THE ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD)

The OECD is a forum where Members come together to discuss critical issues, opportunities and policy options and to arrive at harmonised approaches through consensus. Established in 1960, it is the successor to the Organisation for European Economic Co-operation, created in 1948 to help with the revitalisation of war-torn economies of Western Europe. Since its origin, the OECD has promoted democratic, pluralistic institutions and market-oriented policies which aim:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral non-discriminatory basis in accordance with international obligations.

Current Member countries of the OECD are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities participates in OECD work.

THE DEVELOPMENT ASSISTANCE COMMITTEE (DAC)

The Development Assistance Committee (DAC) is a specialised committee of the OECD, whose Members have agreed to secure the expansion of the total volume of resources made available to developing countries and to improve aid effectiveness. Created in 1960, the Committee undertakes periodic peer reviews that critically analyse aid programmes. Members also consult on broader aspects of development policy encompassing a range of economic, financial, trade, environmental and structural issues.

The DAC is the principal international forum where bilateral donors adjust the pattern of their aid in light of changing priorities and new perspectives on the development process. In 1989 the DAC created a Working Party on environment to strengthen the contribution of aid policies and programmes to sustainable development.

As of 1992, the Members of the Development Assistance Committee are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, the United States and the Commission of the European Communities.

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DAC GUIDELINES ON AID AND ENVIRONMENT

The OECD Development Assistance Committee (DAC) seeks to improve and co-ordinate Member policies which will integrate development and environment imperatives. Through its Working Party, the DAC is preparing a series of Guidelines and Recommendations on Aid and Environment. These Guidelines are designed to help policy-makers as well as practitioners in donor agencies and developing countries prepare strategies to address serious national, regional and international environmental concerns.

In December 1991, OECD Ministers of Environment and Development Co-operation endorsed the first set of guidelines produced by the DAC Working Party on Development Assistance and Environment:

1. *Good Practices for Environmental Impact Assessment of Development Projects*;
2. *Good Practices for Country Environmental Surveys and Strategies*;
3. *Guidelines for Aid Agencies on Involuntary Displacement and Resettlement in Development Projects*; and
4. *Guidelines for Aid Agencies on Global Environment Problems*.

This concensus of OECD Member countries shows strong donor support for the efforts of developing countries to manage and protect the environment and to minimise adverse environmental effects of economic development.

The fifth in the series *Guidelines for Aid Agencies on Chemicals Management* proposes priority areas for development co-operation concerning hazardous chemicals. They apply to all types of chemicals and their products throughout their life cycle — from manufacture or import through handling, use and disposal. Chemicals are indispensable in a wide range of industrial, agricultural and service activities, and their use tends to increase with economic development. While the hazards of chemicals are the same everywhere, the risks in their production and use are often higher in developing countries. The basic concerns are laid out in a clear, succinct format for non-specialists with recommended priority actions for donors.

The Guidelines are only one aspect of the DAC activities which bear on sustainable development. Current work includes development assistance for pesticides and integrated pest management; natural disaster reduction; wetlands; global and regional marine pollution; capacity development in the field of environment; technology transfer and co-operation; trade/environment and development; and environmental economics.

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Acronyms

APELL	Awareness and Preparedness for Emergencies at Local Level
CEC	Commission of the European Communities
CIS	Centre international d'information de sécurité et d'hygiène du travail/ International Occupational Safety and Health Information Centre
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organization of the United Nations
GTZ	Gesellschaft fur Technische Zusammenarbeit (German Agency for Technical Co-operation)
ICCA	International Council of Chemical Associations
IARC	International Agency for Research on Cancer
IEO	Industry and Environment Office of the United Nations Environment Programme
ILO	International Labour Organisation
IPCS	International Programme on Chemical Safety
IRPTC	International Register of Potentially Toxic Chemicals
NGO	Non-governmental organisation
NRPTC	National Register of Potentially Toxic Chemicals
PIC	Prior Informed Consent
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
UNITAR	United Nations Institute for Training and Research
WHO	World Health Organization

GUIDELINES ON CHEMICALS MANAGEMENT

Introduction

An essential element in a strategy of sustainable development is the protection of health and the environment from adverse effects. As economies in developing countries diversify and grow, chemicals can be expected to be used in increasing quantities. Chemicals should be produced, used and disposed of in ways that minimise adverse impacts on humans and the environment. However, developing countries in particular, often lack the appropriate legal and institutional frameworks, trained personnel, and the technical and financial resources needed to do this. These Guidelines address the role that OECD Development Assistance Committee (DAC) Members can play in improving chemical safety in aid-recipient countries.

The Guidelines apply to all types of chemicals or their products throughout their life cycle — from manufacture or import through handling, use, and disposal. Chemical exposures of not only workers but also the public and the environment are of concern.

Separate Guidelines[1] have been prepared for DAC Members on two categories of chemicals: pesticides and hazardous wastes. While the general guidance on the management of chemicals given here applies also to pesticides and hazardous wastes, the unique aspects of their management and the potential magnitude of their impacts warrant special consideration.

The Guidelines draw upon the documentation and recommendations from numerous international workshops and meetings held over the past five years. Of particular relevance is an OECD workshop held in September 1991 on importing hazardous chemicals[2]. This workshop specifically focused on bilateral aid activities concerning hazardous chemicals and reached consensus on a series of recommendations for future priority areas of development co-operation. In this regard, the following actions could be considered by bilateral donors, alone, or in conjunction with other donors:

- collaboration with developing countries to assess their assistance needs based on the nature and extent of their production and use of chemicals;
- support for the development of legal, regulatory and administrative infrastructures;
- assistance with training and education programmes;

- provision of technical specialists in chemicals management and appropriate sub-disciplines;
- provision of equipment and supplies such as computers, communications equipment, laboratory and emergency medical equipment and facilities;
- assistance in developing appropriate mechanisms for obtaining health and safety information from international organisations, industry and non-governmental organisations (NGOs);
- assistance to implement Prior Informed Consent (PIC)[3] procedures to control the import of hazardous chemicals;
- examination of aid projects for their potential to directly or indirectly increase exposure to chemicals;
- avoidance of support for projects involving the transfer of hazardous technologies unless the technology is accompanied by related safety technology and expertise and if safe operating conditions can be achieved and maintained; and
- assistance in establishing accident prevention, preparedness and response programmes and with chemical emergencies should they occur.

Nature and Extent of the Problem

Chemicals are indispensable in a wide range of industrial, agricultural and service activities. Generally speaking, the production and use of chemicals tend to increase with economic development. The growth of demand for more sophisticated types of consumer and industrial products generates a large market for chemicals, increasing amounts of which can be produced locally as industrial know-how develops and local demand increases (see Box 1).

While the intrinsic hazards of chemicals are the same everywhere, for a number of reasons the risks in their production and use are often higher in developing countries. First, in developing countries there is less knowledge and understanding of chemical risk factors. This partly reflects a lower level of education than in OECD countries, but it is also due to more limited availability of the means of mass communication such as newspapers, television etc. The problem is compounded by information about chemicals — especially imported chemicals — not being available in local languages. There is also a chronic shortage of trained personnel to manage the risks in the workplace and to explain the necessity for the codes of good practice to be respected. In developing countries populations may be more susceptible to toxins due to poor diets or health. Also, children who frequently form part of the work force and women are often at greater risk.

BOX 1. Chemicals and Development

Studies carried out by the United Nations Industrial Development Organization (UNIDO) indicate a rapid growth of chemicals industries in parts of the developing world in recent years. Particularly in lower-technology production involving basic industrial chemicals, artificial fibres, bulk plastics and fertilizers, synthetic rubber, etc., many countries have built up significant production capability. These countries include Brazil, China, India, Malaysia, Mexico, Pakistan, the Republic of Korea, Singapore, Taiwan and Thailand. According to one forecast of capacity quoted by UNIDO, close to half the new capacity in the industry is being added in countries outside Europe, the United States and Japan, principally in developing countries. The types of chemicals involved are mostly low in value per ton and their transportation is expensive. Production close to the market is thus favoured and if user industries in the developing countries continue to show strong growth, greater production in the developing countries will follow. In addition, the UNIDO study points towards possibly significant effects from a relocation of certain types of chemicals production from developed to developing country locations. This relocation appears to be in part to avoid the very costly environmental codes that a number of the more advanced countries have, and will impose, but also because such plants are often intrinsically ugly and increasingly unpopular among local communities in these countries. However, concerns about chemical hazards are also increasing in some of the most advanced of the developing countries, such as the Republic of Korea, Taiwan and Thailand — countries that are among the group of more important chemicals producers.

Sources: United Nations Industrial Development Organization, *Industry and Development, Global Reports* 1990/1991 and 1991/1992, Vienna, Austria.

Safety standards in the chemical workplace may be violated not only through ignorance, but because a lack of will or resources precludes purchasing the ancillary equipment, protective clothing, etc., that is required. This is part of a much wider problem in adapting and using equipment and processes that minimise chemical risks even though such equipment and technology may be widely available and in general use in wealthier countries. Although these conditions are present in large as well as small enterprises, many of the problems — a lack of understanding of chemicals management and the risks, a scarcity of trained personnel and the use of outmoded and unsafe technologies — come together and reinforce each other in small businesses (see Box 2).

BOX 2. Chemicals, Miners and Gold

In many developing countries there are large groups of "informally" organised miners working as individuals or in co-operatives, extracting metals such as gold, tin and copper from alluvial deposits. Gold tends to be attractive on account of its high value. In most cases, artisanal gold mining is practised in remote areas far from the main population centres in a semi-clandestine and largely unregulated way.

In artisanal mining, gold is generally recovered from the crushed ore by amalgamating it with mercury. The gold is obtained from the amalgam by heating which vaporises off mercury leaving gold as a residual. This gold processing is often carried out in the villages, sometimes at ground level with the mercury vapours being carried by a chimney directly to the living quarters on the first floor. Water is also used in the extraction process which can result in mercury-contaminated waste water entering rivers, lakes, etc. Serious health effects (e.g. neurological disorders) have been associated with exposure to mercury: from the vapour in occupational settings, but more significantly from an organic form of mercury (methylmercury) which accumulates in the food chain and results in exposures through the diet (fish and fish products in particular).

In the Philippines, attention was drawn to the potential health problems associated with the use of mercury in gold extraction during an investigation of a catastrophic landslide in a gold-mining area of Mindanao, and a study was initiated in 1988/1989 by the University of the Philippines supported by German aid (GTZ). Water, ground and air pollution, and occupational hazards were investigated as well as health effects in the local community. The study showed that not only workers involved in the gold processing but also their families, particularly children, exhibited significant symptoms of mercury poisoning. The communication of these findings to the affected families by the research team and the local health authorities created awareness in the local community of the potential hazards from this activity. It also generated intense discussion at the political level, including the President, with the result that environmental surveillance was started and help was provided to the miners. Although the situation is still being studied, by 1991, when a study to investigate the long-term effects of mercury poisoning on children was started, significant changes in gold processing, and thereby exposure to mercury, had occurred: the individual use of mercury was greatly reduced and many miners had joined co-operatives which could use safer methods for gold-processing.

Sources: Federal Ministry for Economic Co-operation, Bonn, personal communication, 1992; Torres, E., *in Proceedings of the Primary Environmental Care Workshop*, Sienna, Italy, January 1990, edited by Grazia Borrini; World Health Organization (WHO), Geneva, Switzerland, International Programme on Chemical Safety, *Monographs No. 101, (Methylmercury)*, 1990, and *Monograph No. 118 (Inorganic Mercury)*, 1991.

The increasingly serious problem of chemicals management in most developing countries is often compounded by deficiencies in the regulatory infrastructure, inadequate disposal and lack of recyling. While the chemicals management programmes of the industrialised countries also suffer from deficiencies in these areas, they are much more severe in developing countries. With respect to regulatory infrastructure the number of trained officers available to the regulatory agency is usually grossly inadequate so that inspection of facilities is unsystematic and, for smaller enterprises, practically non-existent. The penalties for non-compliance may also be too low and legal remedies are hampered by slow-moving due process. The failure to regulate is also reflected in the inappropriate location of hazardous installations close to centres of major population or inappropriate settlements near existing installations. The release of methyl isocyanate in Bhopal and its tragic consequences illustrate this point. In that incident it is easily seen how the presence of a crowded residential community next to the hazardous installation and lack of information and insufficient emergency preparedness and response capability, tragically multiplied the adverse effects of the accident.

It is difficult to obtain data on the extent to which human health and the environment are being adversely affected by chemicals in developing countries. Reports of acute poisonings in workplaces and as the result of accidental releases, while numerous, are believed to represent only a small fraction of the total number of cases. Chronic health effects and environmental damage are even harder to measure and assess. The same factors — a shortage of trained experts, insufficient and inadequate laboratory and monitoring equipment, insufficient funding, etc. — which limit the ability of developing countries to address chemicals problems also make it impossible to measure their extent. Moreover, because the manufacture or use of chemicals is, in many developing countries, relatively recent, long-term impacts are still to be experienced.

The September 1991 OECD workshop provided an opportunity for developing country representatives to meet with representatives of OECD aid and regulatory agencies to explore the nature and extent of the chemicals problems facing developing countries. At this workshop and in numerous other international meetings, representatives of developing countries emphasized that outside help would be needed to effect improvements in the management of chemicals. The following are some common difficulties experienced by developing countries in managing chemicals:

- inadequate capabilities to assess the potential toxicity of chemicals;
- lack of facilities to control the nature and purity of imported or domestically produced chemicals;
- extensive use of chemicals by inadequately informed or trained operatives in small-scale enterprises, and similar problems of exposure arising in domestic households;
- a general lack of understanding of the health and environmental problems associated with toxic chemicals, chemical processes and usage of chemicals at all levels of society;

- shortcomings of scientific, technical and managerial knowledge concerning the technology transfer, storage, transportation, use or disposal of chemicals, and lack of resources to establish properly co-ordinated infrastructures, controls and safety procedures;
- basic deficiencies in governmental administrative or scientific structures to properly advise on the control and use of chemicals coupled with inadequate internationally harmonized labelling of chemicals and user information;
- a general absence of regulations concerning chemicals;
- where regulations do exist, a lack of enforcement and/or incentives to comply (e.g. refund systems);
- lack of training institutions, local shortage of trained personnel and a lack of research directed specifically to national or local problems; and
- deficiencies in the knowledge of less hazardous technologies (e.g. new tanning technologies);
- shortage of the resources and deficiencies in the knowledge required to substitute persistent or toxic chemicals by safe but effective alternatives.

The Role of Bilateral Aid in Chemicals Management

As a consequence of being major producers and exporters of chemicals and having long-term experience in the area, OECD Member countries recognise their responsibility to assist developing countries in chemicals management. A commitment to take action has been made in various fora, including the Meeting of OECD Ministers of Environment and of Development, December 1991. Similarly, the London Guidelines[4] specify, that "states with more advanced chemical regulatory programmes should provide technical assistance to other countries in developing infrastructure and capacity to manage chemicals within their countries, including implementation of the provisions of these Guidelines". The London Guidelines further state that "to the extent possible, donor countries and institutions and recipient countries should inform IRPTC (International Register of Potentially Toxic Chemicals) of all such technical assistance activities".

At the international level there are significant ongoing activities to help developing countries increase their capacity to manage chemicals. These activities, which are further discussed in Annex 1, however, do not preclude the need for assistance by bilateral agencies. For example, such assistance is often critical for developing countries to effectively apply international agreements and help is often needed to adapt general guidance or information to the specific situation in their countries.

While OECD aid agencies are giving increased emphasis to environmental concerns in their aid programmes, projects specifically related to chemicals management have been confined primarily to pesticides. Funding activities have

included training and information, assistance for the selection of least toxic alternatives, and safe storage and labelling. Funds have also sometimes been allocated to support the participation of developing country representatives in international meetings.

In addition to the need for more assistance specifically directed to the management of industrial and consumer chemicals, there is need for better design of assistance projects. Based on experience exchanged between donors and recipients at workshops, some aid projects have had too short a time frame, with little or no monitoring or follow-up activities. In some cases a lack of co-ordination in recipient countries has resulted in duplicative projects. A common complaint is that the assistance projects are often not sufficiently geared to the specific context of the recipient country. Projects have also sometimes failed because the recipient government is only halfhearted in its commitment to them.

Guidelines for Aid Agencies

These Guidelines are intended to provide a common frame of reference for OECD donors on ways to strengthen the contribution of development assistance to the protection of health and the environment from adverse effects of the production, transport, use, storage and disposal of chemicals in developing countries. The Guidelines

- present general considerations relating to the operating procedures of aid agencies and addresses how assistance related to chemicals management can effectively be brought into aid programmes and project selection procedures, including the policy dialogue with developing countries;
- describe the types and design of projects most likely to increase the capability of recipient countries to manage chemicals, and which, depending on the needs of individual recipient countries, could be supported by aid agencies;
- deal with the assessment procedures needed for all project proposals by aid agencies to ensure that they are screened for potential adverse effects from chemicals, taking a life-cycle, multi-media approach to the assessment.

Supporting chemicals management programmes

Chemicals management projects should be selected in close consultation with authorities in recipient countries. Such policy dialogue would permit projects to be identified in the light of the priority needs of the recipient country and should reflect carefully worked out agreements with the responsible authorities of the country in question on the activities to be supported. Frequently this will involve systematic assessment of problems and possible approaches, including an

understanding of the strengths, weaknesses and special features of current efforts at chemicals management.

The aid contribution is also likely to be most effective when there is a close match between the types of priority problem to be addressed and the experience and expertise available to the donor. The latter might include special experience and expertise in handling the problems associated with particular types of chemical industry, different methods of regulation, innovative and low-cost monitoring technologies, training systems, accident prevention and emergency procedures, etc.

Aid agencies should keep under review chemicals management issues, particularly when priorities are set for environmental programmes. Within the scope of what is a potentially wide variety of chemicals management activities and technologies suited for donor support, there are opportunities for both large and small programmes. Regardless of the scale and focus of the assistance programme, wherever the use or handling of chemicals is directly involved, agencies should ensure that adequate funds are allocated for the application of appropriate modern technologies and safety-related measures including training, monitoring and follow-up.

As part of the decision to assist, aid agencies should ensure that expertise is available to help develop and assist in the implementation of the projects and programmes. Since much of the expertise needed by developing countries is employed by industry, donors should consider ways in which it might be made available through an assistance programme co-ordinated with industry. Expertise and other assistance might also be obtained from NGOs. It needs to be kept in mind, as an essential feature of effective chemicals management, that industry itself remains primarily responsible for the testing of chemicals and for taking the necessary measures for the safe manufacturing, transport, import, use, handling, storage and disposal of chemicals.

Staff of the aid agency responsible for developing and preparing project proposals should be made aware of the chemical-related implications of these proposals. Donors contemplating activities related to chemicals management may be advised to operate primarily in conjunction with other donors and international agencies through cofinancing and similar arrangements.

More generally, aid agency staff should be alert to opportunities that take advantage of, and build upon, the work being done or supported by international organisations. In this regard, staff should be aware of international agreements and programmes on chemicals management and seek opportunities to support and further their development including the implementation within their own country of international schemes such as the Information Exchange and PIC procedures of the London Guidelines.

Regardless of the particular type of support, donors should make best efforts to ensure that their activities are well co-ordinated and mutually supportive. Co-ordination is needed at three levels:

— Internationally, among aid agencies of different countries and other donors. It might be appropriate for an international organisation to

take the lead in co-ordinating certain activities; for example, the United Nations Environment Programme (UNEP) or the Food and Agriculture Organization of the United Nations (FAO) could co-ordinate donor activities related to the implementation of the PIC procedures.

— In the donor country, co-ordination should be fostered among the various interested agencies and organisations including, as appropriate, the aid, environment, health, industry and agricultural agencies. As already noted, industry and NGOs should be involved in relevant activities.

— Within the recipient country, among various donors, the responsible governmental agencies and non-governmental parties (including industry and local communities) interested in specific projects. In order to facilitate involvement of local communities and other relevant parties, general access, at an early project stage, to information about planned projects and activities should be promoted to both men and women. While the principle that recipient governments are responsible for co-ordination efforts is stressed, in many cases special efforts by donors are also needed. At the project level, early attention to the roles and responsibilities of the various parties may be helpful in ensuring co-ordination later on.

Finally, aid agencies should promote opportunities for communication among officials in developing countries that share similar problems and that operate within similar institutional contexts. This can be done through existing regional organisations or using ad hoc arrangements, such as workshops and conferences. Regional co-operation is likely to be particularly valuable for countries with limited chemical production at present, or for groups of small countries (e.g. the South Pacific island nations).

Assisting developing countries to build capacity to manage chemicals

Aid programmes should be directed to assisting governments, producers and users in recipient countries to build self-sustaining capacity and a long-term capability to independently manage chemicals. Thus, aid agencies should assist developing countries to:

— determine the needs, nature and extent of the use of particular chemicals;

— provide training and educational facilities to both men and women;

— provide information and technical advice to both men and women on chemicals production, efficiency and safety;

— assess the risks associated with chemicals, including assessment of hazardous installations;

— develop and implement regulatory and non-regulatory approaches to control such risks, by preventing adverse effects wherever possible and taking corrective measures where necessary;

— support the economic policy, legal and administrative structure for chemicals management;

— establish a system of classification and labelling of chemicals;

— monitor and enforce control mechanisms; and

— establish adequate emergency preparedness and response programmes.

The following types of activity indicate those that are especially needed and suitable for development co-operation.

Assessment of recipient country needs

Assistance projects for chemicals management programmes should, to the extent possible, be based on a sound assessment of the country's needs, without, however, interfering with the free market system. Such an assessment should reflect a life-cycle approach to chemicals, covering manufacture, import, use, handling, transport, storage and disposal aspects. The assessment, disaggregated by gender where possible, should include: an inventory of chemicals imported and manufactured including quantities, use and disposal methods; an inventory of hazardous and potentially hazardous installations; an analysis of infrastructure and human resources, both in the relevant control agencies and other management authorities and with respect to standards of chemicals management within industry itself; review of pertinent parts of the administrative and legal framework; review of availability of relevant education and training, possible impacts arising from local culture, including attitudes toward chemical risks and understanding of such risks; and last, but not least, local resource availability to complement aid financing and technical support, including the capacity to sustain project initiatives once project financing is terminated.

In most cases the undertaking of an assessment of needs is a considerable task, calling for sizeable expenditures, including expenditures by the recipient country. Thus, it is particularly important that this activity should be pursued in a well co-ordinated fashion, with recognition that the results should be used by all donors, multilateral as well as bilateral, that are involved in the support of chemicals management programmes. Such studies can also serve as a basis for dialogue with country authorities about priorities and the extent of commitment to change and reform that are essential to the success of any project as well as to the sustainability of improved chemicals management practices.

Training and education

Training and education are especially critical in assuring the sustained capability of the country to manage chemicals. Programmes need to be developed and instituted for a wide range of groups, ranging from government officials (from

national to local levels) and their scientific, technical and administrative support staff, to various categories of people working with or potentially exposed to chemicals including men, women and children. These groups include farmers, business, industrial workers, and transporters/suppliers of chemicals. In addition, usually as part of an environmental education programme, the general public, including children, should be educated about the risks of chemicals.

Evidently, the subject matter of training programmes will vary with the target group. For example, highly technical training will be needed to establish a cadre of people who are capable of interpreting data on chemicals, assessing risks and developing and implementing risk management strategies. The length of training activities will vary too with the target group and purpose. Short courses are indicated for senior decision-makers given their positions and availability, but may also be useful for more technical training in a specialised area of chemicals management to alleviate a shortfall of experts in that area.

A primary emphasis of training assistance programmes should be to develop an institutional capability in developing countries to train, i.e. training of the trainers. It should also be recognised that many types of training need the active involvement of local industry and trade unions to be successful. NGOs also have an important role, notably in broad-based, community-oriented programmes which are among the most promising vehicles to increase the number and size of the constituencies that are actively involved in the safe use of chemicals. The training needs of women and children should be taken into consideration.

Support for the development of legal, regulatory and administrative infrastructures as well as for the use of economic instruments

Aid agencies should provide assistance to developing countries' policies, laws and regulations for the management of chemicals. Assistance may be needed in a wide variety of activities including the drafting of laws and regulations, formulating control policies, elaboration of economic instruments to induce the chemicals industry as well as users of chemicals to adopt more recent and environmentally sound technologies and products, and the setting-up of institutions for monitoring and control systems. In general, in designing projects related to this type of assistance, aid agencies should draw upon guidance prepared by international organisations such as UNEP, FAO, IPCS and OECD as well as concrete practices of other donors and agencies with more experience in controlling chemicals. The ILO, through its Conventions, Recommendations and Codes of Practice, provides guidance for the elaboration of legal, regulatory and administrative structures with regard to the management of chemicals, particularly in developing countries.

Advice is also needed on the administrative structures which should be in place for effective chemicals management. The structures should include mechanisms to improve co-ordination of policies among the relevant government departments (industry, energy, agriculture, health, environment, commerce, etc.) and with the private sector.

Technical advice

If called upon, aid agencies should also provide assistance requiring technical specialists. Such expertise may be needed, for example, to evaluate data from health and environment experiences, assess the risks and benefits of chemicals, or execute or supervise environmental impact assessments. Opportunities may arise for technical assistance for the development of schemes to encourage sound practice within industry, which will involve the use of personnel and industry representatives from the donor country. In this regard it is important that donors promote the transfer of "cleaner" technologies, especially by providing information on cleaner technologies to reduce the amount of hazardous chemicals used or the substitution of hazardous chemicals for less hazardous chemicals.

Provision of equipment and supplies

Most aid-supported activities in chemicals management are likely to involve equipment and supplies. Such requirements might include instructional materials, computers, communications equipment, laboratory and monitoring equipment, emergency medical equipment and facilities in the event of an accident or poisoning, and vehicles of various types. In providing equipment and supplies, donors should ensure that these materials are appropriate to the recipient country, that the necessary training and information are provided and that capacity is, or will be, available to maintain the equipment over the long term.

Access to information

A significant amount of information related to the potential impacts of chemicals on human health, safety and the environment is already available from international organisations (such as ILO's International Occupational Safety and Health Information Centre), national authorities, industry, and NGOs. Certain international programmes, for example, have mandates that are specifically directed to improving the assessment and management of chemicals such as UNEP's IRPTC (see Box 3 and also Annex 1).

Donors should assist in providing appropriate mechanisms for countries to obtain information on chemicals on a timely updated basis and, importantly, to integrate the national systems with networks co-ordinated or managed by international and regional organisations. In order to facilitate involvement of local communities and other relevant parties, general access to information — also at an early project stage — about planned projects and activities should be promoted to both men and women.

BOX 3. IRPTC's Query Response Service

The International Register of Potentially Toxic Chemicals (IRPTC) was set up by UNEP in 1976 to collect, validate and exchange information on hazardous chemicals. While IRPTC is designed primarily to aid national authorities responsible for protection of human health and the environment, its services, which are free of charge, are available to anyone. Use of its Query Response Service has steadily increased from 11 queries per year at the beginning, to 600 in 1991. More than half of these queries were from developing countries and approximately 70 per cent related to non-agrochemicals. Although the answer to many requests can be found in the IRPTC computerised database, outside experts and additional computerised bibliographic sources are often consulted by IRPTC staff to help solve problems as diverse as:

— assessing the potential impacts on human health and aquatic life of cyanide spilled into a river in Papua New Guinea, as well as identifying possible clean-up measures;

— determining whether any occupational exposure standards exist for a chemical which would be released into the atmosphere by a Swiss scientist in the course of his research;

— identifying potential disposal methods for deteriorating stocks of a hazardous chemical in Tonga.

Sources: United Nations Environment Programme, 1985, *International Register of Potentially Toxic Chemicals*, Geneva, Switzerland; personal communication, 1992, J.W. Huismans, IRPTC/UNEP.

Donor support should also be provided to develop the means to apply information to local conditions and, where necessary, to generate additional data concerning the risks from chemicals under particular circumstances in a country or region. In addition to certain health and safety data, such information could include use patterns of a chemical and the risk/benefit profile of possible substitutes. While research concerning individual chemicals is generally undertaken by industry, there may be a need for recipient countries to undertake general research to support its decision-making or monitoring activities. Aid agencies should consider assisting recipient countries to support or to develop sustainable means of continuing these research activities.

Emergency assistance on-site

Unlike the longer-term objectives of the support described above, the essential characteristic of this assistance is the need for a quick response in sending experts and equipment to help deal with specific chemical problems. Thus, the agencies supporting this type of activity need to develop appropriate rosters of personnel and to consult closely with industry when emergencies arise.

While not typically considered an emergency situation, the problems of safe storage and disposal of obsolete chemicals, particularly pesticides, are reaching alarming proportions in a significant number of developing countries. As a consequence a co-ordinated emergency assistance programme, with the participation of industry and government, is urgently needed to address this problem.

Chemical accident prevention, preparedness and response

With respect to assistance in the area of chemical accident prevention, preparedness and response, activities to prevent accidents should be a priority. Incentives for prevention could include price and taxation policies as well as liability insurance. However, there is also a need for assistance for awareness building and for the development of national and local emergency response programmes such as civil disaster prevention units and fire departments as well as programmes to reduce adverse effects of accidents. The latter can be done through, for example, appropriate siting of hazardous installations and the avoidance of housing development near such installations or policing the transport of hazardous chemicals. Special consideration should be given to supporting the many international activities taking place in this area, for example, the UNEP Awareness and Preparedness for Emergencies at Local Level (APELL) activity. These activities are described in Annex 1.

Implementation of the prior informed consent procedures

While the long-term objective should be to establish comprehensive chemical control schemes, the implementation of PIC procedures can be a valuable first step in this direction, in particular in countries where little or no regulatory infrastructure exists. Effective implementation of the PIC procedures does require many of the same mechanisms, skills and equipment as are needed for a more comprehensive approach to chemicals management but on a smaller scale. An example of what can occur in the absence of the type of information exchange inherent in the PIC procedures was provided by a developing country representative at the OECD workshop discussed previously. In this case a donor supplied a chemical which the recipient country had to return since it was banned in that country.

Donors should consider assisting developing countries in tasks related to the implementation of PIC. These include conducting a survey to determine the chemicals that are imported or manufactured in the country and to establish an infrastructure, including legal requirements, administrative procedures and trained staff for reviewing data and implementing as well as enforcing PIC decisions. Other possible areas for donor support involve the establishment of a co-ordinating mechanism to include all relevant parties, both within government and outside. Help is also needed to install effective communication systems for obtaining information and disseminating decisions. In addition, training for customs authorities and equipment to monitor imports and enforcement mechanisms

must be put into place. UNEP and FAO should be able to advise aid agencies as to where assistance could be most productively directed with respect to the implementation of PIC.

Assuring against contributing to chemicals problems in recipient countries

The following Guidelines concern development assistance generally and are directed to ensure that adequate environmental and technological assessments are made of every assisted project to determine whether projects could create increased risks of adverse effects on health or the environment as a direct or indirect consequence of increased exposure to chemicals. Where the assessment indicates that a significant risk of such adverse effects exists, action should be taken to prevent, reduce or control the risk by applying the most recent environmental-friendly technologies or else cancel the activity.

General considerations

Under international agreements, OECD countries are committed to avoid uncontrolled exports of banned or severely restricted chemicals. Therefore, to the extent possible, aid for the procurement or use of such chemicals should be halted.

Aid agencies should not support the transfer of hazardous technologies even in those cases in which the technology is accompanied by related safety technology and know-how, if it is doubtful that safe operating conditions can be achieved and maintained in the recipient country.

Examination of programmes and projects for potential chemical problems

Donors agree to assess potential risks to human health or the environment from development assistance activities that directly or indirectly increase exposure to chemicals. In programmes involving the direct provision of hazardous chemicals or assistance related to an industrial facility using such chemicals through commodity aid, their use must be reduced to the minimum needed for the achievement of programme objectives and the use of alternative, less hazardous chemicals or technologies must be considered.

Where an aid project involves a hazardous installation, the environmental impact assessment (EIA)[5] should be used to ensure that project design has been undertaken so as to minimise the possibility of creating, increasing or sustaining an unreasonable risk of an accident. The assessment should take into account potential technical failures, management capability, workforce capability, appropriateness of technology for the local community and the institutional arrangements for oversight, emergency preparedness and response. Local populations, including both men and women, should be involved in the review process to ensure that their knowledge of the community and the local environment

is fully taken into account. The assessment process should work towards furthering the objective that hazardous installations in non-OECD countries should meet an equivalent level of safety to similar installations in OECD countries.

The EIA should also include an assessment of the regulatory and response capability of recipient countries. The results should be shared with the authorities since these may be helpful in formulating contingency plans. Assistance to respond to weaknesses detected in the EIA would be desirable. Where an EIA reveals deficiencies, steps should be taken to correct them.

The determination of funding levels for aid projects with a chemical component should take into account resources needed to support appropriate environmental and health elements. This would include safety installations, funding for education and training, spare parts, and for monitoring, evaluation and other follow-up needed to ensure that essential health and environment requirements are being met. Whenever possible, donors should provide incentives to maintain environmental and health standards.

Notes

1. *Guidelines on Pest and Pesticide Management* [under preparation]; and *Guidelines for Aid Agencies on Global Environmental Problems*. OECD DAC Guidelines on Environment and Aid No. 4, Paris, 1992. (Issues related to hazardous wastes have been highlighted in these latter Guidelines which also cover assistance related to the implementation of global agreements, including those with components concerning chemicals such as the Montreal Protocol.)
2. The OECD Workshop on *Importing Hazardous Chemicals: Implementing the Prior Informed Consent Procedures and Guidance for Future Technical Assistance* was sponsored by the OECD Environment Committee and the Development Assistance Committee, in co-operation with the United Nations Environment Programme, the Food and Agriculture Organization of the United Nations, the International Programme on Chemical Safety and the Commission of the European Communities. Participants included representatives of developing countries and of aid and regulatory agencies from OECD countries, as well as of numerous international organisations, industry and non-governmental organisations.
3. *Guidance for Governments on the Operation of the Prior Informed Consent Procedure for Banned or Severely Restricted Chemicals in International Trade, FAO/UNEP, Rome-Geneva 1991.* Prior Informed Consent *(PIC)* refers to the principle that an international shipment of a chemical that is banned or severely restricted in order to protect human health or the environment should not proceed without the agreement, where such agreement exists, or contrary to the decision of the relevant authority in the importing country.
4. *The London Guidelines for the Exchange of Information on Chemicals in International Trade* was adopted by the United Nations Environment Programme in 1987 and amended in 1989 to incorporate Prior Informed Consent procedures.
5. *Good Practices for Environmental Impact Assessment of Development Projects*. OECD DAC Guidelines on Environment and Aid, No. 1, 1992.

Annex 1

SELECTED INTERNATIONAL ACTIVITIES ON CHEMICALS MANAGEMENT

Certain international programmes have mandates that are specifically directed to improving the assessment and management of chemicals such as UNEP's International Register of Potentially Toxic Chemicals and the International Programme on Chemical Safety; others are concerned with certain classes of chemicals, such as pesticides at the Food and Agriculture Organization, or types of exposure, for example, the International Labour Organisation's focus on workplace hazards. In addition, development assistance organisations and development banks have training and assistance projects to help developing countries manage chemicals. Given the number of activities which exist, no attempt will be made here to provide a comprehensive review; rather, this section will be illustrative and focus primarily on those activities which are the most broad-based and those which are potentially related to bilateral aid projects. In addition, note is taken of the OECD Chemicals Programme and Chemicals Accidents Programme which, although they do not specifically relate to the needs of developing countries, do provide information, tools and guidance valuable for donor activities.

The International Register of Potentially Toxic Chemicals (IRPTC)

The IRPTC was created in 1976 by UNEP in light of the growing need for increased international exchange of information for the assessment and control of chemical hazards. IRPTC collects scientific, technical and regulatory information and provides a network for information exchange. Among its activities, IRPTC prepares data profiles on chemicals, which are continually updated and contain 17 categories of data relevant to evaluating potential hazards (including information on production, use, pathways into the environment, environmental fate, toxicology, effects on organisms in the environment, waste management, etc.). The profiles also indicate where data is missing. The IRPTC Legal File contains data on national regulatory controls and international recommendations and guidelines from 13 countries and 6 international organisations.

IRPTC has the mandate for implementing the London Guidelines for the Exchange of Information on Chemicals in International Trade (London Guidelines) adopted by UNEP in 1987 to promote comprehensive information exchange on all chemicals with a particular emphasis on chemicals which a country has banned or severely restricted for health or environmental reasons. The London Guidelines

were amended in 1989 to incorporate the Prior Informed Consent (PIC) procedures, in order that export of chemicals that are banned or severely restricted should not proceed without the agreement of the importing country. In the same year, the PIC procedures were also incorporated into the Food and Agriculture Organization's "International Code of Conduct on the Distribution and Use of Pesticides". FAO and UNEP are administering the PIC programme jointly and, in conjunction with the UN Institute for Training and Research (UNITAR), they are conducting training programmes to provide technical advice and assistance to developing countries in implementing the PIC procedures. As part of their training programmes, UNEP and UNITAR are also assisting developing countries to establish National Registers of Potentially Toxic Chemicals (NRPTCs), a national database which supplements data provided by IRPTC with country-specific data. An NRPTC also provides an institutional framework for an effective two-way exchange of data on potentially toxic chemicals at the national and international level and provides the decision-makers with information for evaluating and managing the risks of chemicals.

It should be noted that UNEP is in the process of developing model legislation for chemicals which will, inter alia, provide guidance on establishing the legal basis for the implementation of PIC. In addition, the UNEP Governing Council called on the Executive Director of UNEP to work with industry to develop a code of ethics on the international trade in chemicals as a complement to the London Guidelines.

The International Programme on Chemical Safety (IPCS)

The IPCS, a joint programme of the World Health Organization (WHO), ILO and UNEP, was established in 1980 to provide assessments of the risks to human health and the environment from chemicals whatever their origin and wherever they are found. It provides an internationally-evaluated scientific basis on which governments may develop safety measures while it also provides guidance on how to use such assessments and seeks to strengthen national capabilities to prevent and treat harmful effects of chemicals. The OECD participates in the work of the IPCS Co-ordinating Group for the Harmonization of Chemical Classification Systems for which the ILO provides the secretariat. The IPCS publishes a number of documents related to chemical safety directed to the needs of different groups (see Annex 2).

IPCS also undertakes to promote international co-operation with respect to chemical accidents and supports national programmes for prevention and treatment of poisonings involving chemicals. In addition, IPCS works to foster the development of internationally accepted approaches and methods for assessing the effects of chemicals on human health and the environment, recognising that harmonization of hazard and risk assessment approaches will facilitate comparability, general acceptance and use of data obtained in different countries and will also promote effective chemical safety. A number of IPCS monographs

cover methodologies analysing current testing approaches to predicting health and environmental risks.

IPCS and UNEP/IRPTC has numerous technical co-operation activities and training programmes in order to assist developing countries to use information and analyses on chemicals, and to improve the capabilities of countries to conduct their own evaluations and to strengthen infrastructures for controlling chemical production, importation, transport, storage, use and disposal.

The International Agency for Research on Cancer (IARC)

IARC, established by WHO in 1965, develops and validates the methods for the assessment of chemical carcinogenicity, runs carcinogenicity testing of chemicals through an international network of laboratories, performs epidemiological studies on the role of chemicals in the etiology of human cancer and studies mechanisms of chemical carcinogenicity, and publishes monographs on the evaluation of carcinogenic risks to humans (see Annex 2).

International Labour Organisation (ILO)

One of the objectives of the International Labour Organisation is to promote the adequate protection for the life and health of workers. As a consequence, the ILO have adopted numerous conventions and recommendations related to safety in the use of chemicals at work. Many of these deal with the establishment of international standards relating to a particular aspect of worker protection. The next International Labour Conference will consider the need for a convention related to the prevention of major accidents.

ILO also operates a number of chemical information services through the International Occupational Safety and Health Information Centre (CIS). The CIS has established several databases including one containing detailed safety information based on over 70 000 chemical data sheets and another providing abstracts of literature on chemicals. In addition, ILO has an International Occupational Safety and Health Hazard Alert System which can rapidly disseminate information about specific hazards in its member states. Based on experience gained through CIS activities, ILO provides technical assistance for the establishment and improvement of safety and health information systems.

Awareness and Preparedness for Emergencies at Local Level (APELL)

With respect to chemical accidents, the UNEP Industry and Environment-Programme Activity Centre (IE-PAC) developed the APELL programme including publication of the APELL Handbook and regional and national training programmes in which government, industry and community leaders have taught the APELL process for accident prevention, preparedness and response. In addition, IE-PAC

publishes guidance materials; some of these relate to safety aspects of specific industries, others are more general (see Annex 2).

OECD Chemicals Programme

The OECD Chemicals Programme serves as a forum for information exchange on chemicals and for consensus building on technical and policy issues related to the testing, assessment and management of chemicals. As part of this Programme, the OECD has developed practical tools and guidance materials for use in national chemicals control schemes. This includes the OECD Guidelines for Testing of Chemicals, Good Laboratory Practices, Minimum Premarketing Set of Data and hazard assessment methods. In addition, the Chemicals Programme has an extensive project on the co-operative investigation of existing chemicals for which little data is available and on co-operation in risk reduction of selected chemicals. In this project, Member countries share the burden of testing and assessing chemicals and, where appropriate, consider actions to be taken to reduce the risk of certain chemicals. The OECD works in close co-operation with IRPTC, IPCS and others which has resulted in the worldwide dissemination of OECD materials and use in national chemicals control activities in many developing countries.

With respect to activities directed specifically to developing countries, the OECD Member countries recognise that they have a responsibility to assist developing countries as a consequence of being major producers and exporters of chemicals and because they have information and experience which could be shared with non-OECD countries. In this regard, the OECD adopted in 1984 the "Recommendation Concerning Information Exchange Related to the Export of Hazardous Chemicals". However, with the subsequent adoption of the UNEP London Guidelines and FAO Code, the OECD information exchange mechanism became superfluous. In order to consider what further role OECD may be able to take to assist developing countries, they organised the Workshop described above.

The OECD Chemical Accidents Programme

The OECD Chemical Accidents Programme established in 1988, has focused on improving safety at hazardous installations. One output of this Programme are guiding principles on accident prevention, preparedness and response. These guiding principles cover extensive aspects of prevention, preparedness and response with guidance to public authorities, industry, workers and others. They are intended to be applicable worldwide; with the recognition that installations in non-OECD countries may raise special concerns, the guiding principles also include sections concerning aid and investments related to hazardous installations in non-OECD countries. The guiding principles concerning aid assisted activities have been incorporated into the Guidelines for Aid Agencies, section IV, above. The OECD is working with UNEP to make available worldwide the OECD Chemicals Accidents publications including the guiding principles and to consider

how the Principles should be applied in developing countries. In this area, the OECD works closely with a number of other specialised bodies of the UN including ILO, IPCS, and World Bank and, in this regard is involved in several joint activities. For example, OECD and UNEP have developed an international directory of emergency response centres and along with WHO, UNEP and IPCS undertake training on the medical aspects of emergency planning and response.

The current OECD Chemical Accidents work programme includes increased outreach to non-OECD countries, working in co-operation with UNEP and other international organisations. This work is consistent with the request by the OECD Council, as well as by OECD Ministers of Environment and of Development for Member countries and the OECD to increase their activities to assist non-OECD countries in improving their ability to assess and manage health and environmental risks. The Policy Statement of OECD Ministers of Environment and of Development from the meeting on 2-3 December 1991, stated that they recognised that strengthened scientific, technological and administrative capacities in developing countries are essential for promoting sustainable development. They agreed to "promote and further strengthen co-operation with developing countries in the area of capacity building". The Ministers called on the OECD to formulate a programme of work to include consideration of mechanisms for disseminating the special expertise of OECD. Finally, they stated that they will insure that the OECD ministries and agencies will intensify co-operation with developing countries and agreed that "OECD and its Member countries should... make widely available the results of work on management of chemicals and wastes" and cleaner technologies. Thus, it can be expected that additional activities will be undertaken in the near future to assist developing countries and, in this regard, to make products of work from the OECD more readily available for developing countries.

Corporate Initiatives

In light of their responsibilities related to the environmentally sound management of chemicals, many companies and trade associations have undertaken efforts on the international level to promote and adopt concepts of responsible care and product stewardship. A major example is provided by the International Council of Chemical Associations (an association comprising the major chemical manufacturers associations), who are promoting the adoption of Responsible Care, an initiative through which chemical companies commit themselves to improving performance in health, safety and the environment, throughout the world.

Annex 2
SELECTED DOCUMENTATION

The following are a selection of publications related to the subject of management of chemicals in developing countries and the role of aid agencies in assisting developing countries in improving chemical safety. This list is not intended to be comprehensive and the inclusion of a document on this list is not meant to indicate that it is being recommended over a document which may not be listed.

This selected bibliography contains documents related to the management of chemicals generally; it does not include documents concerned with specific classes of chemicals. References concerning the control of pesticides can be found in the DAC Guidelines on Pest and Pesticides Management (under preparation).

Publications

Information on chemicals

ILO, *International Occupational Safety and Health Information Centre (CIS)* (maintains a comprehensive, computerised database on safety and health; it includes the International Registry of Chemical Safety Information Sheets).

IPCS, *Environmental Health Criteria Documents* (a continuing series of documents providing basic scientific information on chemicals, designed for scientific experts responsible for the evaluation of the risk posed by chemical).

IPCS, *Health and Safety Guides* (a continuing series of documents containing summary information on chemicals designed for a wide range of administrators, managers and decision makers in government, industry and trade unions).

IPCS, *International Chemical Safety Cards* (a continuing series of documents summarising essential product identify data and health and safety information on chemicals on a single page for use in the workplace).

OECD (1991), *Users Guide to Hazardous Substance Data Banks Available in OECD Member Countries*, Paris.

UNEP, *London Guidelines for the Exchange of Information on Chemicals in International Trade*, amended 1989, Decision of the Governing Council of

UNEP of 25 May 1989 [includes the Prior Informed Consent ("PIC") procedures].

UNEP/UNITAR, Workshop Documentation from their training programme related to the implementation of the London Guidelines including:

Report of the FAO-UNEP/UNITAR Regional Workshop on the Implementation of Prior Informed Consent in Asia and the Pacific, Manila, Philippines, 29 July-2 August 1991.

Report of the UNEP/UNITAR Sub-Regional Workshop on the Implementation of Prior Informed Consent, Kuala Lumpur, Malaysia, 9-13 December 1991.

Report of the UNEP/UNITAR Sub-Regional Workshop on National Registers of Potentially Toxic Chemicals, Cha-Am, Thailand, 30 March 10 April 1992.

UNEP/IRPTC, *Data Profiles* (containing files on all aspects of a chemical that are deemed important to conducting a hazard assessment).

UNEP/IRPTC, *Legal File* (brief descriptions of existing regulations and recommendations for controlling chemicals).

Chemical accident prevention, preparedness and response

East African Newsletter on Occupational Health and Safety, Proceedings of the East African Regional Symposium on Chemical Safety and Occupational Health, Mombasa, Kenya, 5-8 December 1988 (published by the Finnish Institute of Occupational Health).

ILO (1991), *Prevention of Major Industrial Accidents* (an ILO Code of Practice), Geneva.

ILO (1988), *Major Hazard Control: A Practical Manual*, Geneva.

IPCS, *Poison Information Monographs* (a continuing series of documents on how to diagnose and treat victims poisoned by chemicals designed for the medical profession).

IPCS (1992), *Guidelines for Poisons Control*, WHO, Geneva.

OECD (1992), *Guiding Principles for Chemical Accident Prevention, Preparedness and Response*, Environment Monograph No. 51, Paris.

OECD (1991), *Users Guide to Information Systems Useful to Emergency Planners and Responders Available in OECD Member Countries*, Paris.

OECD and UNEP (1991), *International Directory of Emergency Response Centres* (OECD Monograph No. 43, UNEP-IE/PAC Technical Report No. 8), Paris.

UNEP/APELL (1988), *Awareness and Preparedness for Emergencies at Local Level: A Process for Responding to Technological Accidents* (the APELL Handbook), Paris.

Worker health and safety

ILO (1993), *Code of Practice on Safety in the Use of Chemicals at Work*, Geneva.

ILO (1992), *Training Manual on Safety in the Use of Chemicals at Work*, Geneva.

ILO (1990), *Convention Concerning Safety in the Use of Chemicals at Work* (Convention No. 170), Geneva.

ILO (1990), *Recommendation Concerning Safety in the Use of Chemicals at Work* (Recommendation No. 177).

ILO (1989), *Encyclopaedia of Occupational Health and Safety*, Geneva, Third Impression (with modifications).

IPCS, International Chemical Safety Cards (see under *Information on chemicals* above).

Storage of chemicals

UNEP (1990), *Storage of Hazardous Materials* (Technical Report Series No. 3), Paris.

Transport of hazardous chemicals

OECD (1988), *Transporting Hazardous Goods by Road*, Paris.

UN (1991), *Recommendations on the Transport of Dangerous Goods* (7th edition), New York.

Role of development assistance agencies

Committee on Health and Environment and the Conservation Foundation (prepared on behalf of the US Agency for International Development), *Opportunities to Assist Developing Countries in the Proper Use of Agricultural and Industrial Chemicals: A Research Paper* (Washington, D.C., 1988) (can be obtained from the World Wildlife Fund, cite CF-01P for text, CF-02P for appendices).

OECD/DAC (1992), *Good Practices for Environmental Impact Assessment of Development Projects*, Guidelines on Environment and Aid, No. 1.

Guidance for Governments on the Operation of the Prior Informed Consent Procedure for Banned or Severely Restricted Chemicals in International Trade, FAO/UNEP, Rome-Geneva 1991.

OECD/DAC, *Guidlines on Pest and Pesticide Management* [under preparation].

OECD, *Workshop on Importing Hazardous Chemicals, Recommendations Concerning Priorities for Future Technical Assistance related to the Management of Potentially Hazardous Chemicals*, Paris, 17-20 September 1991.

OECD (1992), *Guiding Principles for Chemical Accident Prevention, Preparedness and Response*, Environment Monograph No. 51, Paris (Section H on Bilateral and Multilateral Technical and Financial Assistance).

The London Guidelines for the Exchange of Information on Chemicals in International Trade, UNEP, 1987 and amended in 1989.

Miscellaneous

UNCED (1992), Agenda 21, Chapter 19, *Environmentally Sound Management of Toxic Chemicals*.

UNEP and WHO, in co-operation with the League of Arab States and the Commonwealth Secretariat (1988), *Report of the Workshop on Chemical Hazards for African Countries*, Nairobi, Kenya.

Addresses

ILO (International Labour Organisation)
Occupational Health and Safety Branch
4, route des Morillons
CH-1211 Geneva 22
SWITZERLAND

IPCS (International Programme on Chemical Safety)
World Health Organization
20, avenue Appia
CH-1211 Geneva 27
SWITZERLAND

OECD Environment Directorate
Environmental Health and Safety Division
Annexe Pereire
2, rue André Pascal
75775 Paris Cedex 16
FRANCE

UNEP (re: Accidents/Storage Documents)
The Librarian
UNEP-IE/PAC
Tour Mirabeau
39 - 43 quai André-Citröen
75739 Paris Cedex 15
FRANCE

UNEP/IRPTC (International Register of Potentially Toxic Chemicals)
(re: Information on Chemicals)
Palais des Nations
CH-1211 Geneva 10
SWITZERLAND

UNITAR (United Nations Institute for Training and Research)
Environmental Training Programmes
European Office
Palais des Nations
CH-1211 Geneva 10
SWITZERLAND

World Wildlife Fund
1250 Twenty-Fourth St., N.W.
Washington, D.C. 20037
UNITED STATES

ALSO AVAILABLE

DEVELOPMENT CO-OPERATION (1992). Efforts and Policies of the Members of the Development Assistance Committee. The Report by the DAC Chairman stresses the need for immediate action for broad-based growth and for renewed commitments to democracy, private enterprise and environmentally sound development programmes. It also examines such issues as trade, export credits and population.

(43 92 05 1) ISBN 92-64-13772-6 FF160 £19.00 US$34.00 DM65

DEVELOPMENT ASSISTANCE MANUAL: DAC PRINCIPLES FOR EFFECTIVE AID (1992) is a guide for aid policy orientation of Members of the Development Assistance Committee, and an indispensable handbook for anyone with a professional interest in the management of aid, with input from DAC Members' aid agencies, the World Bank, the International Monetary Fund, and the United Nations Development Programme. The Manual addresses aid co-ordination with developing countries; project appraisal; new orientations in technical co-operation; programme assistance; women in development; environmental impact assessment of development projects; good procurement practices for official development assistance; new measures in tied aid; and evaluation of development assistance.

(43 92 06 1) ISBN 92-64-13779-3 FF75 £12.00 US$19.00 DM31

GEOGRAPHICAL DISTRIBUTION OF FINANCIAL FLOWS TO DEVELOPING COUNTRIES (1993). Disbursements, Commitments, Economic Indicators 1988-1991 (bilingual)

(43 93 01 3) ISBN 92-64-03717-9 FF295 £45.00 US$68.00 DM115

FINANCING AND EXTERNAL DEBT OF DEVELOPING COUNTRIES, 1991 SURVEY (1992) presents the latest information on financial resource flows to developing countries and their external indebtedness, with tables of aggregate resource flows and debt by main income group and continent up to 1991, as well as detailed data on the total debt and debt servicing of each developing country over the period 1983-1990.

(43 92 03 1) ISBN 92-64-13741-6 FF165 £24.00 US$43.00 DM68

MANAGING TECHNOLOGICAL CHANGE IN LESS-ADVANCED DEVELOPING COUNTRIES (1991) examines technological priorities closely integrated with economic strategies and human resource development in specific developing-country settings. This can be done by encouraging interaction among the key groups involved — politicians, economic strategists and technicians, administrators, farmers, large and small entrepreneurs, and bankers.

(43 91 03 1) ISBN 92-64-13570-7 FF70 £10.00 US$17.00 DM29

DEVELOPMENT CO-OPERATION (1990). Efforts and Policies of the Members of the Development Assistance Committee. The report by the DAC Chairman discusses critical development questions for the 1990s, with a special focus on the interrelated subjects of environment, population and development. Based on extensive work over the past several years by the OECD Secretariat, it examines in greater detail the efforts of DAC Members to assist developing countries in the areas of environment and population. It also contains a full analysis of trends in aid and other resource flows to developing countries.

(43 90 04 1) ISBN 92-64-13429-8 FF150 £18.00 US$32.00 DM62

OECD
DEVELOPMENT ASSISTANCE COMMITTEE
Guidelines on Aid and Environment

The OECD Development Assistance Committee (DAC) seeks to improve and co-ordinate Member policies which will integrate development and environment imperatives. The Guidelines are designed to help policy-makers and practitioners address serious national, regional and international environmental problems.

Guidelines No. 5 on *Chemicals Management* apply to all types of chemicals and their products throughout their life cycle — from manufacture or import through handling, use and disposal. Chemicals are indispensable in a wide range of industrial, agricultural and service activities. Their use tends to increase with economic development. While the hazards of chemicals are the same everywhere, the risks in their production and use are often higher in developing countries.

The basic concerns are laid out in a clear, succinct format for non-specialists with recommended priority actions on:

- needs assessment;
- legal, regulatory and administrative frameworks;
- training and education;
- equipment and supplies;
- health and safety;
- Prior Informed Consent procedures;
- assessment of aid projects for chemical risks; and
- accident prevention, preparedness and response.

DAC agreement on guidelines for chemicals management shows strong donor support for the efforts of developing countries to manage and protect the environment and to minimise adverse environmental effects of economic development.

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Organisation for Economic Co-operation and Development
2, rue André Pascal
75016 Paris