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Poster

presentations

B.1. Networking

Benefits of regional/sub-regional networking in developing countries to eliminate/manage Persistent Organic Pollutants (POPs)

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Abstract

Over the last half a century, mankind has been extremely benefited from various man made chemicals (xenobiotics) practically in all spheres of life. As more and more "effect specific" chemicals were introduced replacing the old less specific and less effective chemicals, it was evident that many chemicals used in the past as agrochemicals or industrial chemicals turned out to be not only persistent in the environment but also entered the food chain causing damage to wild life and human beings even in remote areas such as the polar regions. Over the last ten years UN organisations such as UNEP and FAO have shouldered the responsibility of creating greater awareness to the impact on health and environment of these persistent organic pollutants (POPs). The UN organisations and NGOs harnessed together the efforts of developed and developing countries to eliminate and reduce the risks associated with POPs. In this global effort, countries are joining hands to create the necessary conditions to eliminate, monitor production, use, storage and disposal of POPs. While the industrialised countries are taking effective measures to eliminate or properly manage persistent organic pollutants coming from point and non-point sources, the developing countries are still a long way to go in the proper management of POPs mainly because of lack of management, financial support and access to technology for proper disposal and replacement with environment friendly chemicals. The paper attempts to illustrate the benefits of regional/sub-regional networking in developing countries to facilitate elimination and management of POPs.

Introduction

It took almost thirty six years since the publication of *Silent Springs* by Rachel Carlson, thanks to UNEP and FAO, representatives from almost 80 countries gathered together in Rotterdam in 1998 and adopted and signed *the Convention on the Prior Informed Consent Procedure (PIC) for Certain Hazardous Chemicals and Pesticides in International Trade*. This was followed by a historical meeting in Bonn in March 2000 to discuss and decide on the fate of the issue of Persistent Organic Pollutants (POPs). Despite the major achievements of Basel Convention, the UN Conference on Environment and Development (UNCED) and the global ratification of Agenda 21, the North-South divide is still very much in existence in the proper management of hazardous waste and persistent toxic chemicals and pollutants. Following the Intergovernmental negotiating (INC) meeting in Johannesburg the developing countries are putting pressure for technical assistance in elimination of POPs, which might have a bearing on the International Treaty on POPs at Stockholm scheduled in May 2001.

In developed countries, the uncontrolled industrial pollution witnessed during the '50s through the '70s had to be contained by government decrees and statutes, but it took decades even for the industrialised countries to take necessary action to improve the technology and implement strict rules and regulations to clean-up contaminated sites on a priority basis, dispose of obsolete persistent (and non-persistent) organic and inorganic chemicals including pesticides and give incentives for replacement with environment friendly alternatives. However, the developing countries and also the countries in economic transition are facing enormous problems to manage the toxic and persistent chemicals manufactured, imported or dumped on their shores over the last three to four decades.

The international attention, thanks to the UN agencies and the NGOs, is now diverted to developing countries for putting their act together, by bringing greater awareness to POPs. The classic example, is DDT which is still used in many developing countries for malaria vector control especially in Asia and Africa, mainly because the alternatives are either expensive or technology for alternatives is not available. This is going to be a major problem since DDT is still an essential chemical for many least developed countries, despite its problems (both resistance and persistence) because alternatives are difficult to obtain.

Categories

For practical purposes the developing countries could be broadly divided into the following 3 categories:

Category 1

Countries which have already taken action and have the capability to deal with identification of contaminated sites, deal with obsolete stocks in a limited way and take action in monitoring (both environment and health aspects), containing the pollutants and in some cases take up decontamination of sites and introduce new technology for environment friendly alternatives and also have rules and regulations and incentive programme for management/elimination of POPs. To this category belong selected countries in Latin America, Asia and the countries in economic transition)

Category 2

Countries that have rules and regulations, capability for identification of contaminated sites but do not have the capacity for decontamination of contaminated sites and proper disposal of obsolete stocks, but have only limited access to technology for alternatives and also do not have the facilities for ecotoxicological monitoring in the environment. In this category come many countries in Latin America, Asia and countries in economic transition.)

Category 3

Countries, which do not have any rules and regulations, have no capability to identify /monitor contaminated sites and have no expertise or access to new technology for alternatives or disposal of obsolete chemicals. In this category we find mainly the African countries and selected countries in Latin America and Asia.

Most, if not, in all developing countries and even in some developed countries there is very little capability for monitoring POPs from non-point sources. While the problems of POPs in agrochemicals area are in many ways being well understood, controlled, monitored and replaced, in the case of dioxins/furans, it is still a major problem.

Apart from POPs, one has to look into other man made chemicals and include chemicals from natural resources such as heavy metals Cr, Pb, Hg, As, Cd and materials such as asbestos and naturally released radioactive gases like radon.

Why regional/sub-regional cooperation?

While down stream activities such as measurement of contamination, decontamination of sites will have to be done at local level, there are areas at upstream and mid stream levels that could be economically and efficiently monitored and controlled through regional or sub-regional cooperation. Here the UN agencies are already providing assistance, but the countries should themselves take necessary action to get together to overcome the POPs issues. The various aspects that could be dealt with on a regional/sub-regional basis are:

Data

- List of POPs and other pollutants of concern
- Sources of production
- Data on import/export
- Places stored/used
- List of alternatives and cleaner technology
- Modelling of movement of chemicals in the environment
- Advanced warning
- Exchange of information
- Decontamination technologies
- Technologies for disposal of obsolete stocks

Analytical

- Monitoring at pre and post decontamination/disposal
- Sample collection/storage analysis
- Regional/sub-regional laboratories
- Inter-laboratory comparisons
- Training
- Regional standardisation

Demonstration

- Site decontamination
- Disposal of obsolete chemicals
- Introduction of alternatives for POPs.

Actions needed to eliminate POPs and other toxic heavy metal contamination

Majority of the listed POPs belong to pesticides and today for all the POP pesticides alternatives are available. Most of the countries have moved away from POP pesticides except for limited use of DDT and BHC. The major problems are the disposal of obsolete pesticides accumulated over the years and treatment of contaminated sites according to priorities. So in the case of POP pesticides, the developing countries are well aware of the problem, the alternatives do exist and it is important to provide technical assistance in disposal of obsolete POPs and monitor contaminated sites and decontaminate according to priorities.

In the case of dioxins/furans by-products the situation is more complex. Dioxins are the most dangerous POPs known. The major sources of dioxins are:

- by-products of chemicals (PCBs and PCPs, Phenoxy herbicides)
- synthesis of dyes and pigments based on chloranil
- production of vinyl chloride
- dry cleaning with pentachloroethylene
- paper production (chlorine bleaching)
- waste incineration and other thermal processes

Some dioxin reduction measures are:

- reduction of chlorine content in materials
- optimal combustion process
- reduction of dust emissions (cyclones, filter media-clothes, electrostatic filters)
- use of activated carbon adsorption
- catalytic oxidation (titanium dioxide)
- using alternatives for PCBs and PCPs in transformers.

So today, extensive knowledge about the source of dioxins exists. It is possible to reduce dioxin reduction by phasing out certain chemicals, proper introduction/ management of technology in metal/paper industries and waste incineration. All this involves policies, building awareness and educating industrialists and the public, identifying barriers and eliminating those barriers according to the nature of the problem.

Other major pollutants

In addition to POPs, use of low quality fertilisers contaminated with heavy metals is of major concern in developing countries. Apart from eutrophication, due to leaching of nutrients, they cause continuous soil contamination with heavy metals. Proper understanding of soil requirements and improving production and application techniques, a vast improvement could be reached in the production and the use of fertilisers. Such an integrated approach will have a greater impact on the management in the production and use of fertilisers especially in developing countries where more than 50-60% of fertilisers are wasted due to improper use.

Activities by many Inter-Governmental Organisations

Many UN and other Inter-Governmental Organisations and NGOs have already set up various programmes in sound management of chemicals. They offer a vast source of information, training and technical cooperation for regional/sub-regional networking. Some of the areas covered but not limited to are:

Subject	Organisations involved
Health, Safety and Environment (HSE or SHE)	ILO, OECD, WHO, UNIDO, UNECE, EU, IFCS, IOMC
Chemical risk to human health and environment databases	IFCS, OECD, WHO, IOMC
Strengthen infrastructure for safety in-production, importation, transportation, storage, use and disposal	IFCS, FAO, WHO, ILO, UNIDO/UNEP/IMO
Cleaner production	UNIDO, UNEP, ILO (also bilateral donors)
Classification of pesticides by hazard	WHO
Air quality/drinking water quality guidelines	WHO
Harmonisation in collection of data on toxicity assessment	IPCS/OECD
POPs	UNEP/FAO/UNIDO/UNECE
PICs	UNEP/FAO
Obsolete pesticide / chemicals disposal	FAO/UNEP/UNIDO
Decontamination of contaminated sites	UNECE/FAO/UNEP, UNIDO
Pesticide risk reduction	WHO/UNIDO/FAO/OECD
Chemical accidents	OECD/UNIDO/ILO
PRTR	UNEP/OECD/UNIDO/EU/UNITAR

So regional/sub-regional networking could benefit from many of these agencies and also from non-governmental organisations such WWF, Green Peace, Friends of the Earth etc.

Example of regional networking

One very good example is the longstanding network supported by UNDP and executed by UNIDO is the:

Regional Network On Pesticides for Asia and the Pacific called RENPAP

I was personally involved for many years. It shows how countries can jointly take up a very challenging, constantly changing topic of pesticides and learn from each other.

Over the last 15 years the network has expanded from 5 Asian countries to 15 Asian countries and took up topics in accordance with the various complex developments and requirements that have taken place in pesticides.

The network now deals with cleaner production, POPs, safer alternatives (active ingredients and formulations), data collection on pesticide production, import /export, ecotoxicology and environmental monitoring etc.

The network along with other groups facilitated banning of BHC production/use (almost 300,000 tonnes / annum of formulated material) in India and has already been involved in helping member countries to go for alternative safer pesticides (Agrow, April, 19, 2000 and RENPAP Reports).

Networking specific to POPs and also to other pollutants as mentioned before, would be specially in gathering data, having common regional/sub-regional analytical laboratories, setting up of demonstration on decontamination of sites and also in disposal of obsolete chemicals including POPs, advanced warning systems especially when they share common river and waterways systems.

North-South divide in the Mediterranean

The Mediterranean is a clear example of North-South divide in development including the environment protection. As an example, a pictorial illustration is given below on the environment situation of Mediterranean Sea where different industrial, fishing, population and tourist pressure activities make it an ideal place to monitor pollutants of both bio- and non-biodegradable nature. A number of sub-regional monitoring networks would enormously help in establishing environmentally sustainable quality of life in this area of early civilisation. This would need a funding mechanism similar to Montreal Protocol for elimination of Ozone Depleting Substances (ODS). This would be an ideal **South-South and North-South** cooperation through networking.



Source: Format, Ausria, June 2000

Figure 1. Impact on the Mediterranean Sea from land and water based activities.

Acknowledgement

The author wishes to thank the organisers for giving an opportunity to participate in this Forum.