

# Strengthening National Capacities for Risk Management Decision- Making for Priority Chemicals

Observations and Conclusions of an  
International Expert Meeting  
Geneva, Switzerland  
4-6 October 1999

Final Report



**IPCS**

INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY

**IOMC**

INTER-ORGANIZATION PROGRAMME FOR THE SOUND MANAGEMENT OF CHEMICALS

A cooperative agreement among UNEP, ILO, FAO, WHO, UNIDO, UNITAR and OECD

## **About the Series of Thematic Workshops on Priority Topics of National Chemicals Management Capacity Building...**

The Series of Thematic Workshops on Priority Topics of National Chemicals Management Capacity Building provides a forum to facilitate an exchange of experience and to identify practical steps which interested countries can take to systematically address certain chemicals management priority topics. The series addresses priorities which have been identified by countries through National Profiles and in the context of National Programmes for the Sound Management of Chemicals and which have also been highlighted through the Intergovernmental Forum on Chemical Safety (IFCS). Many of these topics (e.g. chemicals legislation) are inter-sectoral in nature and cut across the activities of various ministries and interested parties at the national level. For this reason, integrated and co-ordinated approaches, which take into consideration the perspective of all interested parties and build upon existing international experience, are considered of great importance.

The workshops are co-ordinated by UNITAR and involve interested countries, IOMC Participating Organizations, industry, public interest groups, and other interested parties. Thematic workshops on the following topics have been held:

- \* Strengthening National Information Systems and Information Exchange for the Sound Management of Chemicals, September 1998
- \* Strengthening National Awareness Raising and Education for Chemicals Management, October 1998
- \* Developing and Strengthening National Legislation and Policies for the Sound Management of Chemicals, June 1999
- \* Strengthening National Capacities for Risk Management Decision-Making for Priority Chemicals, October 1999

The reports of the workshops are meant to serve as practical inputs to country-based initiatives in the respective areas and may also highlight certain issues which may require further attention at the international level.

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## Executive Summary

The thematic workshop on *Strengthening National Capacities for Risk Management Decision-Making for Priority Chemicals* took place from 4-6 October 1999 in Geneva, Switzerland. It brought together some 45 representatives from developing countries, countries with economies in transition, countries with advanced chemicals management schemes, international organizations, as well as representatives from non-governmental organizations, including industry, academia, and public interest groups.

The workshop reviewed the lessons learned and experiences gained through four country-based pilot projects to develop risk reduction strategies for priority chemicals that were implemented in Cameroon, Chile, Tanzania, and the Gambia through collaboration of UNITAR and IPCS with funding provided by the European Commission. Through a series of plenary discussions and working groups, a wide range of suggestions were generated on practical ways and means to strengthen capacities in countries in the area of risk assessment/risk management decision-making.

The workshop concluded that the use of the four country-based pilot projects in testing a general approach to risk management decision-making for priority chemicals was both valuable and successful in addressing real and practical country needs. More specifically, the pilot projects were believed to have strengthened participants' capacities, fostered a better understanding of opportunities and challenges to develop risk reduction activities for chemicals through a multi-stakeholder process, and catalyzed the initiation of more systematic and transparent processes in the participating countries to address risk management decision-making for priority chemicals in the future. The exercises also helped to highlight various elements of risk reduction which need to be emphasized and improved upon.

Several important issues concerning risk management decision-making for priority chemicals in the context of national chemicals management emerged in the workshop which should be systematically considered by countries prior to initiating a resource intensive process. Participants emphasized that countries should:

- carefully consider how it will go about deciding which chemicals should be submitted for risk management decision-making. Various approaches to identify and select priority chemicals were outlined;
- ensure that risk reduction strategies are developed and implemented in consultation with a wide range of interested and affected parties and that such participation should commence at an early stage; and
- make efforts to formalize the national decision-making process and clearly define the responsibilities of the various stakeholders as to the various steps in the process.

The workshop also reviewed the suggested stages of the risk management decision-making process for priority chemicals and further developed the process. Various key observations and conclusions were made with a view to improving the process. For example:

- the initiation of risk reduction measures for priority chemicals does not always need to be preceded by an in-depth risk assessment;
- the potential utility of risk assessment software is high, but requires considerable training and understanding of the limitations of the software;
- information about the measures and alternatives being used elsewhere for a particular chemical or problem can provide valuable input to the risk management decision-making process;

Lastly, the workshop discussed ways to ensure continuity of the training and capacity building programme beyond the pilot phase. These included: “marketing” the successful risk management decision-making approach tested through the pilot projects; developing a revised guidance document; mobilizing additional resources to allow other countries to benefit from the experience gained in the pilot projects; adapting available software to the situation in developing countries; and linking the programme to the implementation of various international agreements requiring risk management decisions for priority chemicals.

In summary, participants concluded that the workshop provided a unique opportunity to reflect on experiences and to discuss key issues in the area of risk management decision-making process for priority chemicals. UNITAR and IPCS are encouraged to initiate steps to define future projects and seek funding from various donors.

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## 1. Introduction

### 1.1 Background

The thematic workshop on *Strengthening National Capacities for Risk Management Decision-Making for Priority Chemicals* took place from 4-6 October 1999 in Geneva, Switzerland. It brought together some 45 representatives from developing countries, countries with economies in transition, countries with advanced chemicals management schemes, international organizations, as well as representatives from non-governmental organizations, including industry, academia, and public interest groups.

The workshop reviewed lessons learned and experiences gained through four country-based pilot projects.

The workshop reviewed the lessons learned and experiences gained through four country-based pilot projects to develop risk reduction strategies for priority chemicals that were implemented in Cameroon, Chile, Tanzania, and The Gambia. Through a series of plenary discussions and working groups, a wide range of suggestions were generated on practical ways and means to strengthen capacities in countries in the area of risk assessment/risk management decision-making. Workshop results will be used to revise the document entitled “Risk Management Decision-Making for Priority Chemicals: A Guidance Document”, to develop further targeted training materials, and to design future country-based capacity building projects in the area of risk management decision-making for priority chemicals.

### 1.2 Workshop Objectives

The main objectives of the workshop were:

- to identify the challenges countries face in making risk management decisions and in developing sound risk reduction strategies for priority chemicals;
- to discuss and provide feedback on the methodology tested through the pilot case studies, with a view towards its potential improvement and future use by other interested countries;
- to identify analytical and decision-making tools/approaches that are considered of practical use to developing countries in the context of risk management decision-making;
- to discuss the appropriate role of risk assessment in the national decision-making process for priority chemicals in countries without

advanced chemicals management programmes;

- to develop practical suggestions for countries interested in developing a systematic process for chemical risk management decision-making; and
- to identify possible elements of, and actions needed for, enhanced capacity building in this area.

### 1.3 Workshop Opening Remarks

**Appreciation expressed for support provided by the European Commission and the Swiss Development Co-operation.**

*Mr Achim Halpaap*, Senior Programme Co-ordinator, UNITAR, welcomed participants on behalf of UNITAR and IPCS, the two international partner organizations which closely collaborated in the design implementation of the risk management decision-making pilot projects. He stressed the importance of the meeting in reviewing the lessons learned through the pilot projects on risk management decision-making in light of the growing interest of other developing countries and countries with economies in transition to strengthen their human resource infrastructure in this important area of chemicals management. Appreciation was expressed for the support provided by the European Commission for the implementation of the pilot projects, and resources provided by the Swiss Development Co-operation for the organization of this workshop. He also conveyed a message on behalf of the European Commission that the results of the pilot projects are of great interest to the Commission which is committed to strengthening national capacities and capabilities for the sound management of chemicals.

**IPCS core activities include risk assessment of specific chemicals and promotion and harmonisation of methodologies.**

*Dr Kersten Gutschmidt*, International Programme on Chemical Safety (IPCS), spoke about the role of IPCS in strengthening national capacities for risk management decision-making. IPCS is a collaborative effort between WHO, ILO, and UNEP and aims to improve the scientific basis for the safe use of chemicals, and to strengthen national capacities and capabilities for chemical safety. The programme's core activities include risk assessment of specific chemicals, promotion and harmonization of methodologies, and poisoning prevention and treatment. IPCS publishes numerous documents, including the Environmental Health Criteria (EHC) Series, the Concise International Chemical Assessment Document (CICAD) Series, Air Quality Guidelines, Guidelines for Drinking Water Quality, the Joint Pesticide Meeting Summary, and the INCHEM CD\_ROM. While these documents do not provide information on exposure data at the local level, they provide internationally available data and assessments, thus providing important information to countries when



identifying problems and assessing risk under local conditions of use.

**Guiding principles for SDC projects include a country-driven approach and participation of all stakeholders.**

*Ms Nadine Speich*, Swiss Agency for Development and Cooperation (SDC), highlighted that since 1992, when a special multilateral fund for the global environment was set up, SDC has been committed to capacity building for the sound management of chemical substances and the reduction of environmental risks related to chemical use. In addition to the assistance provided to UNITAR, SDC supports various projects in the field of chemicals management. Guiding principles for SDC projects include the following: a country-driven approach; the participation of all stakeholders; promotion of local ownership; the fostering of economic and social sustainability; and the establishment of micro-macro linkages. She also pointed out that SDC was very pleased to be able to provide funding for this workshop.

## 1.4 The Perspective of Other Participants

Participants from international organizations, governments, and non-governmental groups also shared their perspectives and experiences in the area of risk management decision-making.

**OECD aims to make pesticides assessment reports of its Member States more widely available.**

In her capacity as chair of the pesticides committee of the Organization of Economic Cooperation and Development (OECD), *Ms Vibeke Bernson*, Sweden, highlighted the ongoing efforts of OECD to assess the risks of some 50\_100 pesticides in the course of the next 5 years. Two guidance documents have been developed in that context. One addresses industry data submissions on plant protection products and their active ingredients, and a second document addresses the development of country data review reports on plant protection products and their active ingredients. OECD aims to make pesticide assessment reports of its Member States more widely acceptable and increase transparency of the process on how these reports are prepared.

The development of standard terminology for translating documents also aims at facilitating the use and acceptability of existing assessments. OECD is also working to make its information more widely available to non\_OECD countries, in particular through the Internet.

**The Joint FAO-WHO Meeting on Pesticide Residues conducts scientific evaluations of pesticide residues in food.**

*Mr Gerold Wyrwal*, Food and Agricultural Organization (FAO) of the United Nations, reported on the Joint FAO\_WHO Meeting on Pesticide Residues (JMPR). Meeting annually since 1963, this technical group conducts scientific evaluations of pesticide residues in food. Drawn from government and academic experts from various disciplines, the group provides scientific advice on the acceptable levels of pesticide

residues in food. Under the JMPR, the FAO is responsible for considering the available data on recognized and registered pesticide use patterns, the fate and transport of residues, and animal and plant metabolism data. The results of the JMPR are reported annually to the Codex Alimentarius Commission.

**Risk management decision-making in US takes into account concepts such as pollution prevention and green chemistry.**

*Dr John Young*, Hampshire Research Institute, United States, summarized the role of risk assessment for chemical regulation in the US. He stressed that risk management decision-making in the U.S. is based not only on risk assessment, but also takes account of other concepts, such as pollution prevention and green chemistry. A multitude of agencies and organizations are involved in the work. Dr Young highlighted that two recent developments have had a considerable impact on the nature of risk assessment in the risk management decision-making process in the U.S. First, the 1996 Food Quality Protection Act (FQPA) focussed attention in risk assessment on individual persons rather than on a single chemical, as was the case before the FQPA was adopted. Second, a 1997 report by the U.S. Presidential/Congressional Commission on Risk Assessment and Risk Management fostered the role of risk assessment as a stakeholder driven process. The Commission recommended that various stakeholders be involved in the process of risk assessment by allowing any of them to view and potentially alter risk models which were being used.

**Countries that conduct field studies may have a clearer idea of chemical exposure.**

*Ms Barbara Dinham*, Pesticides Trust, United Kingdom, addressed the issue of data requirements from the perspective of a non-governmental organization. According to Ms Dinham, countries that conduct field studies, especially of pesticide application patterns, may have a clearer idea of chemical exposure than those that do not. For example, pesticide application by farmers especially with old, outdated equipment can lead to significant exposure. Field studies can provide valuable information to risk assessment and problem identification and this information can improve exposure characterization. Unfortunately little attention has been paid to how pesticides are applied in developing countries. Since many NGOs and trade unions collect data on use patterns, pilot project representatives may find value in forging partnerships with them. Other international NGOs working on pesticide issues can also provide valuable information. More generally speaking, Ms Dinham recommended that non-governmental stakeholders should be included in the early stages of the risk management decision-making process, including the risk assessment component, especially for exposure data.

*Mr Sanjay Baliga*, Center for Health, Environment, and Policy, Yale University, United States, commented on the role of academia in risk

**Collaborative efforts between researchers and policy-makers potentially of value.**

management decision\_making. Speaking on behalf of John Wargo, Professor of Risk Management and Public Policy at Yale University, Mr Baliga emphasized the potential value of collaborative efforts between researchers and policy\_makers in improving chemicals management. He concluded by stating that Yale University is interested in providing research support to countries interested in risk management decision-making through field work.



## 2. Experience Gained Through Country Based Pilot Projects on Risk Management Decision-Making

### 2.1 Introduction to the Pilot Project Approach and Methodology

Each country selected a priority chemical as the focus of the case study exercise.

To assist countries in developing the human resource capacities needed for risk management decision-making, UNITAR, jointly with the IPCS and with support of the European Commission (EC), initiated country-based pilot case studies in Cameroon, Chile, The Gambia, and Tanzania in early 1999. Each of the participating countries selected a priority chemical as the focus of the case study exercise, and worked through a step-by-step process to develop a risk reduction strategy through a multi-stakeholder process. The chemicals/pesticides selected by the countries are as follows: Cameroon (PCBs and PCTs); Chile (Lead); The Gambia (Tetramethrin, Permethrin); and Tanzania (endosulfan). The primary aim of the pilot case studies was to strengthen human resource capacities in participating countries and to test the approach and methodology for potential future use by other interested countries.

The primary aim of pilot case studies was to strengthen human resource capacities and test the approach and methodology.

A pilot version of a UNITAR/IPC guidance document entitled *Development of Risk Reduction Strategies for Priority Chemicals*, a country grant, as well as additional resource materials on the identified chemicals were provided to each country. In addition, external “resource persons” visited the countries during the period of April - June 1999 to assist the country task forces in the overall implementation of the pilot case study and in the context of the “on-the-case” workshops. A “General Resource Person” spent approximately 10 days in each country to discuss the overall implementation of the pilot case study with the task force, to provide some initial training on aspects of risk assessment and risk management decision-making, and to provide assistance during the on-the-case workshop. A “Technical Resource Person” was also on-site during the workshop to assist the country team in working through the risk assessment exercise. The Technical Resource Person also provided introductory training and guided the group through the use of the EUSES software (or USES, if the selected substance was a pesticide), in order to explore the potential value of such computer-aided models within a developing/industrializing country context.

## 2.2 Pilot Country Presentations

### Cameroon

**Cameroon selected PCB (Arochlor 1254), a coolant heavily used in the electrical supply industry, and PCP, a wood preservative routinely used in the timber industry.**

Mr Dudley Achu Sama summarized the experiences gained by Cameroon as a pilot project country. Cameroon identified PCB (Arochlor 1254), a coolant heavily used in the electrical supply industry, and PCP, a wood preservative routinely used in the timber industry as priority chemicals for risk management decision-making. While the two chemicals are mainstays to large sectors of the economy, they are also considered highly toxic to humans and the environment. Current national capacities, especially legal, technical, and financial instruments, to reduce the risks from PCBs and PCPs are weak and protective measures to limit exposure to humans and the environment are inadequate.

As a first step in the risk management decision-making process, Cameroon characterized the nature and extent of risks and potential problems from PCBs and PCPs. In the case of PCBs, the environmental risks result from a lack of proper waste disposal and recovery operations and spillage during maintenance operations. Occupational risks result from worker exposure during refilling and maintenance operations. For PCPs, the environmental risks also stem from a lack of adequate waste disposal and recovery operations and spillage during reformulation and processing.

Emphasizing precautionary and preventive action, Cameroon proposed specific risk reduction options with a focus on three main issues: risk and hazard communication, worker training, and waste management/disposal programs. Specifically, recommendations include the following:

- hazard communication measures for both PCBs and PCPs in the form of explicit product labelling, worker training on product handling, lowering occupational exposure concentrations, and use of effective protective equipment;
- instituting a PCBs life-cycle management plan, identifying temporary land-fill sites, and restrictions on marketing and use of PCBs; and

- reducing PCPs use indoors, promoting wood treatment with PCPs in a well-ventilated building, isolated from surface waters, and promoting less toxic alternatives.

Future developments in the area of risk assessment and management in Cameroon may include the establishment of a governmental environmental monitoring unit and the formalization of the risk management decision-making process for priority chemicals.

### *Chile*

**Chile selected lead, due to concerns of mismanagement in transport and handling and heavy lead contaminated storage sites.**

In his capacity as the Technical Resource Person for Chile, Dr José Tadeo, Ministerio de Agricultura, Pesca y Alimentacion, Spain, summarized the experience gained by Chile as a pilot project country. Chile identified lead as a priority chemical, due to concerns of mismanagement in the transport and handling of lead (lead containing ores) from neighbouring Bolivia and heavily lead contaminated storage sites in the city of Antofagasta, Chile. The suggested risk reduction measures to minimize lead related risks in the city of Antofagasta include the following:

- limiting mineral storage in the city;
- cleaning and paving the streets; and
- implementing education and awareness raising programmes.

In order to obtain a better understanding of the problem and to evaluate the effectiveness of the proposed measures, environmental monitoring of lead and monitoring of blood lead levels in children and workers are considered important aspects of the risk reduction strategy.

### *The Gambia*

**The Gambia selected permethrin, a pyrethroid insecticide widely used to impregnate bednets for mosquito control.**

Ms Fatoumata Ndoeye summarized the experience gained by The Gambia in the context of the pilot case study. The Gambia identified permethrin, a pyrethroid insecticide widely used to impregnate bednets for mosquito control, as a priority chemical for the pilot project. While permethrin is widely used in the country as an alternative to DDT for malaria control, the risk implications of permethrin have never been studied in The Gambia.

As a first step in the risk management decision-making process, The Gambia characterized the nature and extent of risks from permethrin with the following conclusions:

- When used appropriately as part of impregnating bednets, the risks of permethrin are insignificant;
- Village health workers who impregnate bednets with permethrin as part of the Malaria Control Programme may be highly exposed to the chemical;
- For individuals using permethrin in the home, the risks arise when the chemical is inappropriately stored. The risks of impregnating bednets with Permethrin for the individual, in this context, is not known; and
- Other risks result from unintended use of permethrin for treatment of head lice and bed bugs, as seed dressing, and for spraying of citrus fruits.

The Gambia delineated numerous risk reduction measures in two broad categories: risk reduction measures *already in place* which (may) need strengthening and *further risk reduction measures*. The former include: import notification, provision of protective equipment at the level of the divisional public health officers, provisions of decanting and measuring equipment at the village level, labelling of containers distributed to the villages, and sensitization of village health workers and general public to proper permethrin handling procedures during bednet impregnation. Possible additional risk reduction measures include (but are not limited to): issuing of protective equipment to village health workers, promoting appropriate labelling provisions for containers used at the village level, promoting use of one dipping area, promoting use of alternatives to permethrin, providing permethrin in a tablet form, and introducing a planning/control stock system to reduce stocks of expired products.

### ***Tanzania***

**Tanzania selected endosulfan, an organochlorine pesticide widely used to control a variety of insects.**

Dr Ernest Mashimba summarized the experience gained by Tanzania as a pilot project country. Tanzania chose endosulfan, an organochlorine pesticide widely used to control a variety of insects, for the pilot case study. Endosulfan is considered a priority chemical due to reports of mismanagement during the chemical life-cycle, allegations of misuse in the fishing industry, links to pesticide poisonings, and waste disposal problems.

Using the information from the field work, Tanzania characterized the nature and extent of risks from endosulfan. The health effects of



The pilot countries identified priority chemicals for risk reduction for a number of reasons:

- Cameroon identified two chemicals for risk reduction, PCB and PCP, because they are considered highly toxic to humans and the environment and they are mainstays to large sectors of the economy. Current national capacity to reduce the risks from PCB and PCP are weak and protective measures to limit exposure to humans and the environment are inadequate.
- Chile identified lead, due to problems of lead transport and handling from neighboring Bolivia. Specifically, these circumstances have resulted in heavily contaminated sites in the city of Antofagasta.
- The Gambia identified permethrin for risk reduction, because the insecticide is widely used to impregnate bednets for malaria control but potential risks for human health and the environment have never been assessed.
- Tanzania identified endosulfan due to reports of mismanagement during the life-cycle, allegations of misuse in the fishing industry, links to pesticide poisonings, and problems with waste disposal.

endosulfan are more pronounced when safe handling procedures are ignored. Tanzania also confirmed the misuse of endosulfan in fishing.

To limit exposure, numerous risk management options were proposed, including promotion of protective equipment, awareness raising, conducting a waste audit, and segregating chemicals during storage. These measures were categorized under various components of the chemical life-cycle. Based on multiple criteria, a list of short-term, medium-term, and long-term options were recommended. With regard to the use of endosulfan in fishing, awareness raising and monitoring/enforcement of already existing provisions may reduce this illegal practice.

Tanzania hopes to build upon the experiences and lessons from this pilot project to manage other priority chemicals, such as mercury, asbestos, and chemicals covered in the Rotterdam Convention and a future Convention on Persistent Organic Pollutants. In addition, the project provided invaluable lessons for the development of a systematic national process for risk management decision-making.

### **2.3 The Perspective of External Resource Persons**

Presentations by resource persons highlighted importance of country-driven and multi-stakeholder approach.

In addition to the pilot countries, several external resource persons who had visited the countries and supported national activities shared their experiences. Dr Hans de Kruijf, RIVM, Dr José Tadeo, Ministerio de Agricultura, Pesca y Alimentacion, Spain, Dr Kees van Leeuwen of RIVM, and Dr Peter Peterson, UNITAR, spoke in their capacity as the external resources persons for Cameroon, Chile, The Gambia, and Tanzania, respectively. Presentations of the resource persons highlighted the importance of the country-driven and multi-stakeholder approach in implementing the project, with external support providing technical expertise whenever needed and appropriate. Some of the specific issues highlighted through these presentations which shaped the more detailed discussions during day two and three of the workshop are summarized in the latter part of this report.

### **2.4 Conclusions and Lessons Learned through the Pilot Studies**

Based on the presentations of country participants and external resource persons, the following observations reflect, in summary, the experience gained and lessons learned through the pilot projects:

- The general approach being tested through the programme, which aims to build capacities for risk assessment and risk management

decision-making in an integrated way, addresses real and practical needs of countries. Addressing risk assessment and risk management decision-making in an integrated way is a ‘hands-on’ and useful approach. While the step-wise framework is considered useful, some modifications are recommended.

Capacity building for risk management decision-making an area which has remained virtually unaddressed.

- More specifically, the pilot projects:
  - significantly strengthened the capacity of all members of the national task force to understand and apply risk assessment methodologies to local conditions of use;
  - fostered a better understanding of opportunities and challenges to develop risk reduction activities for chemicals through a multi-stakeholder process; and
  - catalyzed the initiation of more systematic and transparent processes in the countries to address risk management decision-making for priority chemicals in the future.
- While there is a continued need for skills-building in the area of risk assessment, capacity building for systematic risk management decision-making, including the use of decision-making tools, is an area which so far has remained virtually unaddressed.
- The multi-stakeholder and participatory approach promoted through the pilot project methodology is considered valuable.
- The process of identifying priority chemicals for decision-making is an important step which countries need to carefully consider.
- High level commitment prior to embarking on such an exercise and a sound organizational structure for systematic risk management decision-making and stakeholder involvement, are considered very important to successfully implement activities.
- Differing views exist on the best organizational structure for ensuring an appropriate relationship between the risk assessment and risk management decision-making processes.
- Collecting/obtaining the necessary local or national data/information for risk assessment and risk management decision-making is a particularly challenging aspect.

The approach being tested through the programme addresses real and practical needs of countries.

Undertaking in-depth risk assessment is not a prerequisite for initiation of risk reduction measures.

- Computer-based models can be of use in the context of training and capacity building activities (e.g. as a teaching tool). If adapted to the needs and situations of developing countries and if the necessary skills and capacities are developed, these tools could, in some cases, be useful for supporting the assessment of chemical risks in non-OECD countries.
- Undertaking an in-depth risk assessment should not be considered a prerequisite to the initiation of risk reduction measures. Simple means, such as considering potential risks and opportunities for risk reduction at the various stages of the life cycle, can help to identify appropriate areas/aspects on which to focus risk reduction efforts.
- Countries should be encouraged and assisted to make full use of existing data/information, e.g. that which is available internationally.
- Providing training on decision-making approaches/techniques (e.g. use of decision criteria, screening, ranking) was considered useful. Such concepts and techniques are likely to be new to many participants, thus more in-depth explanations and illustrative examples should be provided.
- Chemical-specific risk reduction strategies often point to a more general need for strengthening national chemicals management infrastructure and capacities.
- The sharing of experiences gained by pilot countries at the regional level was considered an important aspect for follow-up, in order to contribute to the strengthening of risk management decision-making for priority chemicals in other countries.

### 3. Risk Management Decision-Making for Priority Chemicals in the Context of National Chemicals Management

During the course of the workshop, several important issues emerged which should be systematically considered by countries prior to initiating a resource intensive process to develop a risk reduction strategy for individual priority chemicals.

#### 3.1 Identifying Priority Chemicals for Risk Management Decision-Making

Carefully consider *how* to decide which chemicals submitted for risk management decision-making.

Different circumstances and different kinds of information can trigger a process to develop a risk reduction strategy for a certain substance. Recognizing the impracticality of applying an in-depth risk management decision-making process to *all* hazardous chemicals, each country should carefully consider how it will go about deciding which chemicals should be submitted for risk management decision-making. Priority setting for chemicals, like risk assessment should not become a goal itself.

Countries may use a number of different approaches, some more ad hoc and others more systematic, to identify and select priority chemicals. “Ad hoc” approaches may be motivated partly by chemical accidents, political wishes, etc. More systematic approaches may take account of available monitoring data, chemicals of international concern (e.g. as identified through the Rotterdam Convention on PIC), trends in chemical use and information on misuses, including intentional misuse. Also, priority chemicals can be identified based on an analysis of the chemical exposure and/or the toxicity of the chemical. Another important risk criteria for categorizing priority chemicals could be based on the particular concern for vulnerable groups (such as children, pregnant women, and the sick) or endangered wildlife and ecosystems.

The priority setting system developed in the European Union (EU) (called EURAM) could be used as a prototype for developing countries. It was pointed out, however, that such an approach may require some resources and the existence of a minimum chemicals management infrastructure at the country level.

It was stressed by participants that the accessibility and availability of relevant information to policy-makers in developing countries is important for priority setting. Information on exposure is particularly important and in some countries difficult to obtain. With regard to information made available internationally, distribution should be

diversified and adapted to the needs of developing countries. Specifically, the communication between developing countries and international organizations should be improved.

### 3.2 Involvement of Concerned and Interested Parties

Stakeholder involvement is essential from an early stage.

Risk reduction strategies should be developed and implemented in consultation with a wide range of interested and affected parties. Broad participation improves the quality and diversity of information and opinions and significantly increase the likelihood that risk management decisions will be accepted and effectively implemented. It is essential to involve all stakeholders from an early stage (for instance in a national advisory committee). Specific issues highlighted by workshop participants include the following:

- Interested parties can help to define problems of mismanagement and misuse of chemicals. Stakeholders can also provide valuable information as input in the risk assessment process. In this context, there should be a mutual acceptance of risk assessment methodologies before assessments are made. If stakeholders understand the process of problem identification and risk assessment under local conditions of use, the acceptability of the results/output of the risk assessments will increase.
- Defining goals/objectives should be considered a form of decision-making and should therefore include involvement of different stakeholders.
- Acceptability of risk management strategies by all stakeholders is an important criteria in the risk management decision-making process and should be pursued. Circulating the risk management strategy to concerned parties, and making use of the media to raise awareness of the strategy and the need for risk reduction is one potentially valuable approach.
- Stakeholders should be involved in the evaluation/monitoring process. It is important that all stakeholders have confidence in the indicators to be used in the evaluation, otherwise the results of the evaluation may not be accepted/trusted. In this context, certain stakeholder groups (e.g. industries, labour, NGOs) may have an active role in monitoring schemes for evaluating the risk management strategies.

### 3.3 Organizing/Formalizing the National Decision-Making Process for Priority Chemicals

Make efforts to formalize national decision-making process and clearly define responsibilities of stakeholders.

The *process* through which risk management decision-making is carried out and the degree to which concerned parties feel appropriately involved is a key determinant of success, and should be carefully considered and communicated clearly from the outset. Formalizing the process can help to increase transparency and ensure that the various interested and affected parties know what to expect and understand how they can effectively contribute to the process.

Workshop participants observed great differences as to how the decision-making process is managed in different countries and across chemical types (e.g. industrial chemicals, pesticides, hazardous substances). A number of bottlenecks regarding the process of organizing and formalizing decision-making for priority chemicals were highlighted, including:

- lack of co-ordination of chemicals management activities of different government agencies;
- information from international organizations does not always reach the appropriate departments or persons;
- within countries, information exchange between departments and institutions of information (technical as well as organizational (e.g. conferences)) is often weak;
- legislation is often fragmented; and
- stakeholder involvement in risk management decision-making is a new concept and very little experience has been gained.

The workshop concluded that despite these challenges, countries should make all efforts to formalize the national decision-making process and clearly define responsibilities of the various stakeholders as to the various steps in the process.

### 3.4 Assessing and Strengthening Key Components of the Existing Infrastructure the Sound Management of Chemicals

The existence of basic elements of a national infrastructure for chemicals management (e.g. legislation) increases the likelihood that risk reduction strategies for priority chemicals will actually work. Parallel efforts should therefore be pursued to strengthen the overall

Risk reduction strategies benefit from the existence of basic element of a national infrastructure for chemicals management.

chemicals management infrastructure needed to safely manage all dangerous chemicals, such as the development of national chemicals management legislation and policies, strengthening of national information systems and exchange mechanisms, implementation of education, training and awareness raising programmes, and strengthening the technical infrastructure. Since monitoring is an important element in evaluating the ultimate success of risk management decisions, the overall infrastructure for monitoring chemicals and their effects on humans and the environment also needs to be in place.

The preparation of a National Profile and the development of national Plans of Action for establishing a national infrastructure through co-operation of all concerned parties are considered important. While significant progress in this regard has been made in many countries, these essential assessments and planning steps still need to be taken in many countries. Additional assistance is urgently required to support such efforts.



## 4. Review of the Suggested Stages of the Risk Management Decision-Making Process for Priority Chemicals

During this part of the workshop, participants reviewed and discussed each step of the suggested 6-step framework for national risk management decision-making for priority chemicals.

### 4.1 Defining the Problem and Characterizing Risks under Local Conditions of Use (Step 1)

#### *Introduction*

The objective of Step 1 is to identify the actual or potential problems posed by the substance in the country including, as appropriate, risks to health and/or environment for relevant life cycle stages of the substance. Towards this end, several approaches and activities are suggested, including, inter alia, to consult information/data/assessments that are available internationally, to collect and analyse relevant national/local data and information (to the extent that it is available), to seek information on existing management practices, bottlenecks, contributing factors, etc., and to consider risks to human health and the environment under local conditions of use for relevant stages of the life cycle. Discussions during the workshop focussed on the following issues:

#### *Identifying and Defining the Problem*

Identifying the problem scenario (actual or potential) can be based on various types of information, such as:

Identify the problem scenario using various types of information.

- regulatory measures taken in other countries (e.g. bans and restrictions as made available through the Prior Informed Consent (PIC) procedure);
- actual evidence of problems, such as cases of reported poisonings, contamination, misuse, etc.;
- potential problems identified by a risk assessment addressing national conditions of use, etc.; and
- other relevant information, such as quantity and type of use of the chemicals, etc.

### ***Is Risk Assessment Always Needed Prior to Initiating Risk Reduction Activities?***

There are different scenarios in which countries may move to risk reduction measures.

Participants agreed that the initiation of risk reduction measures for priority chemicals does not always need to be preceded by an in-depth risk assessment. There are different scenarios in which countries may either directly, or following a simple risk evaluation, move to risk reduction measures, for example:

- the risk management policy of a country is based on hazard and there is an assumption made that members of the public are being exposed (e.g. in Germany/EU, a chemical is automatically banned for consumer use if it is classified as carcinogenic);
- evidence exists that the chemical is not used as intended (e.g. use of a pesticide in agriculture which has only been registered for public health purposes) or misused (e.g. use of a pesticide for fishing, as a suicide agent);
- a chemical has similar hazard properties, use patterns and exposure potentials as other chemicals that have already been targeted for risk reduction;
- the chemical has already been banned in several other countries and/or is subject to the PIC procedure;
- a realistic assumption can be made that significant exposure to a hazardous chemical is occurring; and
- measures, such as hazard communication, education, and training could be used to increase levels of protection and increase compliance with safe handling requirements.

### ***Choosing the “Right Level” of Risk Assessment***

There are significant differences in the way risk assessments are conducted and in the purposes they serve.

There are significant differences in the way risk assessments are conducted and in the purposes they serve. For example:

- compound-specific risk assessments address risks throughout the chemical life cycle;
- site-specific risk assessments address a combination of chemicals emitted from an industrial facility; and
- aggregate/cumulative risk assessments address exposure to a

multitude of chemicals, e.g. humans being exposed to various chemicals in food.

In line with this observation, pilot countries reported that the “risk assessment” component of their respective risk management decision-making processes was conducted in significantly different ways, given that it was targeted towards a specific type of problem scenario (e.g. misuse of a pesticide in Tanzania, continuous local emissions of a substance in Chile)

In those cases where a more comprehensive risk assessment is warranted (e.g. if a ban or severe restriction is under consideration) and resources for the assessment are available, the workshop made the following recommendations:

- maximum use should be made of internationally available assessments (e.g. toxicity and eco-toxicity data, dose/response estimations, identified areas of high risk, use information);
- emphasis should be placed on evaluating the extent to which international data are of relevance to local conditions (e.g. exposure, sensitive species); and
- collection of national and local data such as use and exposure data significantly enhances the value of the risk assessment, as international assessments often cannot address these factors.

Collection of national and local data significantly enhances value of the risk assessment.

Rather than placing emphasis on the need to conduct a risk assessment, Step 1 of the revised guidance document should focus on assisting countries to define/refine the *problem statement* for the chemical. Placing too much emphasis on the risk assessment may lead countries in the wrong direction. However, a risk assessment may be used as one of several inputs to the process of defining/refining the problem statement. As a comprehensive risk assessment is a complex process, for developing countries and countries with economies in transition with serious limitations in regulatory infrastructure and human and financial resources, a simplified risk evaluation process may be a more pragmatic way forward.

### ***Potential Use and Applicability of Risk Assessment Software in General***

With regard to the potential use and applicability of computer-based tools to support risk management decision-making, the following key observations and conclusions were made:

Detailed knowledge on risk assessment essential for this tool.

- Transparency is important: the user must fully understand what is happening in the model, including assumptions made. Detailed knowledge on risk assessment is essential, otherwise the model becomes simply a “black box”, which can be misused.
- Stakeholders should be involved early on in the risk assessment stage. It is recommended that risk assessment methodologies are mutually agreed upon before assessments are made. Transparency, in this context, is also important. If stakeholders understand the process of risk assessment (the model), the acceptability of the results/output of the risk assessments will increase.
- Risk assessment tools could potentially be used in developing countries (provided that the necessary data are available) (1) for screening purposes (e.g. for identifying priority chemicals) and (2) to aid in comparing alternative chemicals and to conduct impact assessments.

### ***Potential Utility of EUSES***

With regard to the potential use and applicability of EUSES to support risk management decision-making, the following key observations and conclusions were made:

EUSES a tool to *aid* in risk management decision-making; not an end in itself.

- EUSES can be used as a training tool for risk assessment. It can be used to illustrate the systematic process of risk assessment, provided that the modules of risk assessment are clearly explained including their weaknesses. However, it is not considered worthwhile to introduce EUSES solely as a teaching tool.
- Training on EUSES or other risk assessment software should not imply that conducting a full risk assessment is always necessary. The use of a computer-based risk assessment tool must be presented in the proper context, i.e. as a tool to aid in risk management decision-making and not as an end in itself.
- A limitation of EUSES is that in case no or very little local data are available (which may often be the case in developing countries), the user of the model must rely on defaults that are geared towards the EU situation. Modifications to the model with respect to climatic, hydrological, and soil parameters, etc. can be made. However, and more importantly, emission factors and use scenarios of chemicals in developing countries are different from those in developed countries. The development of a set of emission factors and exposure scenarios for important categories of chemicals that reflect

more closely the situation in developing countries should be pursued.

- The EUSES model and supporting documentation (the Technical Guidance Document) should be simplified and made more user-friendly. Efforts in this regard are underway.
- For EUSES to be effectively/reliably used, the user must have (1) a solid background in toxicology, chemistry or another relevant study; (2) completed an introductory training on the contents (and limitations) of the EU Technical Guidance Documents; (3) completed an introductory course on the EUSES model (such as the training provided in the pilot case studies); and (4) completed on-site training (approximately 3 months) at an institute with experience in the field of risk assessment.

## 4.2 Setting Risk Reduction Goals and Objectives (Step 2)

### *Introduction*

Defining goals/objectives should be a transparent process involving stakeholders.

The objective of Step 2 is to formulate the risk reduction goals on the basis of the problem statement and taking into account other relevant national/local considerations. The risk reduction goal(s) are meant to provide the main reference framework for the development of the risk reduction strategy during subsequent steps. During this step, stakeholders will need to decide what the risk reduction strategy should aim to achieve, including whether the focus should be on certain aspects of the problem/certain risks (e.g. reducing risks to children, addressing problems arising during transport, addressing risks to groundwater) as well as the timeframe. Several issues were discussed in more detail during the workshop.

### *Setting the Goals*

Setting goals and objectives for the risk reduction strategy is an important part of the decision-making process, in that it sets the direction for subsequent stages and makes clear the intended results/outcomes. Objectives should be “SMART”: **s**pecific, **m**easurable, **a**ceptable, **r**ealizable, and to be achieved by a certain time. They should also be linked to the broader national goals and policies pertaining to chemicals management, environmental, and public health protection, etc.

The refined problem statement, which has been developed based on the outcomes of the risk assessment/problem identification stage, should

provide the starting point for the setting of goals and objectives and subsequent discussions. It may serve to identify certain environmental compartments, for example, or certain populations and/or stages of the life cycle that may be particularly important to address in the context of the risk reduction strategy. Some criteria that might be of relevance in this context include the imminence and degree of the risk(s).

Risk reduction goals/objectives should also take into account factors such as levels/sources of uncertainty about risks, as well as social, economic, legal or political considerations. For example, it may be decided that protecting the health of children or other vulnerable populations may be of high priority.

Finally, it should be recognized that defining goals/objectives is also a form of decision-making. Thus, it is important that the process be transparent, that stakeholders be involved, and that it be explicitly acknowledged if there are any issues/aspects of the problem that have been forsaken (e.g. focus on certain aspects of the overall problem statement).

#### ***Developing Indicators for Measuring Success***

**Objectives may be stated in either qualitative or quantitative terms.**

This stage of the process should include both the identification of the “ultimate”, overarching or long-term goal(s), which may often be stated in general terms, as well as the specific objectives (“proximate goals”) to be achieved through implementation of the risk reduction strategy.

Objectives may be stated in either qualitative or quantitative terms, as long as they are formulated in such a way as to allow for subsequent measurement/assessment of whether, and to what extent, they have been achieved. In formulating the objectives, it is important to identify what measurements and/or verifiable indicators will be used later on during the evaluation stage (i.e. during step 6). Target dates/timeframes also need to be set.

### **4.3 Identifying and Evaluating Risk Reduction Options (Step 3)**

#### ***Introduction***

The main objective of this step is to identify and evaluate alternative options which could address/achieve risk reduction goals and contribute towards solving the identified problem(s). Towards this objective, it is suggested that stakeholders identify a range of possible options to be considered, develop a short list of options that should be further evaluated, and compare the advantages and drawbacks of these

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shortlisted options making use of identified criteria, including practicability, feasibility, economic impact, monitorability, etc.

### ***Identifying Relevant Risk Reduction Options***

It is useful to provide an open-ended listing of known options in the guidance document which risk managers can refer to when seeking to identify options that may be of potential relevance to the situation at hand. Specific suggestions for the revision/improvement of the present listing were made by participants relating to specific life cycle stages including: import; manufacture, industrial and professional use; packaging, transport, distribution and storage; domestic and consumer use; and waste management. Details of the suggestions are provided in [Annex 1](#).

Many options may be applicable to all chemicals or to a broader range of chemicals.

Considering possible options at various life cycle stages is one approach. It may also be useful to approach the identification of options from other perspectives and using different categorization schemes. Providing examples of different ways to conceptualize the problem can help to stimulate thinking and discussion on possible options and solutions.

It should be recognized that many options may be applicable, not just to the chemical in question, but to all chemicals or to a broader range of chemicals. There are a relatively small number of chemicals for which specific or “tailor made” measures are likely to be needed. When considering various options, the risk managers should distinguish between those measures that are more broadly applicable and those which might pertain specifically to the chemical in question.

Certain measures may already be in place but are not achieving the intended results.

In some cases, it may be that certain measures (e.g. regulations) are already in place but are not achieving the intended results (e.g. due to lack of enforcement, lack of awareness within the regulated community). When considering options, it may be useful to consider not only new measures that may be needed but also how *existing* tools/measures can be made more effective.

There are a range of tools/instruments for implementing risk reduction options, such as regulatory measures, voluntary initiatives, economic instruments, etc. These are introduced in Part I of the Guidance Document, but a brief reference to these various tools/instruments should be inserted at this stage (e.g. in a text box). In considering voluntary initiatives, it should be noted that having in place an adequate legal/regulatory “backstop” remains an important prerequisite.

### ***Learning from Others about Risk Reduction Measures***

Information about the measures and alternatives being used elsewhere for a particular chemical or problem can be a valuable input into the risk management decision-making process. There are numerous ways to obtain such information, such as:

- consulting the laws and regulations of other countries, some of which may be available via the Internet;
- interacting with neighbouring countries, other countries in the region, etc.;
- for PIC chemicals, finding out (through the Decision Guidance Documents) what other countries, apart from those that decided to ban the substance, are doing to reduce risks. (In this context, it was also noted that an information exchange procedure for chemicals that are restricted (but not severely restricted or banned) will be put into place under the Rotterdam Convention); and
- finding out (e.g. from NGOs) about alternatives to the chemical, including non-chemical alternatives.

However, several challenges were noted in this regard, e.g. difficulties in accessing information on risk management decisions made by countries, given that such information may not always be documented in a useful form; and lack of access to the Internet. It was also noted that just because an alternative substance is being used, it does not mean that it is better/less risky than the substance which it has replaced.

Information on what other countries have done is not only useful for identifying potential options, but may actually serve to motivate risk reduction action. For example, if information is obtained indicating that many other countries have banned or restricted the substance due to certain hazardous characteristics, this may lead a country to consider more seriously the need for risk reduction action.

### ***Criteria for Selecting Appropriate Options***

Agreeing on criteria for evaluating alternative risk reduction options is important. Some criteria should/may “weigh” more important than others. It may therefore be advisable to maintain a short list of primary or basic criteria, and a set of additional criteria (threshold criteria/balancing criteria/modifying criteria).



The prerogative of making the final decision should rest with government.

Acceptability by all stakeholders is an important additional criteria which should be pursued and which is not yet mentioned in the guidance document. However, it was noted that in developing countries acceptability may be difficult to achieve, particularly where a supporting legal and regulatory framework for chemicals control is absent. Also, there may be a discrepancy between formal acceptance of a risk reduction strategy, and a real commitment to comply and implement the strategy. In the absence of “acceptance” or consensus regarding certain risk reduction measures, the prerogative of making the final decision should rest with the government. However, there may also be cases in which the various actors within government may themselves not be able to agree.

If consensus cannot be easily reached, differences of opinion should be clearly identified and tabled, possibly with the help of a neutral facilitator.

Other criteria for consideration may include:

- equity considerations (which parties are going to bear the burden of risk reduction, and which will reap the benefits?);
- compatibility with existing governmental policy goals;
- flexibility (openness to review and modification); and
- monitorability and controllability.

### ***Evaluating Risk Reductions Options***

Evaluating options for risk reduction could be undertaken in a tiered/phased approach, i.e. first selecting those measures that can be easily implemented and are non-controversial, and then considering whether these measures are likely to achieve the risk reduction goal. If selected options are not likely to achieve the desired goals, more stringent measures should be selected.

Setting out a clear target at the start (e.g. phase out over a five year period) can be a strong driving force to identify alternatives and/or catalyse innovative approaches for risk reduction.

Similarly, a risk reduction strategy could foresee the introduction over time (i.e. in a staged process) of various and increasingly stringent measures, with interim evaluations carried out to determine whether the additional options need to be phased in (“moving targets”).

Decision-making techniques and analytical tools such as cost/effectiveness analysis and simple multi-criteria analysis are of interest to developing countries. However, the analysis should be as simple as possible and complex as necessary. Additional training should be provided on such tools in future projects.

Several recommendations were put forward by participants to achieve the sound evaluation of various risk reduction options:

- Ensure availability of adequate information about the existing situation as a common reference point;
- Ensure broad stakeholder participation;
- Use neutral parties as facilitators;
- Encourage effective and open discussions, e.g. through brainstorming and free-floating discussion;
- Identify opposing viewpoints and interests;
- Look for “win-win” situations (strategies that generate benefits for multiple stakeholders); and
- Look for consensus among different stakeholders.

The analysis should be as simple as possible.

#### **4.4 Developing the Risk Reduction Strategy (Step 4)**

##### *Introduction*

The main objective of this step is to develop an implementation plan/strategy which describes the selected measure(s), responsibilities of parties, and suggested timeframes. It is suggested that countries select the preferred option(s), based on the evaluation conducted during Step 3 and develop a detailed strategy including implementation arrangements, i.e. by whom (which ministry/agency, stakeholder groups, etc.), when (timeframe for implementation), where (nationally, in certain regions, etc.), how (under what legal mandate, with what resources, etc.), and monitoring/evaluation arrangements. Possible guidelines for countries deciding on and developing the proposed risk reduction strategies were discussed in more detail.

Adoption of a step-by-step approach one way forward.

In addition, participants highlighted that the implementation of risk reduction strategies typically requires action at various levels: political, scientific/technical and administrative. All need to be taken into

account when considering implementation. With regard to the strategy, the adoption of a step-by-step approach, in which increasingly stringent measures are implemented if previous, less stringent measures prove not to be sufficient, can be one way forward. If practicable, the implementation of pilot studies prior to a broad based implementation programme could also be considered.

## 4.5 Obtaining Commitment and Taking Action (Step 5)

### *Introduction*

Briefings for decision-makers are suggested to explain context, goals and implications of the strategy.

The objective of this step is to submit the proposed risk reduction strategy to decision-makers in relevant sectors and take steps to ensure its adoption and effective implementation. To ensure adoption and implementation of the strategy, it is suggested that briefings are made for decision-makers to explain the context, goals, and implications of the strategy; to circulate the proposed risk reduction strategy to all relevant parties and seek ways to focus attention on the issue (e.g. through the news media); and to identify linkages between the proposed strategy and governmental policy/budget priorities in order to increase the likelihood of obtaining the necessary resources and support.

### *The Role of the Decision-Maker/Decision-Making Body*

The role of the decision-makers (typically high level government officials, parliament, etc.) is not only to decide whether the strategy will be implemented, but also to provide the authority and budget needed when a decision is made.

While the relevant decision-makers at this stage in the process are likely to be government policy-makers, this may not always be the case. In addition, there may often be more than one or several decision-makers, given that there may be a whole range of actors.

Absence of adequate legislation/policies for chemicals management can pose a challenge.

In some cases, the decision-makers might not appreciate the relevance and importance of the issues at hand and thus may not pay attention to, or act upon, the proposed risk reduction strategy. Efforts to educate and raise the awareness of decision-makers therefore may often be needed.

The absence of adequate legislation/policies for chemicals management can pose a challenge at this stage. In some countries where the legal framework has not been fully developed, it may not be clear who the relevant decision-maker(s) are. There may not be anyone or any organization that has been given the legal mandate needed to act upon the proposed strategy.

There should be some body/entity that is responsible for preparing and submitting the risk reduction strategies and for initiating and following up on the actions needed once a decision has been made to implement the strategy.

### ***Implementing the Risk Reduction Strategy***

Acquiring the commitment of decision-makers and other actors that will be involved in the implementation of the strategy can be a particular challenge/bottleneck at this stage. Efforts will be needed to raise awareness and convince decision-makers to support the implementation of the strategy. Efforts to build commitment and support should start early on in the process. Circulating the strategy to decision-makers and other concerned parties, and making use of the media, are some possible means for raising awareness of the strategy and the need for risk reduction. Such measures can help to focus the attention of the decision-makers on the need to act.

**When communicating with high-level policy-makers focus on a few key issues.**

Communication with various groups/individuals is important at all stages of the risk management decision-making process. Communicating to policy-makers is of particular relevance at this stage. Communication should take place on an ongoing basis and should not be considered a one-time task. Following are some important considerations in establishing how to communicate more effectively: (1) be prepared: make sure you have all of the information/facts you will need (e.g. information on the issue/problem, who are the relevant groups, values and perspectives of stakeholders); (2) keeping in mind what outcomes you would like to achieve, decide what key messages/points you need to convey; (3) determine what will be the most effective means of communicating (e.g. channels of communication, timing); and (4) evaluate the effectiveness of the communication.

When communicating with high level policy-makers, it is important to focus the message on a few key issues/points, in particular those issues that are likely to be of political significance. A brief executive summary, highlighting such key issues, will be more effective than a lengthy and detailed document. The proposed strategy and related background information should be presented in a manner that will capture the interest of the decision-makers and convince them of the need to act. It is also important to be clear on what the implications of the strategy will be (e.g. costs), but at the same time to explain why such costs are justifiable.

Other noteworthy issues concerning the implementation of risk

reduction strategies include:

- The risk reduction strategy, and the manner in which it is presented to decision-makers, should make it clear what the goals/objectives of the strategy are, as well as how its effectiveness will be measured/demonstrated.
- Timing can be important: for example, risk reduction actions are likely to receive heightened attention from decision-makers (and other stakeholders) immediately following an accident involving chemicals.
- Acquiring the budget needed to implement the strategy can be a particular challenge. Understanding the government's budgetary priorities and making a link between those issues and the proposed strategy can increase the chances that the strategy will be funded.

## 4.6 Evaluating Results (Step 6)

### *Introduction*

The objective of this step is to evaluate periodically, through the use of simple indicators and/or monitoring, the success of the risk reduction strategy and its effectiveness. It is suggested that use be made of the indicators and/or monitoring arrangements included in the risk reduction strategy document (Step 4) to assess effectiveness/impact; to compare the results of the evaluation against the risk reduction goals; to determine to what extent the strategy has led to the desired results and whether the strategy needs to be revisited/refined, and to communicate the results of the evaluation to decision-makers and other stakeholders.

### *The Value in Evaluating*

Risk management decision-making is a cyclical, not linear, process. Evaluation and monitoring programmes assess the degree to which objectives have been achieved; they can also serve to determine gaps in the understanding of underlying problems. Evaluation provides an important feedback loop between policy goals and the risk management instruments used to achieve them.

Evaluation provides an important feedback loop.

The risk reduction objectives, as identified in step 2, and identified in the risk reduction strategy (step 4) should serve as the basis for the evaluation. The evaluation should measure/assess to what extent (1) objectives have been reached, and (2) the chosen strategy has been successful. Thus, it is important during the goal/objective setting stage,

as well as during strategy development stage, to decide what means (e.g. indicators, monitoring) will be used for evaluation. The objectives should also include target dates/timeframes.

### ***Important Elements to a Successful Evaluation Programme***

Elaborate, data- and resource-intensive monitoring scheme unnecessary.

A general discussion of monitoring should be included in the introductory section of the guidance document. In the context of this step (evaluation), it is not expected that elaborate monitoring schemes will be developed. However, there may be linkages to be made with existing environmental and other types of monitoring schemes, from which relevant information/data could be obtained for use in establishing the baseline and/or evaluating the results of the risk reduction strategy.

It is not necessary to have an elaborate, data, and resource intensive monitoring scheme; simple means can be used (e.g. number of training events conducted, percentage of chemicals shipped with MSDSs). What is important is to have a clear and solid plan in place for monitoring. Insufficient data management capacities can pose a particular challenge at this stage.

Baseline data/information is essential for evaluating the impact(s) of a risk reduction strategy. If there is no clear understanding of the initial situation, it will be difficult to determine whether there has been any improvement.

Stakeholders should be involved in the evaluation/monitoring process. It is important that all stakeholders have confidence in the indicators to be used, otherwise the results of the evaluation may not be accepted/trusted. Certain stakeholder groups (e.g. industries, labour, NGOs) may have an active role in monitoring schemes.

### ***Means of Evaluating the Results***

Indicators are cost effective means for evaluation.

There are various means for evaluating the results of the risk reduction strategy, including monitoring schemes as well as indicators (e.g. environmental and health indicators, management indicators, pressure vs. state indicators). They vary in terms of resources, infrastructure and information/data demands. Consideration should be given to the level of resources available before selecting/designing the means to be used.

As part of an overall evaluation scheme, indicators serve as proxies or summaries of more sophisticated information and thus can be relatively simple and cost effective means for evaluation. For example, readily

available data (e.g. number of licenses issued) can be use to assess/indicate the degree of compliance with a new licensing requirement. Some other examples of indicators which can be used to evaluate policy objectives may include:

- management capacities and capabilities (e.g. institutional, technical infrastructure);
- the strength of the relationships between governmental decision-makers and other stakeholders; and
- levels of awareness.

## 5. Future Capacity Building Projects for Risk Management Decision-Making

UNITAR and IPCS encouraged to develop and initiate further projects.

During the final part of the workshop, a discussion took place and many ideas were generated to ensure continuity of the training and capacity building programme beyond the pilot phase. Key to the future success of the programme will be the “marketing” of the successful approach tested through the pilot projects, developing a revised guidance document, and the mobilization of additional resources in order to allow other countries to benefit from the experience gained through the pilot projects. Also, further work should be undertaken to adapt the available software (i.e. EUSES and USES) to the situation in developing countries and to link the programme to the implementation of various international agreements requiring risk management decisions for priority chemicals. UNITAR and IPCS were encouraged to initiate steps to define future projects and seek funding from various donor agencies.

Specific suggestions and recommendations by participants with regard to the design of future country-based projects included the following:

- The timeframe of country-based projects should be expanded (e.g. to one year) and the resources made available should be increased in order to allow countries to obtain a more thorough appreciation of needs and implications of such a decision-making process;
- For countries which will initiate projects in the future, government commitment and support for the activity should be secured before embarking on specific project activities;
- Means should be explored to allow for a broader involvement of stakeholders in the process as well as the strengthening of respective capacities. The further involvement of customs departments, NGOs, and monitoring and enforcement personnel was specifically mentioned;
- Training is needed at various levels and should be incorporated in country-based projects. This should include, inter alia, training on risk assessment, training of government officials at various levels on risk management decision-making; and training on the safe use of chemicals among end-users. In addition, the strengthening of chemical import-related data collection capacities of customs departments was highlighted as a key area for capacity building, with specific relevance to the implementation of the Rotterdam Convention;



Strengthening of regional co-operation recommended.

- More time and resources should be allocated for conducting field studies and to assess exposure scenarios. This would allow for a more precise identification of the actual problem as well as appropriate solutions. In defining the problem and identifying solutions, due consideration should be given to gender issues; and
- The need to strengthen regional co-operation and facilitate an exchange of experiences among countries. In this context, the organization of regional workshops as a follow-up to the pilot studies was recommended, during which country experiences and the proposed decision-making process should be shared. It was also recommended to make use of resource persons from the pilot countries in future country-based activities.

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## **Annex A: Workshop Agenda**

**Monday, 4 October 1999**

- 9:00**            **Opening Remarks and Introduction to Workshop Objectives and Methodology**
- 9:30**            **Introductory Presentation** on the UNITAR/IPCS Pilot Project to Strengthen National Capacities for Risk Management Decision Making for Priority Chemicals
- Erica Phipps, UNITAR Special Fellow & Project Manager  
Kersten Gutschmidt, Technical Officer, IPCS
- 10:15            - Coffee Break -
- 10:30**            **Session 1: Experiences Gained through the Pilot Case Studies**
- Presentations by Pilot Country Representatives**
- Representatives of the four countries will be invited to present the main achievements, challenges and experiences gained in working through the risk assessment/risk reduction strategy development process, and to share their ideas and feedback on the suggested methodology.
- Speakers:**
- Mr. Dudley Achu Sama, Ministry of Environment and Forestry, Cameroon  
Ing. Julio Monreal Urrutia, Ministry of Health, Chile  
Ms. Fatoumata Jallow Ndoeye, National Environment, The Gambia  
Dr. Ernest Mashimba, Chief Government Chemist, Tanzania
- 12:30            - Lunch Break -
- 14:00**            **Session 1 (cont.): Experiences Gained through the Pilot Case Studies**
- Presentations by External Resource Persons***
- Two external resource persons visited each pilot country during the period of April - June 1999 to assist the country-based task forces and technical support teams in working through the pilot case studies. In many cases, informal interaction between the countries and the resource persons has continued well after the country visits. During this session, some resource persons will share their insights and perspectives based on their work with the pilot countries.
- Speakers:**

Prof. Dr. Hans A.M. de Kruijf, Utrecht University, The Netherlands  
Dr. José L. Tadeo, Ministerio de Agricultura, Pesca y Alimentación, Spain  
Dr. Ir. Martine C. Lans, College voor de Toelating van Bestrijdingsmiddelen  
(Pesticides Authorization Board), The Netherlands  
Prof. Peter J. Peterson, UNITAR Senior Special Fellow

**15:00      Session 2: Statements of Other Participants**

Session 2 will be an opportunity for participants from international organizations, non-governmental groups, countries, and the academic sector to share their perspectives and experiences in the area of risk management decision-making through brief, informal presentations.

15:45      - Coffee Break -

**16:00      Session 3: Review of Key Stages of the Risk Management Decision-Making Framework**

During Session 3, discussions will focus on the key stages of the risk reduction process outlined in the revised draft guidance document (see Annex) through a combination of plenary discussions and working groups. (Copies of the revised draft guidance document will be made available to participants prior to the meeting.) For each of the stages, a brief introduction will be provided highlighting key issues and questions which merit further discussion. Participants will also be invited to provide their feedback on the relevant sections of the revised draft guidance document.

**→ Assessing Potential Risks under Local Conditions of Use (Step 1)**

**Introductory remarks**

**Background presentation:**

Introduction to and Perspectives on the Use the Computer-Based Tool EUSES in the Context of Risk Management Decision-Making for Chemicals in Developing Countries<sup>1</sup>, Prof. Dr. C.J. van Leeuwen, RIVM, The Netherlands

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<sup>1</sup>Please see discussion paper on pp. 7-18 in Part 4 of the materials distributed in advance of the workshop.

**Possible discussion items/questions:**

- What is the potential value of using computerized risk assessment models such as EUSES in developing countries? For what purposes would (or would not) such tools be useful/appropriate?
- The information/data needed for risk assessment is often not fully available in developing countries. What steps can countries take to overcome this challenge?
- Is conducting a risk assessment always necessary prior to the development of a risk reduction strategy, particularly for developing countries with very limited resources and capacities? What alternative approaches or “short cuts” might be used, and in what cases?

**Tuesday, 5 October 1999**

**09:00**      **Session 3 (cont.)**

→ **Setting Risk Reduction Goals (Step 2)**

**Introductory remarks**

**Possible discussion items/questions:**

- How can the outcomes of the risk assessment be translated into well-targeted and practical risk reduction goals?
- What other factors/considerations, if any, might be taken into account when defining risk reduction goals?
- What guidance can be provided to assist countries in developing *measurable* goals?

10:30      - Coffee Break -

**10:45**      **Session 3 (cont.)**

→ **Identifying Risk Reduction Options (Step 3)**

**Introductory remarks**

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**Possible discussion items/questions:**

- Is the list of possible risk reduction measures provided in the revised draft guidance document considered useful? What improvements might be made?
- What sources of information might a country use to aid its search for potentially suitable options?

12:30 - Lunch Break -

**14:00 Session 3 (cont.)**

**→ Developing/Recommending the Most Appropriate Strategy (Step 4)**

**Introductory remarks**

**Background presentation:**

Introduction to Decision-Making Tools/Techniques of Potential Use for Risk Management Decision Making<sup>2</sup>, Veerle Heyvaert, UNITAR Special Fellow

**Possible discussion items/questions:**

- Information for evaluating and comparing various risk management options (e.g. economic data, information for assessing the potential societal impacts of various options, availability of viable alternatives, etc.) can be difficult to obtain, in particular in developing countries. How might countries overcome gaps or deficiencies in this type of information?
- Of the socio-economic analyses and decision-making tools/techniques typically used in risk management decision-making in countries with advanced chemicals management schemes, which are of potential interest/use to developing countries?
- Are the decision criteria suggested in the revised guidance document appropriate? What are some potential challenges of applying them in practice?

15:30 - Coffee Break -

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<sup>2</sup>Please see the transparencies used during the in-country training, included on pp. 113-145 in Part 1 of the materials distributed in advance of the workshop.

**15:45**      **Session 3 (cont.)**

**→ Making the Decision and Taking Action (Step 5)**

**Introductory remarks**

**Possible discussion items/questions:**

- What are some recommendations/suggestions on how to successfully move from the development of a proposed risk reduction strategy to the actual decision to implement?
- What are the main challenges/obstacles at this stage?

**→ Evaluating Results (Step 6)**

**Introductory remarks**

**Possible discussion items/questions:**

- Once a risk reduction strategy has been put into practice, what types of evaluation should be undertaken to see whether it is achieving the intended results?
- What guidance might be provided to countries to assist them in the use of indicators and/or monitoring to assess the effectiveness of a risk reduction strategy?
- What steps might countries take to ensure the availability of information needed for assessing the impacts of risk reduction strategies?

**Wednesday, 6 October 1999**

**09:00**      **Session 4: Developing a Sound National Framework for Risk Management Decision Making**

Session 4 will focus on issues related to the development of a national institutional framework for risk management decision-making for priority chemicals, within which a step-wise decision-making process such as that discussed during Session 3 could be systematically implemented. Some key issues to be discussed are outlined below.

**→ Identifying Priority Chemicals for Risk Reduction**

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**Introductory remarks****Possible discussion items/questions:**

- National decision-making for some chemicals may be triggered by international policy decisions (e.g. PIC chemicals), whereas other priority chemicals may emerge as a result of national/local concerns. Through what channels and based on what types of information are the latter category typically brought to the attention of decision-makers?
- How might a country go about systematically identifying and prioritizing chemicals for risk management decision-making?
- Could a computer-based risk assessment model (e.g. EUSES) be used as a practical screening tool for identifying priority substances for risk reduction in developing countries?

10:30 - Coffee Break -

**10:45 Session 4 (cont.)****→ Organizing the National Decision Making Process****Introductory remarks****Possible discussion items/questions:**

- Assuming that there are numerous ministries, national focal points and committees involved in aspects of chemicals management, how might a country go about organizing a risk management decision-making framework that complements and makes effective use of existing roles and structures?
- How can countries best organize themselves to ensure good linkages between the technical and policy-related aspects of risk management decision-making? Is the formation of a policy-oriented "task force" and a scientific/technically-oriented "technical support team", as suggested in the pilot project methodology, a useful approach? What other formulas might be suggested?
- How can transparency in the risk management decision-making process be ensured?
- Should the risk management decision-making process and framework be formalized and if so, how might this be done?

## → Involvement of Interested and Concerned Parties

### *Introductory remarks*

#### *Possible discussion items/questions:*

- What should be the involvement of parties outside of government in risk management decision-making? What are important considerations in this regard?
- What means/mechanisms might be used to obtain input from non-governmental stakeholders and/or otherwise facilitate their involvement in the process?
- What expertise and capacities of non-governmental actors (e.g. industry, public interest groups, academia) could be effectively tapped to support government efforts to carry out risk assessment, risk reduction strategy development and/or implementation?

12:30 - Lunch Break -

### **13:30 Session 5: Capacity Building for Risk Management Decision Making**

There have been numerous calls for increased capacity building for chemical risk management, as developing countries are increasingly faced with the need to make risk management decisions for chemicals/pesticides that are the focus of international attention (e.g. PIC chemicals, POPs) as well as for substances of priority concern at the national or local level. This session will be an opportunity for participants to discuss possible ways in which ongoing/future capacity building programmes can be designed or improved in order to better meet countries' needs.

#### *Possible discussion items/questions:*

- Taking into account the approach tested through the pilot projects, what should be the design of future country-based capacity building projects on risk management decision-making? What are some specific suggestions for improvement?
- In what specific areas/competencies of relevance to risk management decision-making (e.g. risk assessment/evaluation, socio-economic analysis, strategy formulation, risk communication, liaison with stakeholders, etc.) is there a particular need for human resource development and skills-building in developing countries?



- What opportunities exist at the country level for linking the implementation of relevant international conventions with a country's efforts to strengthen national capacities for risk management decision-making? How might international organizations best assist countries in this regard?

**15:00      Session 6: Review of Draft Workshop Recommendations and Conclusions**

During Session 6, draft recommendations and conclusions will be tabled for review and potential endorsement by participants. This draft paper, as revised by participants during this session, will serve as a key input into the full workshop report to be prepared by the secretariat. A draft of the workshop report will be circulated for review to all participants before being made widely available.

The workshop is expected to end no later than 4:30 pm.

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