating countries was progressively increasing and the network of lead and participating institutions was expanding slowly but steadily.

The collaboration of LIs and PIs was fundamental to the operation of the IPCS, but more effective coordination of their activities was needed on the part of the Central Unit to achieve programme objectives. For this and other reasons the PAC recommended that a Consultation be held to review the organizational arrangements of IPCS. Attention should be given to mechanisms to involve and encourage LIs.

The 1983 Consultation

The requested Consultation took place in July 1983. One of the main problems discussed at the Consultation was the participation of Member States in the IPCS by Lead and Participating Institutions.

The Consultation found that the concept of LIs and PIs had proved to be acceptable to Member States and the activities so far carried out by the existing LIs had been fruitful. In further considering the functioning of LIs and PIs, the Consultation accepted the Manager's analysis, based on 3 years' experience, that the principle of negotiating a Memorandum of Understanding with a government, committing the government to make available the resources to carry out certain projects for the IPCS at a designated institution, was a sound one. However, the original concept of a group of more or less equal LIs with the capacity to accept a designated major project, assisted as necessary by PIs with specific expertise, had not proved practical, because of the considerable differences in funding procedures and technical capacity in the various countries. In particular, the acceptance of important tasks had generally only proved possible if an LI had the expertise and was already part of a national programme. This meant that the Central Unit had had to revert to the use of working groups or experts under special contract to complete the task, funds being provided from the IPCS budget, which is derived from voluntary contributions. The Consultation agreed that the negotiations carried out by the CU with individual Governments and designated Institutions had proved successful and should continue but that one designation was sufficient for the national institute concerned.

So, the classification of the national institutions involved into two categories, named Lead Institutions and Participating Institutions, respectively, was considered unnecessary and potentially confusing. It was recommended that only one category of institution be used henceforth, namely the IPCS Participating Institution.

The Consultation regarded the involvement of governments essential, when MOUs are prepared and signed, in order to assure continued governmental support for the national IPCS Participating Institution. On the other hand, the actual activation of the designated IPCS Participating Institutions for defined specific tasks should be carried out by means of direct

negotiations between the CU and the institution concerned, on the basis of mutual agreement and in the most flexible way.

The adjusted basis of IPCS from 1984

In a progress report on IPCS of November 1983, the Director-General of WHO (EB73/20) gave a description of the experience gained during the development of the Programme, the practical implications of the arrangements for its management, and the recommendations made by the 1983 Consultation.

In its resolution EB73.R10 (January 1984), the Executive Board gave full support to the changes in the organizational structure of IPCS as outlined in EB73/20, and in addition recommended that Member States

- (1) consider establishing national focal points for the Programme in the light of their health priorities, if they have not yet done so, as well as appropriate mechanisms for coordinating work related to chemical safety; and that those in a position to do so identify national institutions to collaborate with the Programme and provide them with the necessary resources for this purpose;
- (2) ensure to the best of their economic ability the availability of institutional capacity to implement chemical safety measures such as those recommended by the Programme;
- (3) cooperate with WHO in conducting epidemiological studies with a view to identifying those chemicals, acting singly or in combination, or combinations of chemicals and physical and biological factors, which may be detrimental to health and the environment;
- (4) consider, where the necessary scientific and other facilities exist, developing national toxicological programmes as a means of promoting comprehensive evaluations of the risk of chemicals to health and the environment;
- (5) consider, if they are in a position to do so, increasing their voluntary contributions to the Programme from all relevant sources, in a manner which allows flexible and long-term programme development;

At its Fourth Meeting held in Nairobi in October 1984 the PAC noted that the collaborating institutions now would be known as IPCS Participating Institutions, and that directors of these institutions would meet regularly at intervals of 3-5 years to discuss broad issues and the priorities of the Programme. No specific discussion on PIs took place, but again it was considered essential to strengthen IPCS resources. It was stated that in circumstances of insufficient resources, priority should be given to the completion of current activities. Highest priority should be assigned to identified activities in the fields of risk evaluation and manpower development.

Concern expressed by PAC in 1986

Two years later, at the Fifth Meeting of PAC, held in Geneva in October 1986, the problems concerning PIs were at focus again.

The contributions of the PIs to the IPCS were summarized by the Secretariat and the PAC noted certain difficulties, such as lack of active participation by some PIs, and delays in the submission of draft documents.

A working group set up during the PAC Meeting stated the following.

- (a) There were four broad areas of activities within which PIs could be utilized: (1) hazard evaluation and the preparation and dissemination of, for example, health and safety guides, and EHC, JMPR and JECFA documents; (2) manpower development and training; (3) methodology development; and (4) response to chemical accidents. There may be other activities not fitting into these areas. PIs should not be restricted from or to any area.
- (b) It is expected that a PI should have reasonable resources of manpower and finance, whether of its own or provided by its government, sufficient to respond to the defined IPCS need for which assistance is being requested. Past experience has indicated that availability of financial and manpower resource have not guaranteed that work is fulfilled on time. Commitment to undertaking the task may be the most critical element to timely completion of volunteered tasks.

- (c) The network of PIs should include, for each discipline of interest, more than one PI with the same relevant expertise. This will ensure flexibility of selection. It follows that the Institutions and individuals in them who have the best available expertise should continue to be the standard for selection of PIs.
- (d) It may be useful, at the time of the renewal of the Memorandum of Understanding, to review the designation of PIs with a view to including new Institutions more in line with the programme activities and to eliminating those no longer active.
- (e) Initiative for activities should continue to come from the Central Unit; the activities should be discussed with the focal points in governments and with PIs.
- (f) The original concept that most EHCs would be produced by PIs is no longer valid.

The PAC fully endorsed the recommendations by the working group. Moreover, the PAC recommended criteria to be adopted in the designation of PIs. That recommendation resulted in the criteria for designation of PIs comprised in Annex II of the current MOU which I quoted at the outset.

Experience and prospects

I would now like to return to the survey.

The first questions regard contacts with other PIs and read:

To what extent have you had contact with, or information about other IPCS PIs:

- (i) for the purpose of specific activities which you have undertaken for the IPCS;
- (ii) for general information about activities of other PIs in the programme?
- (iii) what improvements would you like to see?

The replies indicate that the contacts between PIs are very limited. To the extent they exist they are mainly between PIs in the same country or between PIs in a group of countries which have a developed collaboration also in other contexts, e.g. the CMEA countries.

The fact that contacts have been established only on rare occasions even when a certain PI has carried out a specific task for IPCS, e.g. drafting EHCs, gives rise to several questions. The most serious one may be: Is the original idea of creating sub-networks of PIs unrealistic? Could and should the idea be developed? I think this has to be discussed at this meeting.

Almost everybody believes that there is a need for some kind of a bulletin, newsletter or something of that sort appearing periodically with general information on IPCS, and in particular on PIs and their activities. I would strongly recommend that something along these lines be carried into effect without delay and invite you to endorse such a project.

It has also been suggested that firm annual workplans for PI activities be elaborated and made known to all PIs. Such an arrangement may serve as an incentive for closer cooperation among PIs. It seems to me that this idea deserves serious consideration. As a follow-up it may be worthwhile publishing brief annual reports on fulfilled activities and their approximate costs.

There were a couple of questions regarding distribution of work between PIs and the National Focal Point. The replies have been brief and not very informative. This may indicate that the concept of National Focal Points and the recommendations to organizing national coordinating committees on chemical safety have not yet been fully recognized in Member States. I think this should be touched upon in the upcoming discussions.

Most comments on activities which PIs have already undertaken for the IPCS go very much in the same direction. The tasks have been appropriate to the particular fields of expertise and experience of the PIs. Carrying out the contribution has been fruitful also for the institutions.

I will not comment on your replies regarding your future cooperation in the network of IPCS PIs. You are aware of your own answers and you will have ample opportunities to expand on them, in particular under item 7 of the agenda.

I have tried to make a quick review of IPCS with special regard to the Participating Institutions and their contributions to the Programme. I think it is fair to say that the four principles that guided the Consultation which designed IPCS in 1978, are still valid. The objectives of the Programme have been sharpened, the organizational structure has been slightly modified. But still the concept of PIs is crucial for the IPCS, and without strong support from Member States in kind and in funding the Programme will not be successful.

It is quite obvious that the financial support has not materialized in the way which was foreseen ten years ago. The available funds of the order of magnitude of US\$ 4 million a year are far away from the expected 6 million in 1978 currency. Moreover, the contributions from PIs, and the collaboration between PIs and with the Central Unit have not reached the level of development which once was foreseen.

As you are aware much attention has been paid to this problem by the Programme Advisory Committee, by special Consultations, by the Intersecretariate Coordinating Committee, by the Central Unit and by the Executive Board of WHO. And yet serious deficiencies are there. The question is now what can be achieved during this week and as a consequence of this Meeting in order to arrive at a better state of the matters.

According to the agenda you adopted this morning the next few days will be devoted to discussions and decisions of great importance for the capability of IPCS in the near future. In the upcoming deliberations the weak point is certainly not the scientific competence and technical skill of your institutions. The serious problem is that almost everybody has complained about shortage of staff and funds. Ten years ago your governments approved the design of an international programme on chemical safety. On several occasions later on the need of the programme and the need of resources for it have been reconfirmed. Never before the need for chemical safety has been as evident as it is today. In this situation it is a shame that the resources for the Programme are so insufficient. The Manager of

IPCS constantly has to spend considerable time to find resources not only for significant scientific elements of the Programme, but also for activities like editing and printing, necessary to reveal the results of the scientific work, desperately needed by Member States. You should not be blamed for this. But you have a responsibility to remind your governments of the interrelationship between national and international work, that the possibility of achieving results in IPCS to a great extent is dependent on you. This has its price. That price has to be paid. Otherwise it is not any longer true that Participating Institutions are crucial parts of the IPCS.

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 1962.

ICS/PI/ROOM DOCUMENT 3 - SEPTEMBER 1988

RISK ASSESSMENTCOOPERATION WITH IPCS

High (H), Medium (M), Low (L) priorities for EHC, HSG and Poison Information Monograph (PIM)

NO.	NAME	IPCS PRIORITY			RTECS RN	CAS RN	IRPIC DATA PROFILE	NAME OF PI	ASSISTANCE OFFERED *	TIME-FRAME
		EHC	HSG	PIM						
114	α- and β- naphthylamine	L	H		QM1400000	134-32-7	X			
107	β-butyrolactone	L	H		RC8050000	3068-88-0	X			
54	1,2-diphenyl hydrazine	L	H		MM2625000	122-66-7	X			
7	1,3-butadiene	M	H		ET9275000	106-99-0	X			
118	1,3-propane sultone	L	H		RP5425000	1120-71-4	X			
4	1,4-dioxane	M	H		JG8225000	123-91-1	X			
51	2-butanone	L	H		EL6475000	78-93-3	X			
147	aminocarb	-	H		FO0175000	2032-59-9	X	Dr Magallona, Philippines	2	
148	amitraz	L	H		ZFO480000	33089-61-1	X			
1	aniline + derivatives (group)	EHC 18	H	H	EM6650000	62-53-3	X			
	arsenic		H	H	CG0525090	7440-38-2	X			
149	arsenical pesticides		H	H			X			
	asbestos	EHC 53	H		CI6475000	1332-21-4	X			
150	atrazine with other triazines		H		XY5600000	1912-24-9	X			
3	benzidine + derivatives (group)	-	H		DC9625000	92-87-5	X			
183	benzopyrene	L	H		DJ3675000	50-32-8	X			
28	bis(2-chloroethyl) ether	L	H		111-44-4	111-44-4	X			
35	bis(2-ethylhexyl) phthalate	-	H	M	TI0350000	117-81-7	X	INBOSH, Sweden-Env. Canada	1, 2	
29	bis(chloromethyl) ether	L	H		KN1575000	108-60-1	X			

- * 1. Preparation of EHC
 2. Preparation of HSG
 3. Preparation of PIM
 4. Second editing of HSG
 5. Review of PIM
 6. Secordment of staff
 7. Making reviews available
 8. Hosting meeting
 9. Translating
 10. Preparation of IRPIC work sheets

NO.	NAME	IPCS PRIORITY			RTECS RN	CAS RN	IRPTC DATA PROFILE	NAME OF PI	ASSISTANCE OFFERED *	TIME-FRAME
		EHC	HSG	PIM						
60	boron derivatives (reactive)		H	M	ED7350000	7440-42-8	X			
61	boron trifluoride		H		ED2275000	7637-07-2	X			
50	bromomethane	L	H	M	PA4900000	74-83-9	X			
151	caprolactan	L	H	M	OM675000	105-60-2	X			
152	captafol		H	M	GM4900000	2425-06-1	X	2		
153	captan		H	M	GM5075000	133-06-2	X	2		
156	chloroform		H		IQ4375000	6164-98-3	X			
39	chlorinated naphthalenes (group)	M	H				X			
	chlorine and hydrogen chloride	EHC 21	H	H			X			
30	chloroethanes (group)	H	H		KH7525000	75-00-3	X			
	chloroethanol		H	H	NI2600000	1897-45-6	X			
53	cyanides + HCN	L	H	H	GS7175000	57-12-5	X			
	demeton-S-CH ₃	H	H		TC1750000	919-86-8	X			
34	di-n-butyl phthalate	H	H	M	TI0675000	84-74-2	X	1, 2		
62	diborane		H		HQ9275000	19287-45-7	X			
32	dichlorodisopropyl ether	L	H		63283-80-7					
33	dichlorodipropyl ether	L	H		7774-68-7					
18	dichloronitrobenzenes (group)	H	H		CZ5425000	89-61-2				
143	diesel engine exhaust	H	H		MS7875000	64-67-5				
63	diethyl sulfate	H	H	M	MS8225000	77-78-1	X			
77	disocyanates (incl. diphenylmethane-4,4'-)	EHC 48	H		SJ9800000	88-85-7	X			
78	dimethyl sulfate	L	H		KH9275000	106-93-4	X			
160	diroseb	L	H		KB8575000	107-15-3	X			
8	ethylene dibromide	L	H		TI5685000	133-07-3	X			
123	ethylene diamine	L	H				X			
161	folpet	H	H				X			
162	fumigants (e.g., methyl bromide, FB3, HCN, chloropicrin) (group)	H	H	H			X			
124	furfural	L	H		LT7000000	98-01-1	X			

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- 9. Translating
- 10. Preparation of IRPTC work sheets

NO.	NAME	IPCS PRIORITY			RTECS RN	CAS RN	IRPTC DATA PROFILE	NAME OF PI	ASSISTANCE OFFERED *	TIME-FRAME
		EHC	HSG	PIM						
163	glyphosate		H	H	MC1075000	1071-83-6				
36	hexachloroethane	H	H	H	KI4025000	67-72-1				
197	hydrogen selenide	-	H	H	MX1050000	7783-07-5				
164	malathion		H	H	WM8400000	121-75-5		1		
	man-made mineral fibres	EHC 77	H	H			Dr Jager, IPCS			
165	mareb		H	H	OP0700000	12427-38-2				
166	mcpa	L	H	H	AG1575000	94-74-6				
167	methamidophos		H	H	TB4970000	10265-92-6	Dr Magallona, Philippines	2		
21	methanol	L	H	H	PCI400000	67-56-1	Sysin Institute, USSR	1, 2		
31	methyl chloromethyl ether	L	H	M	KN6650000	107-30-2				
115	methylene bis-o-chloroaniline	L	H	M	CY1050000	101-14-4				
64	methylisocyanate		H	M	NQ9450000	624-83-9	NIENS, USA	1, 2		
169	monocrotophos		H	M	TC4375000	6923-22-4	Dr Magallona, Philippines	2		
101	n-hexane	L	H	M	MP9275000	110-54-3	Dr Chipman, UK	1, 2		
	nitrites, nitrites and N-nitroso compounds	EHC 5	H	M						
65	nitric acid		H	H	QU5775000	7697-37-2				
22	nitrobenzene	M	H	H	DA6475000	98-95-3				
170	nitrofen		H	M	KN8400000	1836-75-5				
68	organic peroxides		H	H						
171	organotins: di-n-butyltin dichloride		H	M	WH7100000	683-18-1	ITE, UK	1 on TBTO		
172	di-n-octyltin dichloride		H	M						
173	paraquat		H	M	DM2275000	1910-42-5	Dr Jager, IPCS	2		
174	parathion		H	H	TF4550000	56-38-2	Dr Magallona, Philippines	2		
175	parathion, methyl-		H	H	TG0175000	298-00-0	Dr Magallona, Philippines	2		
66	perchloric acid and salts (perchlorates)		H	M	SC7500000	7601-90-3				
67	perchloryl fluoride		H	H	SD1925000	7616-94-6				
90	phosgene		H	H	SV5600000	75-44-5			1, 2	
69	phosphoryl chloride		H	H	TH4897000	10025-87-3	Dr McCormell, USA	2		

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		EHC	HSG	PIM						
70	polybrominated biphenyls									
181	propoxur		H	H	FC3150000	114-26-1		?		
	reactive silicon derivatives (group)		H	M				2		
10	rodenticides	H	H	H						
11	selenium	EHC 58	H	M	VS7700000	7782-49-2		1, 2		
12	tetraethyllead	L	H	H	TP4550000	78-00-2		1, 2		
178	tetramethyllead	L	H	H	TP4725000	75-74-1				
	thallium salts	H	H	M	XG3425000	7440-28-0				
	toxaphene		H	H	XW5250000	8001-35-2		2 (circulating)		
13	trichloroethylene	EHC 50	H	H	KX4550000	79-01-6				
	vinyl chloride	L	H	H	KU9625000	75-01-4				
71	1,1-dimethyl hydrazine		M		MY2450000	57-14-7				
55	2,4-dimethylphenol	L	M		ZE5600000	105-67-9				
56	4,6-dinitro-2-methylphenol	L	M		GO9625000	534-52-1				
57	4-methyl-2-pentanone	L	M		SA9275000	108-10-1				
105	acetyl chloride	L	M		AO6390000	75-36-5				
93	acetylene	L	M	M	AO9600000	74-86-2	X			
72	alkylaluminum derivatives		M							
14	allyl chloride	L	M	L	UC7350000	107-05-1	X		1, 2	
6	antimony oxides	M	M		1327-33-9					
94	arsine	L	M	H	CG6475000	7784-42-1	X			
119	benzaldehyde	L	M	M	CU4375000	100-52-7	X			
120	benzofuran	L	M							
15	benzyl chloride	L	N		XS8925000	100-44-7	X			
48	bromodichloromethane	L	M		PA5310000	75-27-4				
49	bromoform	L	M	M	PB5600000	75-25-2	X			

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 5. Review of PIM
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 7. Making reviews available
 8. Hosting meeting
 9. Translating
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NO.	NAME	IPCS PRIORITY			RTECS RN	CAS RN	IRPTC DATA PROFILE	NAME OF PI	ASSISTANCE OFFERED *	TIME-FRAME
		EHC	HSG	PIN						
180	trifluralin	L	M		XU9275000	1582-09-8	X			
108	γ-butyrolactone	L	L		UB3500000	96-48-0				
109	β-propiolactone	L	L		RQ7350000	57-57-8				
186	1,1-dichloro-1-nitroethane	-	L		KL1050000	594-72-9				
196	1,2-propylene glycol dinitrate	-	L		TY6300000	6423-43-4				
145	2,4,5-T	-	L	H	AJ8400000	93-76-5	X			
92	acetone	L	L	H	AL3150000	67-64-1	X			
146	aldicarb	L	L	H	UE2276000	116-06-3	X			
46	benzoic acid	L	L	M	DG0875000	65-85-0	X	1		
106	benzotrichloride	L	L		XV9275000	98-07-7				
112	bis(2,3-dibromopropyl)phosphate	L	L		WQ0900000	5412-25-9				
117	bis(2-chloroethyl) sulfide	L	L		FO5950000	505-60-2				
154	carbaryl	L	L	M	FB9450000	63-25-2	X			
155	carbofuran	L	L	M		1563-66-2	X			
121	chloroacetophenone	L	L			1341-24-8				
157	DDT	EHC 9	L	M	KJ3325000	50-29-3	X			
158	diazinon	L	L	M	TF3325000	333-41-5	X			
96	dimethyl terephthalate	L	L		WZ1225000	120-61-6				
19	ethanol	L	L	H	KQ6300000	64-17-5				
80	gasoline	L	L	H	LX3300000	8006-61-9				
185	glutaraldehyde	L	L		MA2450000	111-30-8				
41	glycidol	L	L		UB4375000	556-52-5				
25	hexachlorophene	-	L		SM0700000	70-30-4				
110	hexamethylenephosphotriamide	L	L			1333-74-0				
98	hydrogen	-	L		MM8900000	123-31-9	X			
187	hydroquinone	L	L		MX3500000	75-47-8				
188	iodoform	L	L	M	FB7000000	16752-77-5	X			
168	methomyl	L	L	M	AK2975000	681-84-5				
190	methyl silicate	L	L		WV9800000					

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NO.	NAME	IPCS PRIORITY			EIECS RN	CAS RN	IRPTC DATA PROFILE	NAME OF PI	ASSISTANCE OFFERED *	TIME-FRAME
		EHC	HSG	PIM						
100	methyLamines	L	L	M	PF6300000	74-89-5				
189	methyLiodide	L	L	M	PA9450000	74-88-4				
192	nickel	-	L	M	QR5950000	7440-02-0		1, 2		
193	nickel carbonyl	-	L	M	QR6300000	13463-39-3		In Nickel EHC		
194	nitroglycerin	-	L	H	QR2100000	55-66-0				
9	nitrophenols (group), o-, p-, m-	L	L		SR5600000	25154-52-3				
102	nonyl phenol & isononyl phenol	L	L			556-67-2				
44	octamethylcyclotetrasiloxane	L	L			98-73-7				
182	p-tert butylbenzoic acid	L	L			115-77-5				
103	pentaerythritol and p. tetranitrate	L	L			75-55-8				
116	propylene imine	L	L			91-22-5	X			
38	quinoline	L	L			7791-25-5				
91	sulfuryl chloride		L			3383-96-8				
177	tenephos		L	H	TF6890000	100-21-0	X			
104	terephthalic acid	L	L			78-10-4				
198	tetraethoxysilane	L	L			76-03-9				
199	trichloroacetic acid	L	L	M	AJ7875000	126-72-7				
113	tris(2,3-dibromopropyl)phosphate	L	L		UB0350000	593-60-2			1, 2	
201	vinyl bromide	L	L	M	KUB400000			Dr Van Esch, Netherlands		
127	acrylamide	EHC 49		H	AS3325000	79-06-1	X	Dr Jackson, UK	2	
140	alcohol and gasoline combustion products	further study		H						
27	benzene amines (2,3- 3,4- 2,4-dimethyl)	-					X			
24	bromium + bromide species (group) : see 47			M			X			
47	brominated methyl (group)									
74	carbonyl metals	defer		M						
75	chlorine	defer		M	FO2100000	7782-50-5	X			

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		EHC	HSG	PIM						
16	chloroanilines (group)			H						
17	chlorohydrins (group)			H	TY4025000	96-24-2				
128	chloroprene		defer		EI9625000	126-99-8	X			
142	coal liquefaction products	further study								
141	coal-fired stove exhaust effluents	further study		M						
76	complex hydrides	defer			KK5075000	100-37-8				
130	diethylaminoethanol	defer			AB7700000	127-19-5	X			
131	dimethylacetamide	defer			KX5075000	151-56-4	X			
79	ethylene imine	defer					X	1, 2		
139	ethylenebis-tris-(2-cyanoethyl)- phosphonium bromide	H					X			
82	haloacetylene derivatives	defer								
42	halogenated oxiranes (group)					3194-55-6				
136	hexabromocyclododecane	H			MM4025000	7647-01-0			1, 2	
85	hydrochloric acid	defer		M						
20	mercaptans (group)			M	SB4200000	141-79-7	X			
43	mesityl oxide			M	QD6475000	110-91-8	X			
133	morpholine	defer		M						
88	natural gas + LNG	defer		H				1		
135	naturally-occurring toxins (substances of plant, microbial or animal origin)									
134	o-methyl cyclohexanone	defer			GM1575000	1331-22-2				
26	organic acid anhydrides (group)			M						
137	pentabromotoluene	H				87-83-2	X		1, 2	
89	petroleum gas + LPG	defer								
23	phenyl mercuric acetate	defer		H	SE7545000	62-38-4				
138	tetrabromobisphenol A + derivatives	deleted			QW6475000	79-94-7				
144	wood-fired stove exhaust effluents	H					X		1, 2	
		further study		M						

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ANNEX IV

PLANNED TRAINING MODULES FOR CHEMICAL SAFETY
TO BE DEVELOPED 1988-1990

1. The nature of chemical risks: Toxicology and ecotoxicology
2. Assessment of chemical risks
3. Chemical safety and occupational health
4. Poison control and treatment
5. Safe use of pesticides
6. Chemical accidents and emergencies
7. Environmental epidemiology