Persistent Organic Pollutants in Africa

Summary of Proceedings

Skillshare and Workshop

Ratifying and Implementing the Stockholm Convention

15-19 July 2002, Arusha, Republic of Tanzania
RATIFYING AND IMPLEMENTING THE STOCKHOLM CONVENTION

IN

AFRICA

SKILLSHARE AND WORKSHOP

July 15-19, 2002
Arusha, Republic of Tanzania

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Cleaner Production and Environmental Management Branch
2003
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<tr>
<td>ASP</td>
<td>Africa Stockpiles Programme</td>
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<td>CP</td>
<td>Clean Production</td>
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<td>DDT</td>
<td>Dichlorodiphenyltrichloroethane</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>ESID</td>
<td>Ecologically Sustainable Industrial Development</td>
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<td>FAO</td>
<td>Food and Agricultural Organization</td>
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<td>GEF</td>
<td>Global Environment Facility</td>
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<td>GIS</td>
<td>Geographic Information System</td>
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<td>HCWH</td>
<td>Health Care Without Harm</td>
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<td>IPEN</td>
<td>International POPs Elimination Network</td>
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<td>IPM</td>
<td>Integrated Pest Management</td>
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<td>MOA</td>
<td>Ministry of Agriculture</td>
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<td>NCMP</td>
<td>National Chemicals Management Profile</td>
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<td>NGO</td>
<td>Non Governmental Organization</td>
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<td>NIPs</td>
<td>National Implementation Plans</td>
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<td>NSC</td>
<td>National Steering Committee</td>
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<td>PAN</td>
<td>Pesticide Action Network</td>
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<td>PBES</td>
<td>Peacock Bay Environmental Services</td>
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<td>PCBs</td>
<td>Polychlorinated Biphenyls</td>
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<td>POPs</td>
<td>Persistent Organic Pollutants</td>
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<td>PRTR</td>
<td>Pollutant Release and Transfer Register systems</td>
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<td>SEG</td>
<td>Safe Environment Group</td>
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<td>TDA</td>
<td>Trade and Development Agency</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
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Executive Summary

In July 2002, a Skillshare and Workshop Ratifying and Implementing the Stockholm Convention in Africa was conducted in Arusha, Tanzania. The workshop was primarily aimed at building capacity among African NGOs to participate in Stockholm Convention ratification efforts, national implementation plans and country based enabling activities. The workshop was organized by the International POPs Elimination Network (IPEN) and co-sponsored by UNIDO. Financial support was also received from the Africa Stockpiles Programme (ASP) and the Pesticide Action Network (PAN), the Canadian International Development Agency (CIDA) and the Mitch Kapor Foundation. The Stockholm Convention includes provisions for civil society engagement in all aspects of the Convention related activities.

More than 100 delegates attended the workshop from 20 countries and all the subregions of Africa were represented. The workshop was opened by Mr. Felix Ugbor, the UNIDO field representative in Tanzania, who noted that “there had been a significant growth in the number of civil society and non-governmental organizations active in international development and that they played an increasingly important role at the national, regional and international levels”.

The skillshare sessions were spread in four days and addressed by several resource persons. The first day opened with a panel on Clean Production, Sustainable Agriculture and Alternative Vector Control. The issues that were focused on included an overview of the problems with POPs (Mr. Jack Weinberg), Malaria prevention and DDT in sub-Saharan Africa (Dr. Paul Saoke), subsistence agriculture (Dr. Abou Thiam) and use of pesticides and clean production techniques (Ms. Beverley Thorpe). The second day of the skillshare opened with an introduction to the ASP (Mr. Mark Davis) and the problem of obsolete pesticide stockpiles in Africa and the programme that has been developed under the auspices of the Global Environment Facility (GEF) to address these issues. On the third day of the skillshare, plenary sessions were devoted to developing an understanding on the development of National Implementation Plans (NIPs) and national regulatory systems. Mr. Mohamed Elia, UNIDO staff member and Project Manager, described the process for developing country-based enabling activities and national implementation plans, which are mandated under the Stockholm Convention. Dr. Jonathan Akhabuhaya described the different types of national regulatory frameworks for pesticides that were available and discussed the various options for regulation under the Convention. Dr. Anaalem Abebe discussed the development of Ethiopia's regulatory system with special reference to chemical safety issues. The fourth day of the skillshare focused on ratification tools and techniques that would enable NGOs to participate in country ratification efforts.

Ten working groups and subgroups were held as part of this programme: Preventing New Stockpiles of Pesticides discussed past dependence on POPs pesticides for agricultural use and vector control and the need to develop a variety of tools and techniques to ensure that stockpiles of pesticides did not accumulate in the future; The ASP and Related Issues analysed the disposal options that were available for POPs and other hazardous wastes; Encouraging Clean Technology Development in Africa assessed the role of clean production techniques in encouraging sustainable development in Africa; Developing Media and Communication Skills illustrated different methods of communication among delegates; The Benefits of Ratification discussed the changes that are associated with the Convention obligations; Using the Stockholm Convention as a Tool for Community Action was chiefly laid on familiarising delegates with some of the language in the Stockholm Convention that can assist NGOs in developing local and national campaigns; Making Use of Online Databases showed participants how to use an extensive database that PAN-NA has developed to assist with information gathering regarding product information, use and toxicity; Community Monitoring and Toxic Loading shared strategies regarding the communication and use of pollutant release and transfer inventories, data analysis and the monitoring of human health and body burdens; Alternatives and Disposal Options in the Hospital Sector analysed the results of a waste audit and waste reduction campaign in KwaZulu Natal as an effort to end the incineration of hospital waste.

On the final day of the workshop, in a closed session, NGOs agreed upon a common programme of action for continued participation in the Stockholm Convention in Africa. (See Annex B: The IPEN Arusha Declaration). The detailed papers of these presentations and the full addresses of the authors can be consulted at the IPEN website http://www.ipen.org.
I. INFORMATION AND AWARENESS

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Implementing the Stockholm Convention on POPs in Africa

Felix Ugbor
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Chairperson,
Co-Chairs for the International POPs Elimination Network (IPEN),
M/S Romy Quijano and Jack Weinberg

My Colleague from UNIDO Headquarters, Mr. Mohamed Eisa,
Chairman of AGENDA for Environment and Responsible Development,

Distinguished Participants,

Ladies and Gentlemen,

Since UNIDO is only one of the many agencies and groups sponsoring this workshop, it is indeed a privilege and an honour for me to make some remarks at the opening ceremony. It is my understanding that the workshop is “designed to develop capacity among NGOs working in Africa so that they can assist and work with their governments on issues relating to the Stockholm Convention”. I would therefore like to extend a special welcome to all the participants but more especially to those who have come from other regions to share their experiences with us. As we say in Tanzania, karibu sana — welcome.

Given the importance of the subject matter that would occupy us in the coming days and conscious of the effort made by IPEN to have us here, I thought it would be befitting to recognize the increasing and important role being played by NGOs and CSOs.

One important consideration that encouraged UNIDO to contribute to this workshop is our realization that the last two decades have witnessed a significant growth in the number, size and profile of organizations of the private sector and civil society active in international development. It is gratifying that the various groups are playing increasingly important roles at international, regional and national levels, whether in promoting democracy, safeguarding the environment, promoting sustainable development, setting technical and professional standards, advancing the boundaries of science and research, promoting education or defending freedom and human rights.

The trend towards the increasing roles by CSOs should be seen in the light of people’s growing aspirations for enhanced bottom-up participation in the recent fundamental changes in the political, economic and social environment of developing countries and countries with economies in transition. The democratization process in these countries has been accompanied by state disengagement, price and trade liberalization and privatization thus leading to shift towards the private sector.

Despite the increasing role played by market mechanisms and the private sector in the developing world, market failures occur in a number of important areas, e.g., environmental pollution, human resources development and technological innovation. Similarly, government failures can occur due to the behaviour of political interest vis a vis economic and social ones and to the difficulty for national governments of handling global economic problems. Therefore, the emergence of private sector non-profit organizations is stimulated by a rising demand for products and services that are provided neither by the market nor the government.

In the past, CSOs were mainly seen as lobbyists in the development field. Today, they are important
development agents proposing solutions to their member’s requirements. They are catalysts and advocates for change-transmitting the opinion and needs of their members on the setting of development policies and providing an important mechanism for consultations between the government and private sector entities. They act as service providers - providing information on technology, standards, environmental regulations, etc. I would therefore, like to salute the NGOs, in particular, IPEN for bringing all of us here for this important workshop.

Chairperson, As you are all no doubt aware, Agenda 21, which was adopted by the RIO Conference of 1992 included Chapter 19 on Environmentally Sound Management of Toxic Chemicals including the Prevention of Illegal International Traffic in Toxic and Dangerous Products. Since then, UNIDO had been actively involved in a number of global initiatives and project committees concerned with the operationalization of Chapter 19, including the Montreal Protocol on Ozone Depleting Substances (ODSs) and GEF’s Inter-Agency Task Force on POPs and the Inter-Governmental Negotiating Committee. UNIDO has also accepted to chair the Inter Organization Programme on the Sound Management of Chemicals, (IOMC) which includes six UN Agencies (UNIDO, UNEP, ILO, FAO, WHO, UNITAR as well as the OECD) beginning next year.

As far back as May 2000, UNIDO was awarded the status of Executing Agency with Expanded Opportunities inter alia, in recognition of its comparative advantage in the area of POPs.

Chairperson, Tanzania signed the Stockholm Convention on POPs in May 2001. Like other developing countries the authorities are now faced with the challenge of following through on their commitment with regard to the control, elimination and management of the initial 12 hazardous chemicals (pesticides, industrial chemicals, and by-products) identified under the Convention.

In the course of your deliberations, you would be briefed in some details about the effort being made by the country in an attempt to meet its obligations regarding POPs. I may simply indicate that, following the approval of the relevant project document, the Vice President’s Office and UNIDO have been working very closely towards developing a National Implementation Plan. As a matter of fact, exactly a month ago (14 June 2002), we organized the Inception Workshop for stakeholders in Dar es Salaam.

As we look forward to Rio plus 10, more popularly known as the World Summit on Sustainable Development (WSSD), we wish to emphasize that one of the key ways to fight poverty in a sustainable manner – is to promote growth through enhancing domestic productive capacities and competitiveness. For countries, such as Tanzania with agriculture as the main stay of the economy, this implies efficient and sustainable exploitation of the resource base and the development of productive agriculture and competitive industries.

The development of these sectors is, however, not without negative consequences to the environment caused by the increased utilization of agricultural inputs and industrial chemicals.

Within the current global economic scenario, developing countries are importers of large quantities of industrial chemicals. At the same time, developing countries have the least capacity to manage and control the proper utilization, storage, transportation, and disposal of such chemicals. The Stockholm Convention was indeed designed to address some of the associated negative impacts and capacity constraints.

Chairperson, Among the UN Agencies, UNIDO has a unique, practical, hands-on experience-working with many developing countries and countries with economies in transition, in the provision of assistance for the introduction of best available technique: industrial process changes, substitute or modified materials and products, cleaner production methods and environmentally sound
management and minimization of wastes. My colleague, Mr. Mohamed Eisa, will later share with you information on UNIDO’s contribution and technical capabilities.

One thing is clear however - based on our rich experience, UNIDO could play a special role in developing a methodology for incremental cost calculation related to the investment projects in the POPs focal area of GEF. Without a practical methodology, the implementation of the Stockholm Convention might not be able to enter the investment phase and therefore, not fulfill the objective of reducing and eliminating emissions of POPs by-products.

Chairperson, In the negotiations leading up to the Stockholm Convention on 23 May 2001, in Sweden, it was widely recognized that regional and sub-regional networking could play an important role in assisting developing countries to address the various issues on POPs. Perhaps even more important, the pivotal role of NGOs in promoting public awareness of the hazards of POPs and appropriate safeguards as well as informing the populace and guiding debates on alternatives to POPs use was equally recognized. I would hope that this workshop in Arusha is in furtherance to those objectives.

Indeed, strengthening regional and sub-regional co-operation is the key to ensuring that we, individually and collectively, get our rights and privileges under the Convention while at the same time fulfilling our obligations. These include: the development of regional and sub-regional mechanisms to meet needs such as:

a) training the trainers and training workers b) information exchange c) institutional infrastructure strengthening in legislation and enforcement capabilities and the development of adequate domestic regulation and standards to control and eliminate adverse health and environmental impacts of POPs pesticides d) disposal capability e) research facilities f) capacity building.

Technical assistance and funding to address these needs are of practical consideration. In co-sponsoring the Workshop, UNIDO is emphasizing its willingness, competence and availability to work with African countries to foster the necessary partnerships with our more industrialized member States and bilateral as well as multilateral, technical and financial assistance organizations with a view to meeting your expectations in this regard.

While scientific and technological considerations seem to have gained the ascendancy so far in developing and implementing international action on POPs, it is equally important, some would say even more important, to focus on socioeconomic factors, such as:

a) possible impacts on food production b) possible impacts on human health e.g., through ban or restricted use of vector control agents such as DDT) c) need for capacity building in countries and regions d) financing concerns and opportunities; and e) possible trade impacts.

UNIDO believes that while no area of involvement is taboo to NGOs in the POPs debate, their contribution will be critical to the success or otherwise of the POPs convention. NGOs being grassroots organizations have to play a leading role in the discussions on the socioeconomic factors, which might otherwise be overlooked.

Chairperson, before concluding, I would once more like to pay tribute to all those who have in one way or another contributed to this workshop. It is our sincere hope that the conclusions and recommendations from the diverse groups represented here will enable us to work more effectively towards achieving greater success in meeting the goals of the Stockholm Convention.

Chairperson, Ladies and Gentlemen, it is now my pleasure to declare this workshop opened.
Welcome Remarks by AGENDA to the IPEN Africa Skillshare Workshop AICC Arusha Tanzania, 15th July 2002

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UNIDO Director/Representative,
IPEN Co-Chairs,
IPEN Coordinator,
Fellow IPENers,
Workshop Participants,
Ladies and Gentlemen,

Good Morning.

It is my great pleasure and honour to welcome you all to Tanzania, to Arusha and in particular to this very important Africa Skillshare workshop on the implementation of the Stockholm Convention on Persistent Organic Pollutants (POPs). I hope that you had a comfortable trip and sound rest too. The organizers could not have chosen a better time of year to hold this workshop than this one. I am sure you will find the weather pleasant and comfortable. It is my sincere hope that you will enjoy every moment of your stay in Tanzania.

To us AGENDA and Tanzanians at large we are privileged to host this workshop of its kind, which draws participants from the entire continent, under the umbrella of International POPs Elimination Network (IPEN). On behalf of AGENDA and on my own behalf I would like to express our sincere gratitude to the organizers, IPEN and Regional Participating Organizations; the Kenya Association of Physicians and Medical Workers for Social Responsibility, the Climate Development Initiatives of Uganda and UNIDO for entrusting us this noble task. In the same token I would like to thank all the invited guests, workshop participants and media who travelled all the way to attend and make this skillshare workshop a memorable event.

For those who have not been able to read the Stockholm Convention it would not make any harm to introduce it shortly. The Convention was adopted and opened for signatures by governments on 23rd May 2001 (just over a year ago). It aims at restricting and ultimate elimination of the production and use of the worlds most dangerous chemicals starting with 12 substances that have been studied and deemed to be acutely toxic. This group include eight pesticides, namely Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Mires, Toxaphene and DDT, and two industrial chemicals i.e. polychlorinated biphenyls (PCBs) and hexachlorobenzene. In the list there are also two unintentionally produced by-products of other chemicals and processes namely dioxins and furans.

Fellow IPENers know the struggle ensued during the drafting of the Stockholm Convention. Our struggle is not yet over as long as the Convention is not yet in force and more so as long the aspirations of the Convention are not realized. By bringing you here the organizers would like to share skills that may play a role in sensitizing our governments to ratify and subsequently implement the Convention. It is our belief that together we can make a difference.
Mr. Guest of Honour
Distinguished Participants, Ladies and Gentlemen

Let me abuse my position by introducing AGENDA in brief. AGENDA as an NGO that was established in July 1998. With a mission of promoting, among business entrepreneurs and the government at large, a culture of responsibility to the environment and sustainable development. Our main goal is to put the principles of sustainable development into practice at the business enterprise and decision making level. In the context of Agenda 21, this involves strengthening the role of business by promoting responsible entrepreneurship through improving efficiency of resource use, reducing risks and hazards, minimizing waste and safeguarding environmental quality. This workshop squarely fits into our aspirations and mandate.

The main focus of AGENDA is working with people to protect and conserve the environment while pursuing economic development activities. AGENDA works with micro, small and medium scale enterprises and integrated community based income generating initiatives; turning environmental conservation into business opportunities for job creation, income generation, and poverty alleviation. At macro-enterprise level AGENDA facilitates the integration of environmental responsibility into decision-making.

AGENDA works with government agencies in all major sectors and business interest groups to review policies, institutional collaboration, legal frameworks and business practices to enable the private sector take up a responsibility role in managing the environment and natural resources.

Ladies and Gentlemen,

Agriculture is the backbone of Tanzania economy and probably most of the countries represented here. The majority of farmers are small-scale farmers with acreage of about 0.9 to 3.0 hectares. Tanzania, being a tropical country, is highly affected by a variety of pests. Accordingly wide range of pesticide is used extensively in agriculture and for public health protection. The amounts of pesticides being used have increased tremendously from 1/3 of a kg/person in 1977 to about 1 kg/person in 1990s. Among the pesticides used are POPS, namely Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, and Toxaphene. However, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene and Toxaphene are no longer in use.

Most of the pesticides imported in the country are used on coffee for the control of Colletotrichum coffeaeum (Coffee Berry Disease), Hemileia vistatrix (Leaf Rust), Antestiopsis spp (Antestia Bug), Leucoptera spp (Leaf Minor) etc. Cotton crop is normally attacked by different sucking and chewing pests including Helicoverpa armigera (African Bollworm), Dysdercus spp etc thus various pesticides are used for the control of those pests. Control of migratory pests including Spodoptera exempta (Army worms), Quelea birds (Quelea quelea), Nemadcris setemfaciata (Red locusts) and field rodents (Mystomis spp) involves a lot of pesticides. Ladies and Gentlemen these are the cask crops as such they carry immense political sensitivity.

Ladies and Gentlemen,

Tanzania also faces another dimension of environmental stress from obsolete stocks of chemicals which are scattered in more than 324 storage sites and contain more than 250 different products POPs inclusive. Majority of the stores are in poor condition, leaking and rusting containers, some are kept in open space. Potential risks associated with these obsolete wastes include surface and ground water contamination, environmental pollution and risks to human health. Old transformers are mainly kept in the open thus areas around are contaminated. These transformers contains oil which may contain PCBs. Temptation of incinerating the sum of these is growing day by day.
Ladies and Gentlemen, what I am trying to drive at, is the immense dependence of our agriculture to pesticides, insecticides and fungicides. This coupled with lack of alternative methods for disposing of the waste generated there from, it will take a lot of convincing for decision makers to accept the phasing out of some of these chemicals if we cannot demonstrate that there are environmentally sound alternatives that may equally or even better control the pests. This workshop is one of the activities that are intended to equip the participants with such skills.

You will appreciate that lack of information is a major stumbling block, especially in our part of the world, in the creation of an informed public opinion. The majority of POPs users are living in villages and most of them may not even understand the language we normally use to communicate. Through IPEN it is possible to get a lot of literature on alternative methods for pest control and POPs management, the question is how we are going to disseminate the same to the decision makers and the public at large.

Mr. Chairman,

Let me not bore you with a long speech, I was only supposed to welcome you, but I could not resist the temptation of the power of the Microphone and attentive audience. But before I wind up I would like to extend our profound appreciation to UNIDO, ASP/PAN, CIDA, IPEN and self sponsored participants whose support have made this event a reality. Your support to these young and small NGOs which are doing wonderful things under severe financial hardship is essential now than ever before.

While I am aware of the tight schedule the organizers have prepared for us, it is my sincere hope that you will have some time to explore the beauty of mother nature which I dare to say there is no match of the concentration of natural attractions anywhere in the world as is Arusha. We have in the near vicinity the Ngorongoro, Serengeti, Manyara and Kilimanjaro National Parks. You may even decide to test your endurance by climbing Mount Kilimanjaro.

Mr. Guest of Honour, Dear Participants

May I now with all humbleness one can think of welcome you all by saying

**Karibuni sana**

And

**Thank you for your attention.**
Persistent Organic Pollutants (POPs) and Human Health

Jack Weinberg
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Introduction

POPs are toxic chemicals widely present in the environment, which are harmful to human health and wild life. POPs includes pesticides, industrial compounds and unintentional by-products in chemical production. Three important aspects of POPs are its perseverance in the environment that do not easily degrade or metabolize, strong effects on human beings, and no safe levels. These chemicals enter the environment through pesticides, DDT, incineration and waste burning, and through releases of chemical and industrial wastes. POPs can spread over thousands of kilometres before returning to earth through air currents. For example, POPs enter the Arctic region through the air in quantities that cause serious harm, though little POPs have ever been used or produced there.

POPs are also spread to different locations by migratory animal species; eventually getting into ground or water, finding the way to food chains which contaminates vegetables, fruits, meat, fish, eggs or milk. Importantly, POPs do not dissolve in water, hence they cannot be washed off or easily removed. POPs are also produced as by-products or wastes such as dioxins and furans. These are commonly released when chlorine containing materials such as PVC, plastics and chlorine bleached papers are burned or incinerated.

Impact of POPs on Human Health

The first evidence to drastic effects of POPs on living creatures can be observed in fish, birds and mammals. Large levels of POPs were found in human beings all over the world. This makes the POPs a legitimate and important cause for concern everywhere. POPs get into the human body through food chains (from meat and animal products or through vegetable and fruits). POPs in human bodies cause disease and health problems, especially harmful to infants. It creates serious problems for fetus, although the effect is often not recognized until adulthood. A significant level of evidence is available to suggest the possible effects of POPs on human beings. This includes cancers and tumors, nervous system damage and impairments, immune system changes that may weaken a person’s ability to fight off disease, reproductive/sexual disorders, increased incidence of diabetes, among others. There is good evidence to suggest that POPs presence in mother’s body could introduce health damages to children. They are also found in mother’s milk; however, the good effects of breast-feeding outweigh the harm caused by POPs in mother’s milk.

The Stockholm Convention on POPs

The governments of the world adopted The Stockholm Convention on POPs on 23 May, 2001. In its first Article, the Convention calls attention to the Precautionary Approach that declares that the Convention’s objective is “to protect human health and the environment from POPs”. To achieve its objective, the Convention will assist, encourage and require countries to take measures. Developing countries and countries in transition will receive financial and technical assistance to enable them to implement Convention measures.

Under the Convention, governments will restrict, phase-out/ban the production and use of POPs and its industrial chemicals. They have the responsibility to minimize, cleanup/destroy obsolete stocks of POPs.
The Stockholm Convention requires a ban of the pesticides, reduction and elimination of all DDT use, immediate prohibition of the new uses of PCBs, minimisation of releases of unintended by-products (dioxins and furans) and disposal/destruction of POPs stocks and wastes that no longer exhibit POPs characteristics. The Convention establishes criteria and a procedure that reflects a precautionary approach.

Under the Convention, countries will be required to develop plans for identifying stockpiles of POPs and produce inventories of unwanted by-products. The countries also required to develop national implementation plans that will meet Convention obligations and develop a specific action plan on measures to reduce and eliminate sources of by-product POPs.

The Treaty identifies waste incinerators and cement kilns, firing hazardous waste that releases POPs to the environment. So governments should give priority to alternative processes, techniques or practices to minimise/eliminate waste and file their implementation plans with the Convention.

One hundred and fifty countries have signed in Stockholm Convention. A country, by signing, indicates an intention to ratify. When it ratifies, a country assumes a legal commitment to implement the Convention. A country that ratifies is called a “Party” to the Convention. Ninety days after fifty countries ratify, the Convention enters into force and becomes legally binding on its Parties. It is likely that the Stockholm Convention will enter into force within only a few years, possibly as early as 2003 or 2004.

The Stockholm Convention provides a means to end the manufacture and use of POPs chemicals, pesticides and their by-products, and to destroy POPs stockpiles. The treaty will also reform waste management practices to prevent POPs formation when wastes are burned or incinerated, and to promote the use of cleaner production processes and cleaner materials.

**NGOs can play a key role in**

- helping all parties understand the dangers of POPs and steps they can take for their elimination.
- educating the public and government officials about the Convention and the important role it will play in toxic pollution reduction.

**Funding to Promote Action.** A special fund to encourage government action on POPs has been set aside by international donors through the Global Environment Facility (GEF). Developing countries who have signed and/or ratified the Convention can receive money from this fund to prepare for Stockholm Convention National Implementation Plans (NIPs), and Convention Enabling Activities. Some early funds from the GEF will also be available for targeted regional or global projects to perform assessments and/or to demonstrate techniques for the reduction and elimination of releases of POPs to the environment. Stockholm Convention Enabling Activities are a government-led multi-stakeholder process. Under Enabling Activities, the government

- consults with and involves stakeholders including civil society, NGOs and industry
- assesses its institutional infrastructure and its capacity to meet future Convention obligations
- produces an initial inventory of POPs including: present POPs uses and by-products, stockpiles, sources, and also possibly human body burdens and environmental pollution
- establishes country objectives and priorities for action on POPs
- prepares a National Implementation Plan detailing measures the country will take to satisfy its country objectives together with its Convention obligations.
VERS DES SYSTEMES AGRICOLES DURABLES

Depuis quelques années (particulièrement la conférence de Rio de 1992 sur l’environnement et le développement) on assiste à une meilleure prise de conscience des problèmes de santé et d’environnement. La durabilité est devenue le mot clé des discussions sur le développement économique, notamment en rapport avec les pays en développement. La communauté internationale est de plus en plus consciente de ces problèmes et les politiques des pouvoirs publics dans les pays industrialisés et en développement encouragent de plus en plus l’agriculture biologique et d’autres formes d’agriculture durable.

En matière de développement agricole, l’accroissement de la production est souvent la préoccupation prioritaire, alors que la productivité de tout système a des limites. Si celles-ci sont dépassées, l’écologique va se dégrader et peut ensuite s’effondrer.

La “durabilité” dans le domaine de l’agriculture se réfère principalement à la capacité de rester productif tout en maintenant la base des ressources. À cet égard, plusieurs concepts, techniques et méthodes sont utilisés.

Le concept d’agriculture biologique couvre également les aspects économiques et sociaux de la production agricole tant locale que mondiale. Dans l’agriculture biologique, l’objectif est d’appuyer et de renforcer les procédés biologiques sans recourir à des aides techniques tels que les engrais et les pesticides synthétiques. La lutte contre les mauvaises herbes, les parasites et les maladies, est par conséquent essentiellement préventive. L’agriculture biologique repose sur l’amélioration de la structure et de la fertilité du sol, sur un choix équilibré de cultures, et sur la mise en œuvre de systèmes de rotation des cultures diversifiées. L’agriculture biologique connaît une croissance rapide surtout en Europe de l’ouest. La FAO estime qu’elle fournit près de 2% des aliments vendus dans le monde. La production d’aliments biologiques augmenterait d’au moins 20% par an en Europe de l’ouest car les consommateurs se font des soucis à cause des alertes très médiatisées et cherchent des garanties par rapport à la sécurité alimentaire.

En Afrique, des projets de production de coton biologique sont en cours au Sénégal, au Bénin, au Zimbabwe, en Tanzanie.

Les systèmes d’agriculture intégrée conjuguent les moyens de lutte chimique et biologique. Parmi les techniques utilisées, figurent la lutte intégrée contre les ravageurs, la gestion intégrée des nutriments et la gestion intégrée des mauvaises herbes.

L’agriculture durable est multifonctionnelle il produit l’alimentation et d’autres biens pour les fermiers et les marchés, mais il contribue aussi à une gamme de biens publics, comme l’eau propre, la faune et la flore, la séquestration du carbone dans des sols, la qualité de paysage, ... Beaucoup de ces fonctions non-alimentaires ne peuvent pas être réalisées par d’autres secteurs économiques.
Ratifying the Stockholm Convention in Africa

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The workshop Ratifying the Stockholm Convention in Africa seeks to stimulate NGO activism as a necessary measure of achieving expedited ratification and implementation. In this context, it is important to identify active environmental groups in the region, involve them in the network and equip them with the necessary information and tools to enable them to track and pressure their governments to ratify and implement the treaty.

According to the Food and Agricultural Organization (FAO), the amount of obsolete pesticides accumulated in stockpiles throughout the African continent is about 50,000 tons. These chemicals and their containers are frequently found leaking into local water supplies, soil or evaporating into the air to be carried away to contaminate distant environments.

The stockpiles include some of the most toxic pesticides ever made, many of which have been banned for years, such as dieldrin and toxaphene, and some may be up to 40 years old. The dangers to health and the environment worsen with each passing day of inaction as the chemicals continue leaking. Urgent actions are needed to stop additional damage to the health of local communities, to local and regional environments and to the global environment. Rapid solutions will also alleviate the economic burden of trying to maintain decaying chemical stockpiles, and help to bring about sustainable changes in the way pesticides are controlled and used.

In essence, the POPs Treaty provides a firm legal framework for banning the toxic substances as well as the impetus for international assistance with destruction of POPs stockpiles and implementation of safe alternatives for poor countries. These measures are however urgent if further threat of POPs is to be eliminated and capacity building is crucial. It is therefore important to identify resources and opportunities for regional collaboration.

DDT (Dichlorodiphenyltrichloroethane)

DDT has been rampantly used in vector control in many African countries, despite having been banned in developed countries. There have been clarion calls and media mounted campaigns to exempt DDT from the list of the “dirty dozen”. It would be imperative for the workshop to review the salient issues behind DDT and Malaria control so as to advise on appropriate policy.

Other issues requiring attention are the NGO community needs to adopt a common position on DDT elimination and there seems to be ambivalent national policies concerning the use of Polychlorinated Biphenyls (PCBs). The management of municipal and hospital wastes is still largely dependent on incineration. Many African countries have no clear-cut policy on incinerators despite the fact that they are the greatest emitters of dioxins. The number of operational incinerators, new and proposed would therefore be one of the benchmarks for evaluating governments’ commitments to implementing the POPs Treaty. NGOs have a greater role to play in expediting the ratification, implementation and monitoring of the POPs Treaty. They are even better placed to popularize and publicize the Stockholm Convention since most of them have smaller bureaucracies and are involved in awareness programs already. They have also developed frameworks and infrastructure for community outreach programs, where necessary.
Health Care Without Harm: Involvement and Contribution to GroundWork’s Health Care Waste and Incinerator Project

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Health care waste and incineration problems in South Africa have reached uncontrollable proportions. GroundWork, a South African NGO committed to the process of reducing the impacts of health care waste and incineration, started a project with the objective of reducing impacts of health care waste and incineration. GroundWork identified together with HCWH and the Department of Health, two hospitals for “greening”, Edendale hospital (Pietermarizburg) and Ngwelezana (Empangeni), with the idea to make them model institutions for other hospitals to follow. This had commenced with a skillshare visit by HCWH’s consultant, Glen McRae. HCWH skillshare aims to reduce waste and thereby saving costs and increasing effective occupational health and safety. Following is the summary of the project:

The work with KwaZulu-Natal Hospitals: Findings by HCWH Skillshare team conducted in 2001

Health Care Institutions generate high concentration of waste, which are not segregated. On-site incinerator is one of the institutions creating health problems. Little care has been given for possible dangers of waste in red bags such as injuries, exposures, spills etc. There is no co-ordinated mechanism in the form of a chain for Hospital waste disposal. The public lack education are unaware of the consequences. The health care staff needs training on hospital hygiene and proper handling, collection and secure storage of health care waste.

Handling of Health Care Waste - a Complicated Issue:

Wastes are not handled and treated according to their type and thereby lead to hazardous working conditions. Investment in technology creates even more problems. For example, Incinerator generates dioxins and furans. Incineration does not encourage waste minimization or segregation. Other problems are over handling and mixing of waste, and scarcity of resources in hospitals.

Lack of Proper Waste Minimization Plans:

No internal policies and regulations for waste segregation have lead to confusion and incorrect disposal of waste by staff. Lack of proper waste minimization plans have lead to incorrect disposal of waste.

Three other important findings by the HCWH team:

- Little distinction by staff between what was “infectious” and “noninfectious” health care waste.
- Fear of diseases like HIV and hepatitis lead to treating most waste as highly infectious and the perception was that the best way to treat waste was to burn it
- Little awareness of the dangers of Mercury

Report formulated on how to improve waste management for hospitals after skillshare by HCWH and possible strategies given to institutions to be adopted.
Progress at institutions after follow up of recommendations given by HCWH at Edendale Hospital in 2002

- A proper waste minimization plan has been formulated.
- Red bags containing infectious medical waste have dropped from an average of 250 – 300 bags to around 70 bags per day.
- Secure storage areas for red bags have been built - no community access is allowed.
- Proper segregation has lead to the initiation of recycling of paper and cardboard.
- Internal training workshops are conducted on regular basis.
- Chief pharmacists have also started disposing of used vials in red bags.

A number of reports have appeared in newspapers indicating dramatic improvements at Edendale hospital. For instance:

“I am very appreciative of the support we have received from GroundWork and Health Care Without Harm, and also commend the hospital staff for their enthusiastic commitment to improving medical waste management in Edendale” (Chief Medical Superintendent, Dr L. Ramiah).

Red bag reduction at Edendale saved cost for the institution. Improvements at Ngwelezana have also been reported. There are also reports about formulation of proper waste minimisation plans and efforts to develop posters in both English and Zulu. Moreover, meetings are held every month to assess improvements and discuss further methods for improvement. As a result of this, the incinerator has been shut down and the incinerator ash dump site has been cleared.

**Looking Ahead**

Groundwork with the support of HCWH is continuing to work with these hospitals for continued improvements by using the recommendations from the report supplied by HCWH. Groundwork together with HCWH wishes to make these institutions role model for other hospitals in South Africa to follow contributing to a role out campaign.
In the information age, media play a significant role in framing the thinking and attitude of society. Communication using mass media resources like radio, television and press make greater impact than any other mode of knowledge transfer. However, for effective communication, great care is needed in planning a media presentation of any sort. Important aspects to be considered are the type of audience, the nature and importance of the subject to be conveyed and the mode of presentation. The material for presentation should be focused and vividly explained. In any presentation the first paragraph is the most important part, and should be catchy. Adding colourful quoting, contact details, logos, etc. add flavour to the presentation.

If you know who is most likely to be interested in the story, address it to them. If you don’t know, then add “attention assignment editor/producer”. Phone reporters up the day before (especially friendly reporters) to tell them you have an interesting story out the next day. Faxes often go astray; other delivery methods may also not work. Check if it reached its destination and offer an interview on the spot.

How to plan for an interview

• Be well aware of the subject of the interview.
• Do background work related to the subject, type of publication and the person interviewing.
• Find out about the context of the interview.

Who is doing it?
What sort of person are they?
What sort of programme or publication is the interview for?
Who else is being interviewed for the story?

Imagine the most difficult questions one could face, write them down, and then answer them. It may also helpful to ask a friend or colleague to conduct a mock interview.

If the interview is for radio, one should know when it will be broadcasting, and whether it will be recorded or broadcast live. For a TV interview, the appearance is very important. Try to avoid looking directly into the camera while the interview is on. However, if the interview is for printing, try to repeat key messages, using different wording. Printing media thrives on statistics, maps and tables.
Media advocacy works through the media to highlight social and health issues, focusing on policy-oriented solutions. In this presentation Valerie Denney Communications introduced three fundamental elements of successful media work. Gaining mastery in each of these areas will help you attract media and get the story you want.

**What is Newsworthy?**

A successful news story must be able to catch people’s attention. This doesn’t mean the subject has to be sensational. It means that the readers have to be shown why the story matters immediately. The story needs to arouse some kind of human emotion. Action, stories in the news, famous, new facts, impact, conflict, human interest, emotion, common story lines and unusual twists will make the news interesting.

**Framing a Story**

Creating a “Frame” describes problem, solution, responsible people and the boundaries of the story. For example, tobacco will cause a problem to individual or public health caused by faulty products. Frames may include the subjects like homelessness, guns, abortion, death penalty, etc. It also includes credible facts, voices, examples and analysis. Frames require spokespeople, messages that resonate, pictures, symbols, sound bites, a storyline and background.

**Creating a Media Advocacy Campaign**

The first step to successful communications is to develop a strategy that identifies project goals, targets audiences and the messages that they need to hear. Clarifying these points up front is the key to focusing resources and generating real results.

While creating a media advocacy campaign one should clarify one’s goals, identify an audience, develop messages, expect feedback from people, ask oneself why someone should pay attention to the issues, express ideas through packages (brochure, profiles, information kit, website, fact sheets, video and spokesperson list) and develop a communication strategy.

Know, which audiences the reporter writes or broadcasts for and develop messages that will resonate with those audiences, whether they are suburban or downstate. Keep that audience in mind as you are interviewing and try, as much as possible, to imagine yourself speaking directly to them.

Communicate with your targeted audiences directly. Paid advertising, direct mail, documents such as newsletters and brochures and community outreach should be part of your overall communications planning.
Mr. Orme has discussed the importance of the PAN Pesticides Database. The PAN Pesticides Database is a one-stop location for current toxicity and regulatory information for pesticides. This presentation showed participants how to use an extensive database that PAN-NA has developed to assist with information gathering regarding product information, use and toxicity.

To find out more about insecticides, herbicides and other pesticides, this database is very helpful. Using this online database, one can search any chemical by chemical name, CAS number, EPA PC code or DPR chemical code.

The Pesticide Chemical Search page allows one to search for individual chemical active ingredients. Formulated pesticide products typically contain mixtures of active ingredients and other ingredients. Active ingredients are listed on the labels of all U.S. pesticide products. If someone wish to search for a product by trade name instead, use the Product Search Page. Some of the top chemical searches are 2,4-D, atrazine, carbaryl (Sevin), chlordane, chlorpyrifos (Dursban), cypermethrin, DDT, dioxin, DEET, deltamethrin, fipronil, glyphosate (Roundup), diazinon, imidacloprid, lindane, malathion, methyl bromide, paraquat, permethrin and pyrethrins. One can also view an alphabetical list of chemicals.

Another method of searching for the chemical is to search by chemical categories such as use type, toxicity, regulatory or chemical classification. Using the chemical category search, one can find pesticides that meet certain criteria. Multiple selections are treated as ‘AND’ searches. For example, selecting ‘Insecticides’ and ‘Carcinogens’ will find all chemicals which are both insecticides AND carcinogens.

From the PAN Pesticides Database one can find the following type of information (search by the following criteria of information):

- Acute toxicity, carcinogenicity, endocrine disruption and developmental toxicity
- Physical property data relevant to water contamination/related chemicals
- Aquatic ecotoxicity data by taxa group and species
- Searching for pesticide products by product name or EPA registration number
- Searching for pesticide products by product categories
- Detailed product information
- Detailed product information including links to all available product labels
- Registered uses, registration history and manufacturer
- Pesticide use in by country
- Top chemicals used on chemical name in country wise and year
- Pesticide use in country wise
- Top countries for chemical use on chemical name and year
- For example: use of Phosmet and Chlorpyrifos on Almonds in Fresno and Kern Counties from 1991-2000

Refer to (http://www.pesticideinfo.org) website for more details.
Community Monitoring

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Mr. Looker presented in IPEN skillshare about the importance of Community Monitoring and POPs. Community-based monitoring programs are a powerful tool to bring a community together, gather information about environmental problems or injustice and protect the health and well-being of communities.

Types of Monitoring

According to Mr. Looker one should monitor a source or an effect. In the source monitoring, one should check the chemical releases, chemicals in products, chemicals in food and hazardous incidents. An aftereffect can be anticipated after the emission of different types of POPs in the environment. They are environmental concentrations, chemicals in food, biological effects, human health effects and ecological effects. Some of these are described here below:

Chemical or pollutant releases are defined as the direct measurement of chemicals or pollutants in the environment which includes direct releases or emissions and environmental concentrations. Releases are not the same as environmental concentrations. The advantages in chemical or pollutant releases are: powerful and convincing direct measure of contamination, useful for modelling and easy to understand and communicate. The disadvantages are: often difficult and/or costly, sometime have to estimate the release and do not give information about effects. Examples are: measuring concentration in air, water, soil and tons of pesticides sold. For more information please see the Case Study Silicon Valley Toxics Coalition shellfish program, on the website http://www.svtc.org/sust_water/cscb/index.html.

The shellfish deployed in contaminated streams accumulates pollutants due to the concentration of mercury and PCBs. For more information please see the Case Study Bucket Brigade in South Africa and Swaziland elsewhere on the website http://www.gcmonitor.org/. Use simple capture device (special bucket) to sample the air and detect air toxins.

Pollutant Release and Transfer Register systems (PRTR): The core elements of Aarhus PRTR Protocol are: facility-specific (with respect to point sources), pollutant-specific (or waste-specific, as appropriate), multi-media (air, land and water), include information on transfers, mandatory reporting on periodic basis, standardized and timely data, limited reporting thresholds, limited confidentiality, coherent and user-friendly and publicly accessible, including in electronic form and be a structured, computerised database or linked databases.

NGOs want PRTRs to have precise geographic locations of facilities, to facilitate mapping of pollutant releases and potential health effects, major diffuse sources of pollution (traffic, agriculture, shipping), information on on-site transfers and storage, water, energy and resource use, reduction targets, estimates of future releases, noise, radioactive substances and GMO releases (releases as products).

Some major points of controversy are chemical specific reporting of off-site transfers of waste, step-by-step approach (number of chemicals to include in 1st step and 2nd step mandatory or voluntary?) and opt-out provision sought by USA (to annual reporting requirement and to greenhouse gas emissions reporting).
Ecological/Biological Effects are defined as the measurement of environmental conditions and their effects on organisms or ecosystems. An advantage is that directly measures an impact of contaminants in the environment can be directly measured. The disadvantages are that they do not, by themselves, tell the cause and require some expertise. An example is measuring failed-to-hatch bird eggs. For more information, please see the Case Study *Measuring benthic macroinvertebrates in a stream to assess stream condition*. Benthic organisms are those that live on the bottom of lakes, rivers, streams, ponds and wetlands on the website http://plasma.ycas.yorku.ca/mapref/.

Human Health/Body Burden are defined as the measurement of human health or the measurement of chemicals or pollutants in the human organism, which refers to naturally occurring or man-made chemicals measured in an individual that serve no useful health or nutritional purposes and that may be harmful to human health. The advantages are direct measurement of cumulative exposure and very powerful evidence for use in campaigns. The disadvantages are difficult-to-interpret meaning of results, which are difficult to link to disease. An example is measuring contaminants in blood, hair and urine. For more information, please see the Case Study *PHTHALATES*, on the website http://comeclean.org/body_burden/page7.htm.

Chemicals in food/products are defined as investigations into known or suspected toxic chemical substances contained in commercial products or of hazards associated with the use of commercial products. Advantages are that they can be helpful in preventing exposure and they are useful information for campaigns against certain products. The disadvantages are difficult-to-interpret results and the need to combine with exposure information. An example is pesticide residues in food and lead in paint. For more information please see the Case Study *Detecting Pesticide Residues in Food* (Texas Dept. and United States Dept. of Agriculture) and visit the website http://www.texascenter.org/almanac/Land/PESTICIDESP4.HTML.

Communicating Data:

Mr. Looker explained in detail why communicating data is important, to whom one should communicate, how one can communicate to the authority and what the challenges are. Some of the ways of communicating data are GIS/Maps, raw data and visualisation of data and statistical communication.

Graphical communication is using pictures to tell a story. The main advantage is that it usually is an effective way to communicate a lot of information in an understandable fashion. The disadvantage is that it may be misleading, focus on the wrong things or try to say too much.

Be a Citizen – Scientist

The scientific method is important because you will be communicating with scientists and more effective in proving a point. The main steps of the scientific method are the identification of a problem, formation of a hypothesis, development of study design, collection of data and derivation of a conclusion.

Good data is usable, reliable, valid, of known quality and certified. Data is capable of answering questions and supporting management decisions, completing parameter packages, being compared to other data sets in terms of sampling design and data quality.
II. POLICY AND REGULATION

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Country Enabling Activities in Africa

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The presentation *Country Enabling Activities in Africa* described in detail the process for developing country based enabling activities and national implementation plans (NIP), which are mandated under the Stockholm Convention. The project document was developed in co-operation with representatives from the Ministry of Environment of NIP, in consultation with other stakeholders relevant to the implementation of the project. According to him, the process of developing NIPs involves a variety of steps. Project implementation, however, involves a successful coordination from the project co-ordinator. To help the participants in the workshop, who may later become project coordinators, Mr. Eisa clearly outlined the various duties, responsibilities and steps that can lead to successful co-ordination.

This primarily involves setting up a National Steering Committee (NSC). This means identifying and inviting representatives to serve on the project’s steering committee from different institutions that are relevant in this area. Followed by this, the coordinator has to organise an inception workshop for these members. Inception workshop organised by the project coordinator is only an initial phase but it is a major one in this process. This workshop will serve as the initial platform to present the country’s obligations regarding the Stockholm Convention on the POPs issue.

The project coordinator is responsible for ensuring that a National Chemicals Management Profile (NCMP) is prepared/upgraded and/or used as a basis for planning inventories and assessments for carrying out the NIP. The project coordinator will initiate the development of a set of criteria for prioritisation, taking into account the health, environmental and socioeconomic impacts of various POPs chemicals and the availability of alternative solutions. Followed by this, the national coordinator is responsible for organising a national priority validation workshop. The facilitator may play an important role by presenting the criteria and the results of the analysis derived from the inventories and assessments performed and facilitate and finalise discussions in the workshop.

Mr. Eisa has also illustrated the strategies and action plans that need to be carried out as part of implementing this programme. The implementation strategy covers the country’s overall strategy for implementing the NIP once prepared and endorsed. For this stage the project coordinator, in consultation with the NSC, will prepare terms of reference and recruit an expert to review the implementation strategy together with all action plans and strategies. The project coordinator will then organise a final workshop to obtain commitment of stakeholders for the NIP Policy Statement. Participants should be provided with information material and the final draft of the NIP well in advance of the workshop. Then the project coordinator can submit the NIP, through the NSC, for endorsement by the relevant government institutions after having incorporated workshop comments and suggestions. In the final stage, the project coordinator is responsible for submitting the endorsed NIP document to the government.
UNIDO Programme for the Implementation of the Stockholm Convention on POPs: Cooperation with the Global Environment Facility (GEF)

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In the Stockholm Conference on 22-23, May 2001 focused on various POPs aspects that are threats to health and the environment. The Stockholm Convention focuses initially on twelve POPs that can be grouped into three categories: Pesticides (Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, Mirex and Toxaphene), Industrial Chemicals (PCBs) and unintended by-products (Dioxins and Furans). Mr. Eisa explained to the delegates about these chemicals and particularly industrial chemicals and unintended by-products, in his presentation.

Industrial chemicals, called PCBs, are generally used in industry as heat exchange fluids, dielectric material in transformers and capacitors, additives in paint, carbonless copy paper and plastics (Properties: organic diluents, immersion oils, fire retardants, sealing liquids, laminating agents, de-dusting agents). The level of persistence of PCBs in the environment corresponds to the degree of chlorination. PCBs have a number of devastating effects. High doses of PCBs can kill fish, while low doses may lead to and cause spawning failures. Research on wild animals (seals and mink) linked PCBs to reproductive failure and suppression of the immune system. PCBs will contaminate food and may later lead to pigmentation of nails, mucous membranes and swelling of the eyelids, fatigue, nausea and vomiting. Other consequences of PCBs contamination have also been reported. Their presence in mother’s bodies during pregnancy can lead to developmental delays and behavioural problems in newborn children. It is also reported that effects of PCBs include poor short-term memory functions and suppression of the human immune system.

Dioxins and Furans are chemicals that are produced unintentionally due to incomplete combustion, during the manufacturing of pesticides and other chlorinated substances. They are mainly emitted from burning hospital waste, hazardous and municipal waste, automobile emissions, peat, coal and wood. Dioxins can remain in soil up to 10-12 years after the first exposure. Citing various research studies, Mr. Eisa explained the adverse effects of dioxins. They include immune and enzyme disorders and chloracne and are classified as possible carcinogens. Clean production approach can be used to minimize emissions of these chemicals.

Cleaner Production Steps

1. Planning and Organization
2. Preassessment
3. Assessment
4. Generation and screening of options
5. Feasibility analysis
6. Implementation of options
7. Evaluation and continued improvement
Dr. Akhabuhaya, Chief Registrar of Pesticides in Tanzania, described the different types of national regulatory frameworks for pesticides that are currently in use and discussed the various options for regulation under the Stockholm Convention. It is understood that R-frameworks are useful in a variety of ways. This helps access to suitable pesticides rather quickly, to screen off unsuitable pesticides, to control availability (qty/qlty) of pesticides and institute safe use practices.

Dr. Akhabuhaya stressed that the choice of R-Framework in any situation should be based on a variety of issues such as local needs/pest problems, social & economic conditions of the situations, level of literacy, infrastructure (manpower, labs, inspectors, etc) and co-operation from other institutions (customs, police, banks and judiciary).

According to Dr. Akhabuhaya, each of these schemes has advantages and disadvantages. Therefore, he suggested that error free situation can be developed by using these various schemes as they all can contribute to each other.

Dr. Akhabuhaya pointed out that the POPs convention directly and indirectly hinges on these types of regulatory frameworks. For instance, the convention requires an *immediate ban* of eight pesticides and DDT (except for malaria) and an immediate prohibition of PCB production by 2025 at latest and prevention of the development of new POPS. Dr. Akhabuhaya informed the participants about the legal obligation of various countries to set up R-frameworks. To achieve these goals, the governing council of UNEP decided to start global intergovernmental negotiations on a legally binding POPs instrument in February 1997, which was endorsed by the World Health Assembly later in May 1997.

Dr. Akhabuhaya added that noncompliance to engage with such activities by the parties, who agreed to the Stockholm Convention, will be seriously considered (Article 17 of the UNEP points to this condition). Finally, Dr. Akhabuhaya mentioned that the Stockholm Convention was also helpful in developing new regulatory frameworks.
Stockholm Convention on POPs: Making International Agreements Work for Local Community Action and Campaigns

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Using the Stockholm Convention as a Tool for Community Action, Ms. Carter, representing IPEN, explained to the delegates some of the terminology of the Convention that can assist them in developing local and national campaigns and campaign strategies. This may have been helpful for the delegates to develop broad understanding in carrying out environmental protection projects.

The main topics covered in Ms. Carter’s session were human health, elimination of all intentionally produced POPs, aim of elimination for by-product POPs and precautionary principle operationalised in key sections of the Convention. Strict language on the destruction of stockpiles of POPs and wastes Substitution Principle Community Right to Know Strict limitations and bans in trade of POPs. Another topic included in Ms. Carter’s presentation was loopholes in Convention exemption. It was also pointed out that all countries are required to develop national implementation plans and the various financial and technical assistance are available. Countries will develop action plans on measures to reduce and eliminate by-product POPs.

Examples of Industrial sources of by-product POPs

- Waste incineration
- Cement kilns firing hazardous waste
- Secondary copper smelting
- Secondary aluminum production
- Waste oil refineries
- Fossil fuel fired utility and industrial boilers

Ms. Carter has also informed the delegates about the various implementation activities such as ongoing negotiations and demonstration projects that are in progress in various countries. This session covered issues such as increased information on POPs producing industries and investing in alternative industries and alternative methods of production that can reduce pollution. Finally, Ms. Carter underlined the importance to stop global spread of POPs by stopping inappropriate technology transfer.

Opportunities for Action

- Stop global spread of POPs by stopping inappropriate technology transfer.
- Interventions in domestic regulatory settings process
- Non-incineration destruction of POPs stockpiles be adopted
- Opportunities to target local sources identified
- Addition of new POPs to the list
Dr. Anaalem Abebe, representing the Ethiopia EPA, discussed the development of Ethiopia’s regulatory system with special reference to chemical safety issues. The government of Ethiopia has issued a constitution that has highly recognized the democratic rights of all Ethiopian citizens to live in a clean and healthy environment. However, Ethiopia is one of the developing African countries with a considerable amount of environmental problems. The major environmental problems are land degradation and industrial pollution.

In Ethiopia, the government has established an organization that bears the biggest responsibility of protecting the environment, The Environmental Protection Authority (EPA). It was established by virtue of proclamation No 9, in 1995G.C. The main objective of EPA is to ensure that all matters pertaining to the country’s social and economic development activities are carried out in a manner that will protect the welfare of the human beings as well as sustainably protect, develop and utilize the resources base on which they depend for their survival. Bearing such responsibility the EPA has developed a federal Environmental Policy and formulated federal environmental legislation. The authority has initiated a project idea in the implementation of Ecologically Sustainable Industrial Development (ESID).

The EPA was also very influential in the follow-up and the implementation of Global Environmental Conventions. Furthermore EPA has represented the federal government of Ethiopia in all the negotiation meetings for the POPs Convention.

In Ethiopia, one of the major environmental problem is pollution. With regard to the pollution problem, the EPA has established a pollution control department. In order to alleviate the issue of pollution and specially control the hazardous chemicals in the country, different measures have been taken by the government. A decree with a No 20 1990 for the registration and control of pesticides has been issued. In this decree, Article 3 reads, “No person may manufacture inert, sell or use of a pesticide not registered."

Accordingly, all the eight POPs pesticides are prohibited to be registered within the country. These include Aldrin, Dieldrin, Chlordrin, Mirex, Heptachlor,Toxaphene and DDT. Dr. Abebe pointed out that no clear information is available on Hexachlorobenzene and PCBs. Dioxin and Furans also undetermined and no action is yet taken.

Dr. Abebe has also stressed the need for successful co-ordination of different governmental and non-governmental agencies to work together and cooperate, in order to protect the environment and achieve the objective of sustainable development.
Dr. Quijano dealt with issues such as the impact of globalisation. He believes that globalisation is one of the major environmental disasters in the developing countries. He expanded the word ‘GLOBALISATION’ in the pattern: “Greed Driven Liberalization Obviously for Big Business Advocated Largely by Industrialized States Aggravating Tensions, Inequalities and Oppression of Nations” to show the intensity of this threat.

In his view the main principle, to protect the nature should not rely fully on scientific evidence and cost-effective analysis. According to him, “Whenever there is a serious threat to health and the environment, lack of scientific certainty should not postpone cost-effective measures to prevent harm” and, “when there are reasonable grounds to indicate potential harm to health and environment precautionary action should be taken even if cause and effect relationship has not been established scientifically”.

Underlining how science has inversely affected the situation, Dr. Quijano has provided an expansion of the word ‘SCIENCE’. The expansion is “Subject to Corporate Interests Engaged in Nonessential Commercial Exploits”.

Emphasizing the importance of precaution in this regard, Dr. Quijano expanded the word ‘PRECAUTION’.
III. CLEAN PRODUCTION

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Clean Production: The only Sustainable Framework to Implement the Stockholm Convention

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For PRODUCTION processes, Cleaner Production includes conserving raw materials and energy, eliminating toxic raw materials and reducing the quantity and toxicity of all emissions and wastes before they leave a process. For PRODUCTS, the strategy focuses on reducing impacts along the entire life cycle of the product, from raw material extraction to the ultimate disposal of the product.

The presentation is summarized as follows:

Clean Production:
- Promotes renewable energy and materials and sustainable product design
- Is rooted within circular concepts of the product life cycle
- Is based on the Precautionary Principle

Clean Production is based on four Principles: precautionary, preventive, democratic and holistic.

Precautionary Principle:
- If there is a threat of harm to the environment or human health, precautionary measures should be taken via a dynamic search for safer products, processes or services
- The Burden of Proof is not placed on communities to prove harm

Preventive Principle
- Prevent rather than cure
- Creative know-how based within ecological thinking
- Life cycle important

Democratic Principle
- Production involves workers, consumers, communities and local knowledge, not just engineers and scientists
- Access to information is vital for efficient implementation of CP.

Holistic
- Solar, cyclic, safe?
- Continuous improvement using life cycle thinking

Clean Production and the Stockholm Convention

For unintentional POPs “continuous minimization and where feasible, ultimate elimination” (all achievable via a clean materials policy) “best available techniques” to reduce or avoid existing and new sources of unintentional POPs (achievable by substituting chlorinated processes and products).

National Implementation Plans (NIPs)

Each country should establish a material plan based on Clean Production methodology as the
only sustainable way for agricultural and industrial production. Dioxin can be eliminated through clean production, material substitution and alternative processes.

Main Sources of dioxin are from PVC, Incineration/Burning, Cement kilns/Smelters, Pulp and Paper bleaching, Solvents and Pesticides.

**Alternatives to eliminate Dioxin are:**
- Non-PVC building materials, packaging and hospital use
- Alternatives for solvents (Aqueous, mechanical and safer chemical cleaning to replace chlorinated solvent use)
- Alternatives to pesticide production and use (Sustainable agriculture techniques which avoid the use of pesticides yet achieve comparable or increased yields)

**Alternatives to hazardous waste incineration:**
- Toxic use reduction techniques (cleaner production) in industrial processes to prevent the use of chlorinated inputs. Achievable by process modification and product redesign.
- Incineration no longer ‘needed’
- State of Massachusetts achieved 67% toxic chemical reduction between 1989-99; all incineration proposals stopped

**Alternatives to dioxin generation in pulp and paper manufacturing**
- Substitute chlorine bleaching in pulp and paper production with:
  - Oxygen delignification
  - Peroxide
  - Ozone
  - Enzymes and closed loop

**Alternatives to dioxins in smelters**
- Smelters generate dioxins because of chlorinated organic substances used in steel making and metallurgical processes
- In Secondary Smelters PVC content in scrap (e.g. cables, scrapped telephone cases) generates dioxin
- PVC plastic separators in lead-acid batteries and residues in steel scrap from junked cars generates dioxin
- Non-PVC materials in electronic equipment, autos and cables now exist

**Definition of Sustainable Agriculture**
- Makes use of nature’s goods and services whilst not damaging the environment
- Integrates natural processes (nutrient cycling, nitrogen fixation, soil regeneration and natural enemies of pests) into food production processes
- Minimises use of nonrenewable inputs
- Uses knowledge and skills of farmers
- Makes productive use of social capital - people’s capacities to work together to solve common management problems such as pest, watershed, irrigation, forest and credit management.

The Clean Production national policy are to conduct POPs audit, set timeline and percentage reduction goals for POPs use, increase public access to information and participation, ‘push’ sustainable material use via R&D on local renewable material and financial incentives.
An Integrated Pest Management (IPM): Training Process for Cotton Producers in Senegal

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LA PRODUCTION DE COTON AU SENEGAL

- fournit environ 3 % du Produit Intérieur Brut (PIB), soit 18 % des exportations agricoles et 5 % des exportations nationales
- contribue à l’amélioration de l’habitat et à la réalisation d’infrastructures sociales telles que la construction des postes de santé, des écoles, des mosquées, etc.
- a permis également un début d’industrialisation avec la création d’emplois à travers les cinq usines égrenages dans les zones de production.

PROBLÈMES LIÉS À LA PRODUCTION DU COTON AU SÉNÉGAL

- De nombreux ravageurs dont: Helicoverpa armigera, Bemisia tabaci, Aphis gossypii, Sylepte derogata, Spodoptera litorallis et Earias biplaga
- Coûts très onéreux des pesticides chimiques et inefficacité sur certains ravageurs (exemple : Bemisia tabaci qui a provoqué la chute brutale de la production et des rendements cotonniers en 1998/1999)
- Pesticides très dangereux pour les hommes et le bétail qui fréquente les champs après les traitements
- baisse de la production due au sous-dosage et au détournement des pesticides destinés au coton au profit d’autres cultures
- diminution du nombre de producteurs surtout au cours des trois dernières campagnes

PRINCIPES DES CHAMPS ECOLES PAYSANS

- Sensibilisation des producteurs sur les dangers des pesticides
- Une prévention des ravageurs par l’assainissement de l’environnement de production, l’utilisation de méthodes culturales saines: bonne préparation des sols, fumure organique, semences saines
- Observations agronomiques et biologiques régulières des champs: une fois par semaine
- Identification des ravageurs et des ennemis des ravageurs afin d’évaluer le degré d’infestation
- Prendre la décision de manière autonome de traiter ou de ne pas traiter son champ. Ainsi, dans les champs écoles, le paysan apprend
- a mieux connaître son environnement
- à pouvoir reconnaître les ravageurs des insectes utiles (ou ennemis des ravageurs)
- connaître le cycle de vie des ravageurs
- À pouvoir décider s’il faut traiter ou pas
- s’il doit traiter, à privilégier les produits naturels et de n’utiliser les pesticides chimiques qu’en dernier recours

le CEP n’enseigne pas aux producteurs de nouvelles technologies développées hors de leur environnement, mais leur offre la possibilité d’apprendre en pratiquant. Car la formation se fait dans les champs.
DISPOSITIF DES CEP

- La parcelle PP est la parcelle qui utilise les pratiques paysannes habituelles; elle est large de 20 m et longue de 25 m.
- La parcelle IPM est cultivée avec la méthode de la lutte intégrée contre les déprédateurs. Elle a les mêmes dimensions que la parcelle PP.
- La parcelle compensation sert à étudier le comportement des cultures face aux différentes agressions et stress telles que le manque d’eau, la section des feuilles ou des branches,…Elle ne subit aucune autre intervention hormis les agressions qu’on lui fait subir
- Elle est longue de 25 m et large de 2 m. Les parcelles sont séparées par une distance de 2 m.

ACQUIS DU PROGRAMME DE FORMATION

En deux ans, les résultats de la formation sont prometteurs. Cent cinquante neuf (159) producteurs qui ont été formés possèdent actuellement des connaissances de base pour une meilleure protection phytosanitaire. Ces connaissances sont :

- la distinction entre un ravageur et prédateur (ennemi naturel) ;
- le rôle des ennemis naturels des ravageurs dans un champ ;
- la lutte physique (arrachage et destruction des organes attaqués) ;
- les pesticides naturels (neem, piment, citron, caïlcédrat, etc.).

Au cours de la deuxième session de formation à Velingara, certains producteurs de coton ont observé les principes du CEP dans leurs propres champs. Des six traitements recommandés par la société d’encadrement du coton conventionnel, ils ont eu à effectuer uniquement deux à trois traitements et les rendements ont été bons. Si la formation est élargie et démultipliée dans les zones agricoles, il est certain que les coûts de production seront réduits de plus de 50 %. Ce type de formation permettrait à l’avenir de réaliser des économies en matière de protection des cultures par réduction progressive des quantités de pesticides utilisées.

L’IMPORTANCE DE L’AGRICULTURE DURABLE POUR LES PAYS AFRICAINS

La promotion de l’agriculture durable est d’un intérêt capital pour les pays africains. Les paysans africains sont pour la plupart analphabètes et de petits exploitants agricoles pauvres. Il s’y trouve aussi que les sols ont été appauvris à cause de modèles agricoles extensifs fortement consommateurs d’engrais chimiques.

L’IMPORTANCE DES CEP POUR LES PAYS AFRICAINS

Le développement des CEP dans l’ensemble des zones agrobiologiques des pays africains permettra :

- de rendre les paysans moins dépendants des produits chimiques et de l’extérieur
- d’assurer la sécurité alimentaire par l’élargissement de l’agriculture biologique aux cultures vivrières, base de l’alimentation
- d’améliorer les conditions de vie des petits exploitants
- d’améliorer la fertilité des sols grâce à l’utilisation de la fumure organique
- de présérer la santé humaine et de protéger l’environnement

Refer to FAO (http://www.fao.org) website for more details.
Mr. Costner discussed the obligations in the Stockholm Convention regarding the disposal of POPs and assessed the technologies that met Convention criteria. Mr. Costner began by describing what persistent organic pollutants are and then explained in detail the 12 POPs which the Stockholm Convention focused on. The POPs will concentrate on fats and oils, such as those in people’s bodies. POPs are very stable and persistent and do not break down readily as they move through the environment or when they are captured in the fatty tissues of living creatures. It was also identified that major sources of dioxins are waste incineration and ferrous and nonferrous metal production. They are also heavily produced during power generation and heating.

Followed by the above explanations Mr. Costner presented the ways in which POPs affect human health. It is now understood that their effect can be from the time of conception onwards and may even continue during gestation and breastfeeding. Other health related consequences include the failure of a number of internal organs, nervous system disorders, immune system suppression, reproductive damage and disruption of hormone functions. Mr. Costner also gave a detailed description of the way POPs move from their sources to human beings. These are clear indications that the entire body of a human being is prone to the effects of POPs.

Based on various research studies Mr. Costner provided information about effective measures to reduce dioxin emissions, and the reduction of chlorine in fuels used for small firing installations. He said that dioxin emissions of domestic households and the agriculture and forestry sector could be reduced primarily by the use of “clean” fuels such as untreated wood, oil and gas together with modern firing installations. Many studies with laboratory- and pilot-scale combustors have found that increased chlorine input leads to greater dioxin formation. Therefore, reducing chlorine input in various industrial sectors could also contribute to the prevention of the production of POPs. In particular, there is a need to reduce the use of municipal and medical waste incinerators for burning wastes. Effective measures for reducing dioxin emissions include “exclusion of PVC and computer scrap in the input”. For example, such practices were taken up at the Bielefeld municipal waste incinerator in Germany.

Refer to the UNEP website (http://www.unep.org) for more details.
Africa Stockpiles Programme

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Programme Overview

The urgent cleanup of stockpiles of obsolete pesticides and the prevention of further accumulation in African countries requires a coordinated, multistakeholder approach.

Virtually every African country has stockpiles of obsolete pesticides and associated wastes that have accumulated over as long as 40 years. At least 50,000 tones of obsolete pesticides, as well as tens of thousands of tonnes of contaminated soil, have accumulated in African countries. These pesticides pose serious threats to the health of both rural and urban populations, especially the poorest, and contribute to land and water degradation.

Chemical pesticides have contributed to the protection of crop, human, and animal health for over half a century. Because of the toxicity of many pesticides, their production, trade, and use are regulated in most industrialized nations.

The Africa Stockpiles Programme (ASP) aims to clear all obsolete pesticide stocks from Africa and put in place measures to prevent their recurrence. Since December 2000, the Africa Stockpiles Programme has evolved substantially as a multistakeholder partnership. ASP’s objectives are

- clean up stockpiled pesticides and pesticide-contaminated waste in Africa in an environmentally sound manner
- catalyze development of prevention measures
- provide capacity building and institutional strengthening on important chemical-related issues.

ASP activities will also create opportunities to address broader hazardous waste management issues and evaluate new, cleaner disposal technologies. A phased long-term approach is needed, implemented in at least three tranches spread over 10 to 15 years. The first tranche of 3 to 4 years will be implemented through a “strategic partnership” involving multiple stakeholders.

Current partners include financial institutions and specialized executing agencies. Efforts are being made to fully engage NGOs and the private sector.

Cleanup, Disposal, and Prevention Costs. Past experience has shown that the cost of removal, clean up, and disposal in an appropriate hazardous waste destruction facility is approximately US$3,500 per ton of waste. Based on these figures, the total cost for clearing the entire continent of its stockpiles of obsolete pesticides is estimated to be US$150-175 million. The total budget for prevention measures is estimated at US$50-75 million. Therefore, the total ASP fund is expected to be US$200-250 million.
Recent Developments

The purpose of the Africa Stockpiles Programme (ASP) is to eliminate all stockpiles of obsolete pesticides from Africa and helps to prevent further accumulation. At present, the ASP is still under development and not yet operational. Technical and operational plans are being established to enable an effective ASP start-up by late 2003. Prior to implementation, several actions are necessary:

- World Bank-coordinated appraisal of the project readiness;
- Substantial country-level preparatory activities;
- Co-financing commitments of $35 million to cover the first phase, along with pledges for subsequent phases; and
- Final sign-off by the GEF and World Bank, targeted for June 2003

Recent developments highlighting the ASP progress are listed below:

**GEF Council Pledges US $25 Million**: At its 15 October 2002 meeting in Beijing, China, the GEF Council approved Phase I of the Africa Stockpiles Programme. The Council pledged $25 million in Phase I funding with the understanding that $35 million in co-financing will be contributed by government aid agencies, the private sector, and other donors, and that participating countries will ratify the Stockholm Convention persistent organic pollutants (POPs).

A significant portion of the pesticide stockpiles is POPs, a new “focal” area of the GEF that was approved by its Assembly in October 2002. “The project reflects GEF’s commitment to the emerging issues of [POPs], which affect the health and wellbeing of millions of people around the world,” said Mohamed El-Ashry, Chairman and CEO of the GEF.

The ASP is one of GEF’s first projects in the area of POPs, which pose a considerable threat for the continent of Africa. The GEF channels multilateral funds into projects initiated by people in developing nations that lead to global environmental benefits. Since its creation in 1991, the GEF has allocated $4 billion in grants and leveraged an additional $12.4 billion in co-financing from other sources to support more than 1,000 projects in 140 developing nations and countries with economies in transition. The only new funding source to emerge from the 1992 Earth Summit, GEF today counts 173 countries as its members.

**Operational Arrangements**: The ASP is designed as a 12-15 year programme of 4 overlapping phases, each of which will last 4-5 years. This design reflects the breadth of the problem on the continent and the range of activities necessary in each country to achieve ASP goals.

**The programme consists of several key components:**

- Country programmes. Two-to-four year efforts to clean-up and help prevent further accumulation of stockpiles of obsolete pesticides;
- Technical support. To drive the technical implementation and ensure consistency of the programme across countries;
- Crosscutting activities. To ensure the long-term sustainability of the programme across the continent;
- Preparation of country programmes for the following phase; and
- Overall programme coordination

**Funding**: The overall 12-15 year programme is estimated to cost approximately $250 million. As noted above, ASP financing will be provided through a combination of GEF funds and co-financing from partners, donor sources, industry, and country contributions.
In the workshop *Encouraging Clean Technology Development in Africa*, Mr. Marani assessed the role of clean production techniques in encouraging sustainable development in Africa. Mr. Marani argued that traditional industrial practices have resulted in the degradation of the resource base and have left a legacy of pollution, while clean production techniques provide a fundamentally different approach to development that is sustainable, precautionary and preventative.

The goal of clean production is to fulfil our need for products in a sustainable way. This means, “Using renewable, nonhazardous materials and energy efficiently while conserving bio-diversity”. Present production systems are *linear* or cradle-to-grave (often using hazardous substances and finite resources in vast quantities and at fast rates). Mr. Marani says that clean production implements the ‘Precautionary Principle’ (PP). PP is a holistic and integrated approach to environmental issues centred on the product. It recognizes that most of our environmental problems, such as toxic pollution and loss of bio-diversity, are caused by the way and rate at which we produce and consume resources. They include, the Precautionary Approach, the Preventative Approach, Democratic Control, Integrated and Holistic Approach.

The main criterion of clean production systems emphasised by Mr. Marani are nontoxic, energy-efficient and made using renewable materials, which are routinely replenished and extracted in a manner that maintains the viability of the ecosystem and community from which they were taken. Mr. Marani assessed the consequences of regulatory standards in pollution control and pointed out the need to put emphasis on prevention.

### A Clean Production approach involves eight steps:

**Step 1:** Identify the hazardous substance to be phased-out on the basis of the Precautionary Principle.

**Step 2:** Undertake a chemical/material flow analysis.

**Step 3:** Establish and implement a time schedule for the phase-out of the hazardous substance in the production process, as well as its accompanying waste management technology.

**Step 4:** Implement existing and new Clean Production processes and products.

**Step 5:** Provide training, technical and financial support.

**Step 6:** Actively disseminate information to the public and ensure their participation in decision-making.

**Step 7:** Facilitate substance phase-out with regulatory and economic incentives.

**Step 8:** Facilitate the transition to Clean Production with social planning, involving affected workers and communities. The transition to Clean Production also requires examining the product.
To provide clean production in Africa, governments can provide a framework to support technically and commercially innovative strategies to move to Clean Production. Another important step is legislation. As a replacement for focusing on waste management policies and waste laws, develop resource policies favouring long-life products, renewable energy and natural materials. Put in place well-designed regulatory measures such as phaseouts and bans on the production and use of hazardous materials. It is also suggested that governments can disseminate information to the public on issues and concerns such as industrial emissions, pollution prevention plans and toxicity of the products themselves. Governments need to provide supporting measures and technical support and ensure worker and consumer health and safety standards to encourage Clean Production. A well-coordinated international framework is important to ensure that banned technologies and products, phased out or stigmatized in one country should not be transferred elsewhere.

Cleaner production databases and industrial ecology are other measures that require urgent attention in this regard. Mr. Marani also pointed out some prerequisites for successful clean technology transfer to Africa. Based on the above points it can be easily concluded that promotion of clean production in Africa requires industrial and political determination, public participation and pressure from society.

**Changing the Production processes**

- These include improvements in housekeeping, reduction of toxics use and the introduction of in-house recycling systems to re-use wastewaters or heat that would otherwise be dissipated.

- Reductions in emissions are possible at little or no cost. Wastes and emissions from industrial processes can be prevented at their source by utilization of technically sound, economically profitable procedures and technologies that are now available.

**Changing the Product**

- The transition to Clean Production also requires examining the product.

- Product design should aim at not only minimizing production costs but ensuring that society move to understand the environmental, social and monetary costs of resource depletion and waste generation.

- African governments should move to develop and implement product-oriented environmental policies which examine not only all the environmental impacts of a product, but also the wider question of resource use.

- Does society really need the products? How else can this need be satisfied or reduced? What opportunities are available to reduce both the volume and speed of resource flow through production systems?
IV. TECHNOLOGY

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Project on Prevention and Disposal of Obsolete Pesticide Stocks in Ethiopia

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Ethiopian economy and farming population exceedingly depended on the agriculture, occupying 85% of labour employment, 50% of GDP and accounts to more than 80% of the annual foreign exchange. However, the agriculture in Ethiopia suffers 15% pre-harvest and 30% post-harvest loss due to pests. This cannot be tolerated because of the severe food shortage in many parts of the country (5.6 million people), the loss being 42% of the total production, compared to 23-30% in developed countries. In order to control this problem, Ethiopia used large amounts of imported pesticides.

Figures show that the annual average use of pesticides in Ethiopia during the period 1983-1991 was about 4,097 tons, with a total of 36,873 tons during the period, costing 39.32 million Birr (13 million USD). However, during the period 1992-2000 total use was only 13,068 tons (average for the period was 1452 tons), having a total value of 84.79 million Birr (11 million USD). Out of the total, 125 tons were imported through AID mainly from Japan, while the chemicals were supplied by a whole host of countries namely Germany, Japan, UK, Switzerland, France, USA, Israel and later Belgium. Large quantities of these chemicals were unused and became obsolete.

Considering the scale and urgency of the problem, the Ministry of Agriculture (MOA) initiated a countrywide inventory survey in 1995 and 1996. The outcome was alarming; the survey found a total of 400 stores with 1150 tons of obsolete pesticides and nearly 100 tons of contaminated empty containers, overall putting Ethiopia in the second position (after Morocco) in the level of accumulated stock. Oversupply, poor storage facilities, lack of planning, management and distribution are reported to be the reasons for accumulation. Many of the accumulated stocks are banned from use internationally.

Investigation by the Task Force in Ethiopia found more than 1500 tons of obsolete pesticides, 500-1000 tons of contaminated soil and 400 stores. The figures are similar to the findings of MOA. Task Force also reported violation of FAO guidelines for storage, mixup of chemicals (due to deterioration of packaging materials), location of stores in areas with high risk of contamination (such as urban and residential areas), poor knowledge among people about the detrimental effects, etc. The Task Force suggested disposal operation, which should be completed in phases owing to the enormity of quantities and their widespread distribution. Based on the recommendation of the Task Force a project proposal was made for the disposal activity with an initial estimated cost of 4.5 million USD.

The two main objectives of the project were to prevent future accumulation and disposal of existing obsolete stocks. The disposal activity was conducted in four phases with a total project period of 18-27 months, from March 1999 to August 2002 (then extended to October 2002). Donors’ contribution for the project was 4.5 million USD. The Ethiopian government contributed 211,000 USD. In addition, the government provided local staff, equipment, immunity from legal process, necessary immigration clearance and tax and custom exemption.
Considerable progress has been made to date on the disposal of obsolete chemicals. A project manager was appointed by FAO in April 2000; 2 federal and 20 regional counterparts were assigned; 20 trainees from BOA became full-time workers. Training was given to 39 trainees from regional agriculture bureaus and other organizations focusing on health, safety and data collection. A bid was advertised, which EKOKEM of Finland won. A two day meeting with BOA heads was held (November 10-11, 2000) to discuss administration of the project, property transfer, human resource allocation and security for contractors during operations. A public awareness campaign about the project was carried out with wide coverage on TV and radio. Strong action was taken against the use of banned chemicals and the Ethiopian government signed the Basel Convention.

The NGOs played a major role in these activities with more than 350 of them operating throughout the country. NGOs should actively participate in informing the public to create mass awareness of the problem and its implications.

**Phase 1** of the project dealt with training, site upgrade and centralization of stocks. A comprehensive training was organized for personnel involved in disposal activity on issues of risk assessment, safe working practice, protective equipment and spillage, storage and stock control. Followed by this, suitable central store locations were identified for storage of chemicals from different places. The accumulated stocks, which were properly labelled and segregated were transferred from 400 stores to 8 central stores.

**Phase 2** of the project focused on establishing laboratory facility and analysis of unknown materials that had been transferred to the central stores. The characterization of the chemicals was carried out for identifying general group of pesticides, percentage of active ingredient, levels of toxic elements such as mercury, arsenic, cadmium, chlorine and bromine, and if it is a mixture whether the main component supplied.

**In Phase 3** of the project, quantities of each chemical were identified and a tender was called for proposed packaging and transportation. The selection of the contractors was done strictly adhering to the FAO rules to guarantee highest standard to deliver best deal at a competitive price.

**Phase 4**, following the award of the disposal contract, in repacking, transportation and disposal activities was the responsibility of a specialist contractor, appointed by the FAO. This phase of the project ended with the issuance of a destruction certificate. With an attempt to prevent future accumulation of pesticides, strict procedures were laid out for procurement and storage of pesticides, which included correct storage, proper stock management and alternative less toxic chemicals.
Alternatives to DDT

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Malaria alone accounts for more than 2 million deaths annually in sub-Saharan Africa, which is equal to the fatalities due to HIV/AIDS. There is enough evidence to suggest that the Malaria epidemic is increasing in Africa due to several reasons, such as drug and insecticide resistance, wars, natural disasters, human migration that interrupts control operations, local climatic changes and insufficient research and funding for prevention. The clinical caseload due to Malaria is estimated at 500 million annually. Approximately 4 children die per minute from Malaria related illness.

DDT is widely used for Malaria control, and the annual production of DDT amounts to 35,000 tones per year. However in Africa most countries have de facto ban on DDT use due to vector resistance and notable toxicity.

The Stockholm Convention on DDT

The Stockholm Convention falls short of outright ban of DDT production and use and strict conditions have been set. The Convention states that

- All Parties must eliminate production and use:

  - except Parties that notify the Secretariat they need it for disease vector control programs

  - only when locally safe, effective and affordable alternatives are not available to the Party
  - Special public DDT register
  - Reporting and other obligations

- All Parties must promote research and development for alternatives to DDT. Its use will be allowed until technically and economically feasible alternative products, practices or processes are available

- COP will review at its first meeting every three years to see when DDT is no longer needed for disease vector control

The ultimate aim of the Convention is to totally ban the use of DDT.
Other efforts are also taking place to find alternative methods. Current research mainly concentrates on natural chemical control. Use of this type of chemical control leaves no undesirable effect in the environment. There are experiments with semiochemicals (chemical signals that are released externally by organisms with information content for other organisms).

Pheromones and allelochemicals could be used to lure mosquitoes to traps. Sex pheromones could be used to deter ovipositioning, for mass trappings and for interfering with mate finding. Genetic control, aiming to interfere with reproduction of mosquitoes by affecting the sex cells, thus increasing sterility, is another possibility. Gamma radiation has also been used to sterilize male (Culex) mosquitoes. The males are then released to mate with the anopheles. Radiation induced translocation could also be another applicable method.

Alternatives to DDT in Malaria control

**Pyrethrum/pyrethroids:** Pyrethrum is produced largely in Africa. The main issues are the high cost and low residual power.

**Insecticide-Treated Nets (ITN):** ITNs is a net made of synthetic pyrethroids providing protection against adult mosquitoes. Pyrethroids repel mosquitoes; the most commonly used pyrethroids are permethrin, deltamethrin and lambda cyhalothrin. Studies in Ghana, Gambia, Kenya and Tanzania found that the use of ITNs reduced child illness by 29% to 63% and infant mortality by between 17% to 63%, depending on net coverage and Malaria transmission pressure.

**House spraying:** Currently, most programs use synthetic pyrethroids alternatives to DDT and organophosphate.

**Space Spraying:** This is normally carried out in urban areas where many people congregate outdoors. However, this is essential only when there is a danger of an epidemic.

**Larviciding:** This simply refers to the killing of mosquito larvae. Organophosphate temophos are commonly used, although some botanical products such as neem, *Azadirachta indica* appear to be a promising alternative. Commercial formulations of the toxins of *Bacillus thuringiensis* are available already. These products are very expensive. However, it can be produced at a cheaper rate on the village level.

**Environmental Management (IVM):** This is the public health variant of the Integrated Pest Management (IPM), which is the use of a cost effective combination of pest control measures that is appropriate to local conditions, and relatively safe for human health and environment. From the vector control stand point IVM is generally less risky and more effective due to combination of one or more vector control methods. In this method, the combination of both chemical and non-chemical methods are often used. However, chemicals are used as the last point of intervention. IVM methods include public health measures like drainage of still and swampy waters. In rice growing areas these include drainage of canals to avoid water stagnation, shifting of planting schedule to avoid optimal mosquito breeding conditions and growing aquatic plants such as *Azolla*, which interfere with mosquito oviposition, larvae and pupae.

**Biological Control:** Larvivorous fish are commonly used in this method. Most commonly used are *Tilapia* and *Gambusa affinis*. These two species have been used in North America and also eliminated malaria from Palestine/Israel and Italy.
Destroying/Transforming Stockpiles of POPs

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POPs are very toxic chemicals that are harmful to living species. Therefore, POPs stockpiles must be destroyed in a manner which does not further degrade the environment by generating or releasing POPs. According to the Stockholm Convention, the disposal of POPs should be carried out in such a way that it is “destroyed or irreversibly transformed”, so that it is no longer a POP. The Stockholm Convention also calls for community participation in the process, care on safety of the community, full disclosure of information, monitoring, and release of data.

The best possible method of destroying POPs should have an efficiency of 100%, which means the entire POPs are destroyed or transformed into a harmless product. The Greenpeace criteria for POPs destruction expect an efficiency of 100%, complete containment of all residues for testing and reprocessing, and avoiding uncontrolled releases. In other words “destruction must be accomplished in a manner that does not further degrade the environment”.

The destruction efficiency (DE) of POPs destruction process can be calculated using the following equation: 
\[
DE = \left(\frac{POPs_{IN} - POPs_{OUT}}{POPs_{IN}}\right) \times 100
\]

Where POPs\textsubscript{IN} is the total amount of POPs went into the process and POPs\textsubscript{OUT} is the amount of POPs released either in gas, liquid or solid form during the destruction process.

There are several methods that have been used for the destruction of POPs. Traditional methods use landfilling, ground storage, deepwell injection and combustion by open burning, incineration or in cement kilns or metal furnaces. However, there are serious limitations to normal incineration process. Mainly these are open systems, which have process upsets. The process also produces chemicals such as dioxins, PCBs and HCBs at significantly higher levels, which affects the health of workers and local populations. Generation of wastes such as stack gases, scrubber water, quench water and solid wastes (bottom ash, fly ash, sledges etc.) are additional problems. Long term implications include ongoing treatment and disposal of incinerator residues (ashes and sludge), and accumulation of persistent by-products in the environment. Studies have shown that cement kilns also have serious limitations. High levels of Dioxin, cement kiln dust and heavy metal releases are some of the major problems.

Commercial cement kilns burning systems are based on the processes such as gas phase chemical reduction, base catalyzed dechlorination, super critical water oxidation, solvated electron process, catalytic hydrogenation or bioremediation. Among these, the gas phase chemical reduction and base catalysed dechlorination commercial facilities are available with EliEco Lligic (Canada) and BCD Group Inc (USA), with many licencenses worldwide. The former have commercial operations in Australia and Japan, and have been used in USA and Canada. An Australian facility has treated PCBs for 5 years and while the latter is being teated OC pesticides in USA, Australia, Mexico and Japan.

Alternatives for incineration-based technologies are commercially available. The potential benefits of non-incineration destruction technologies are that no dioxins and other POPs are generated. Furthermore, the process has control over all outputs or by-products for re-processing and offers a degradation-free environment.
Reduction de L’Utilisation des Pesticides en Afrique

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1- Bref aperçu sur les dangers que représentent les POPs

Les “Pesticides Polluants Organiques” (POPs) présentent un réel danger pour la santé de l’homme et peuvent causer d’importants dégâts sur les écosystèmes aussi bien sur les terres que sur les cours d’eau. Il est presque établi que tous les organismes vivants de la planète portent des traces de POPs dans leurs tissus.

Il est généralement connu que :

• les POPs se dégradent très lentement dans le sol, l’air, l’eau et les organismes vivants et persistent dans l’environnement pendant très longtemps;
• les POPs s’accumulent dans la chaîne alimentaire et se concentrent ainsi à fortes doses dans l’organisme des grands prédateurs, dont l’homme;
• les POPs se déplacent sur de longues distances dans l’air et les cours d’eau et se concentrent dans les régions du globe situées sous des latitudes élevées où règnent de basses températures;
• certains troubles graves de santé observés chez l’homme et d’autres espèces, y compris les troubles du développement et de la reproduction, la perte de défense immunitaires, les troubles nerveux, les cancers et les dérèglement hormonaux sont dus aux POPs.

Il est donc indéniable que l’humanité entière est face un problème crucial qui ne peut plus être occulté, d’où la grande mobilisation de la communauté internationale sous les auspices du Programme des Nations Unies pour l’Environnement (PNUE) en vue de mettre en place un instrument juridiquement contraignant sur la production, le commerce et l’utilisation de ces substances.

Dans cette mouvance, les acteurs de développement, en particulier les paysans africains, se doivent d’emboîter le pas aux différentes initiatives amorcées, étant donné qu’ils sont en quelque sorte les principaux utilisateurs de ces substances toxiques dans la production agricole.

2- Utilisation des pesticides : Quelques données sur la situation actuelle

a) Les POPs en Afrique.

En dépit de la lenteur avec laquelle les pays africains font preuve pour la ratification de la Convention Stockholm interdisant ou réglementant strictement l’utilisation et la génération des POPs, les utilisations des POPs, dans leur grande majorité, sont illégales. Cela est dû à l’existence d’importants stocks dans un certain nombre de pays. Les estimations des pesticides obsolètes se situent autour de 50 000 tonnes, parmi lesquels les POPs. On peut aussi mentionner entre autres causes de cette utilisation illégale des POPs, la perméabilité des frontières, l’absence d’un cadre réglementaire adéquat, la faible capacité des pays à gérer ces produits de manière appropriée.

Les POPs sont utilisés en Afrique principalement dans l’agriculture, dans la lutte contre les vecteurs du paludisme. Le Bénin, le Burkina Faso sont des exemples de l’utilisation des mousquitos imprégnés (contenant du DDT) pour la protection contre les moustiques vecteurs du paludisme.
S’agissant du DDT, il est abondamment utilisé dans beaucoup de pays. Le rapport du CONGO concernant la situation nationale des POPs a révélé une utilisation mensuelle de 200 Kg dans un site maraîcher, l’utilisation par une société sucrière de l’Heptachlore avec un stock de 2500 litres et le stockage de 4200 litres de Dieldrine qui étaient destinés à la production du maïs.


Au Togo, des analyses chimiques effectuées à l’Université de Lomé, ont mis en évidence des résidus de pesticides POPs sur des produits maraîchers, des céréales et de l’eau. Par ailleurs, des produits à base d’Aldrine, de Dieldrine et d’Endrine seraient fabriqués et distribués dans la sous-région pour la lutte contre les termites, notamment dans le bâtiment.

b) Les problèmes liés à l’utilisation des pesticides

Les économies des pays africains reposent essentiellement sur l’Agriculture. Que l’on considère les grandes plantations industrielles ou que l’on se situe au niveau des petits paysans, ces problèmes sont, à quelque chose près, les mêmes:

(i) l’absence et/ ou la non application de la législation laisse libre cours à des exactions. Le système de contrôle étant défaillant, de nombreuses fraudes font leur apparition mettant ainsi en danger les utilisateurs et les consommateurs des produits agricoles;

(ii) les usages détournés des pesticides: des produits destinés à la protection des cacaoyers ou des cafétiers par exemple sont parfois utilisés dans le maraîchage. On a même des cas où certains produits sont utilisés pour tuer les poissons qui seront plus tard consommés.

L’ignorance des effets des pesticides et surtout de leur toxicité, ce qui conduit les paysans à poser des actes pour le moins dangereux: consommation des sautériaux et autres oiseaux granivores après des traitements anti-acridiens et anti-aviaries. Cette situation a encore été constatée récemment au Nord-Cameroun où ces traitements donnent plutôt l’occasion aux populations de “fêter”, parcequ’elles reçoivent ainsi du ciel de la “nourriture”. Dans la même logique,le sort réservé aux emballages vides n’est pas sans poser des problèmes, parce qu’on les retrouve dans les ménages sans trop se soucier des dangers qu’on en court.

(iii) l’absence de protection des utilisateurs: les paysans africains qui ne se soucient guère de leur protection lors de la manipulation des pesticides. Ils sont donc exposés en tout point de vue, car ils sont susceptibles d’être intoxiqués par absorption dermale, par ingestion, et par inhalation. Ces dégâts s’étendent aussi à la pollution qui a des effets néfastes sur l’environnement.

Face à tous ces problèmes, il apparaît indispensable d’œuvrer à la réduction de l’utilisation des pesticides en général et des POPs en particulier. Pour cela, la voie indiquée est incontestablement la promotion des alternatives aux pesticides.
3- Alternatives aux pesticides POS dans la santé publique et dans l’Agriculture.

Le contexte de pauvreté qui sévit actuellement dans les pays africains, au-delà des effets néfastes des pesticides mentionnés plus haut, commande l’utilisation des méthodes et techniques qui préservent l’homme et l’environnement.

a) Valorisation des expériences paysannes

Sur le continent africain, de nombreuses expériences ont été menées et pourraient être vulgarisées:

*Cas du contrôle des Termites en Afrique de l’Ouest.*

Les termites sont des insectes sociaux vivant en colonies dans le sol et appartiennent à l’ordre des Isoptères. Elles peuvent causer de nombreux dégâts en consommant notamment du bois mort, mais présentent aussi des effets avantageux sur l’environnement : enrichissement du sol par les déchets biologiques issus de nombreuses colonies et nutriments variés, association termites-champignons-autres micro-organismes est un maillon important de la chaîne alimentaire entre autres. Quelques exemples des pratiques paysannes :

(i) Les pratiques culturales: de manière générale, les attaques des termites sont plus sévères sur des plantes stressées, sur des terrains plus secs et sur des sols bas. On recommande d’éliminer de la surface des champs les débris de bois comme les souches et les chaumes de mil cultivé dans les vergers de manguiers pour éviter une attaque massive de ces arbres par les termites en saison sèche; éviter les monocultures et pratiquer les rotations et les associations des cultures, d’utiliser les plantes susceptibles d’attirer et de piéger les termites ou ayant les effets répulsifs sur eux.

(ii) Les méthodes physiques: elles comprennent la destruction des termitières ainsi que la canalisation des eaux de pluies à l’ouverture de la termitière, entraînant ainsi une exposition des termites au soleil et à l’air, ce qui les amènent à se dessécher. Ces pratiques sont connues en Guinée, au Burkina Faso et au Mali.

*Utilisation des pesticides naturels*

Les pesticides naturels sont localement disponibles, pratiquement gratuits, faciles à préparer, non polluants et inoffensifs. Ils ont la particularité de respecter les insectes utiles. Les modes de préparation et d’application sont multiples comme le sont les utilisations (traitement de semences, du sol, des maisons, des clôtures ou haies et des termitières). Ces plantes et leurs différentes préparations sont le fruit des expériences et des recherches des communautés de paysans avec quelques fois l’appui de la recherche moderne. Il existe au moins une trentaine d’espèces locales de plantes dans la pharmacopée africaine connues pour leurs propriétés insecticides ou répulsives pour les ravageurs des cultures: On pourrait citer quelques exemples:

- le Neem: son principe actif, l’azadirachtine, agit sur les sautériaux, homoptères, chenilles et larves des coléoptères.
- *Capsicum frutescens* (le petit piment): appliqué en extrait aqueux, il est efficace contre de nombreux ravageurs;
- *Nicotiana tabacum* (Tabac): les qualités insecticides de la nicotine sont connues depuis longtemps sur les pucerons;
- *Lycopersicum esculentum* (Tomate): l’extrait de ses feuilles agit sur les chenilles;

- *Allium sativum* (Ail): aurait des effets intéressants sur de nombreux déprédateurs;

- *Khaya senegalensis* (Caicedrat): la poudre et les cendres sont utilisés dans le stockage;

- *Chenopodium ambrosioides* (l’herbe à soie): une herbe aromatique répulsive et dont toutes les parties séchéeset réduites en poudre sont utilisées dans le stockage.

### b) Promotion de la lutte intégrée

Les effets néfastes de la lutte conventionnelle contre les ravageurs et autres ennemis des cultures sont largement connus. La lutte chimique, fréquemment utilisée en agriculture, a contribué à la détérioration de l’environnement, à la résistance des ravageurs et à l’accroissement des problèmes de santé. Les pratiques inadaptées de lutte ont accentué la dégradation des écosystèmes, l’érosion des sols et la perturbation de la vie du sol. Tous ces effets pervers des produits chimiques, leur coût élevé, leur toxicité pour les cultures et l’homme obligent à recourir à des méthodes qui s’inscrivent davantage dans la logique d’une agriculture durable.

La lutte intégrée est assurément celle qui assure aujourd’hui un avenir rassurant. C’est ici le lieu de rendre un vibrant hommage à mon collègue et ami ABOU THIAM, qui vient de mettre à la disposition des praticiens africains, un précieux outil de travail à travers un ouvrage intitulé: *ELEMENTS POUR LA LUTTE INTEGREE CONTRE LES ENNEMIS DES CULTURES ENAFRIQUE SOUDANO-SAHELIENNE*, uneco-production PAN-Afrique et WRI (World Resource Institute), en 2001. Cet ouvrage a le mérite d’avoir capitalisé bon nombre d’expériences et renferme à ce jour, l’essentiel des informations utiles pour engager une bonne lutte intégrée dans notre continent.

### CONCLUSION

La réduction de l’utilisation est devenue un impératif si nous voulons préserver notre vie et notre environnement. Il est urgent que tous les acteurs de développement à quelque niveau que ce soit, apportent leur contribution à cette “lutte”. Les ONG, les organisations paysannes, bref l’ensemble de la Société civile, devraient être interpellées pour œuvrer à une réduction de l’utilisation des pesticides en général et des POPs en particulier. Des actions spécifiques devraient être envisagées pour arriver à un résultat probant. Les ateliers de réflexions vont certainement apporter plus de précisions quant aux stratégie à adopter pour atteindre les objectifs que nous nous fixons.
Learning not to Burn

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A primer was written by Elizabeth Crowe of the Chemical Weapons Working Group and Mike Schade of the Citizens’ Environmental Coalition, released in June 2002. The idea of the primer arose from a workshop on hazardous waste incineration during the People’s Summit on Dioxin, in August 2000. Activists and technical experts noted the information and strategic gap in the grassroots movement regarding safer disposal technologies. The aim of the primer is to fill that knowledge gap. It is intended as a tool for grassroots organizations and community members fighting incinerators in their search for a wider range of options to hazardous waste incineration.

The primer contains sections on organizing strategies, information on alternatives to incineration, information resources and links. To illustrate the potential for implementing non-burn technologies, the primer evaluates the experiences of the Chemical Weapons Working Group, the movement for safe chemical weapons destruction, the Citizens’ Environmental Coalition and the Kandid Coalition’s campaign to stop the burning of hazardous waste generated by Eastman Kodak at the Rochester, New York’s headquarters.

Refer to (http://www.no-burn.org or http://www.kodakstoxiccolors.org or http://www.cwwg.org) website for more details.
Threats of a New Hazardous Waste Incinerator in South Africa

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In this workshop Mr. Leonard discussed the Threats of a New Hazardous Waste Incinerator in Sasolburg and explained in detail the future impact that an incinerator will have on the environment.

Proposal

The main proposal for this project is/was to develop a hazardous waste incinerator, first construct a rotary kiln incinerator for the “decontamination” of organic hazardous waste.

Proponents of the incinerator are Peacock Bay Environmental Services (PBES) and US company Roy F. Weston. It is funded by the US Trade and Development Agency (TDA) and American institutions in South Africa (SA). PBES said that once an incinerator is running, it will be importing waste. Local city council has opposed PBES process. Incineration processes were killed in early 90’s, ANC government had support decision for no incineration before it came into power, now ANC is for incineration.

The processes for the incinerator are as follows: Proponents in Environmental Impact Assessment (EIA) process, feasibility study and Scoping report completed, submission to government in February 2002, proponents ask the government to accept Scoping report in place of full EIA, government has not taken a decision as yet.

Waste Streams

There is no inventory in SA of hazardous waste, but 1 Million tones of organic hazardous waste to be burnt a year. Waste streams identified in feasibility study include pesticides PCBs, paints and dyestuffs, petroleum compounds, contaminated soils, VOCs, and Dioxins / Furans.

The selected technology and alternatives are proposing to construct a commercial Rotary Kiln Thermal Oxidation System (RKTOS) - (Incinerator). Proponents say that the RKTOS was chosen since it was, “the only technology that could safely and efficiently treat the wide range of waste identified in SA” and claim that facility would “permanently destroy” all organic wastes fed into it.

The following alternative technologies were selected after evaluation: Cement kiln incineration, Landfill, Composting, Ex situ solidification, Fluidized bed thermal treatment, Pyrolysis, Chemical dechlorination, Thermal desorption, Plasma systems and non-polluting technologies which are not yet fully investigated.

The following action was taken: Sasolburg (an industrial town in the Free State), was selected: large numbers of chemical industries in areas which produce hazardous waste, including two oil refineries, were found; Groundwork took various air samples over two years, which highlighted elevated levels of benzene, toluene, acetone, carbon disulphide, etc and Sasolburg Environmental Committee (SEC) formed to tackle unhealthy levels of air pollution in the area.
Emissions and Health Impacts

Current status of community health are respiratory problems, skin rashes, eye irritations and allergies. Hydrogen sulphide, sulphur dioxide and benzene could be the cause of these illnesses. Proponents claim that the air emissions and health problems which may arise, “are acceptable in terms of EU and US EPA standards and requirements”. On submission of the draft Scoping report, the South African government noted that the report, “downplayed the off-site health impacts of emissions during the operation of the proposed facility”.

The main opposition to proposal are local, national and international groups, local municipality, SEC, groundWork, and members of the Global Anti Incineration Alliance (GAIA) and three letters sent by GAIA to SA government (one letter to President Mbeki, signed by 109 groups from 45 countries).

The reasons for taking opposition are as follows: South Africa’s decision to ratify the Stockholm Convention was welcomed, however, operation of polluting technology will undermine objectives of POP’s treaty; with WSSD coming up, SA is in best position to set a positive example; increased pollution in Sasolburg (air saturated with polluting chemicals); additional burden on the community health; more jobs in the Sasolburg area are substantially not created; incineration is an obsolete technology that encourages waste production and not waste minimisation; PBES proponents have not fully investigated viable non-polluting technologies for hazardous waste destruction; an incinerator will release toxic pollutants into the air, some of which are very toxic to humans and may cause cancers, behavioural disturbances among other diseases; the South African government is lax in the enforcement of incinerator standards and that they are currently no known incinerators in South Africa that meet all their permit conditions; Groundwork has already taken government to court because of allowing incinerators to operate without permits, i.e. Ixopo incinerator.

Pollution Saturation

Sasolburg already faces more than enough potential hazards from other industries in the area and do not need the added risk of yet another polluting facility. Pollution from incinerators can be carried for great distances and cannot be contained by provincial or national borders. This facility will produce dioxins and violate the Stockholm Convention.

Residents have called for authorities to deny application for authorization to construct and operate incinerator on the basis of the Scoping Report. A full EIA is to be conducted, which would include a full investigation of viable alternatives (non-polluting technologies). Residents also demand commitment from all industries in the greater Sasolburg area to develop pollution reduction plans and target at the Ministry of Environment to prohibit the import of dirty technology from the North.
V. ANNEXES

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Life Cycle of the POPs Convention

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The POPs Convention will enter into legal force and thereby become part of international law after the United Nations receives ratification by 50 countries (plus 90 days). As with all such treaties, a country becomes Party to the Convention and thereby legally bound to its provisions when that country ratifies or otherwise accedes to the treaty and it is in legal force. Therefore, there are no “Parties” until it enters force.

The process of entry into force is as follows:

(i) **Adoption of the final draft** of the Convention (23 May 2001), and open for signature on 23 May 2001 in Stockholm, and again at the UN headquarters in New York from 24 May 2001 to 22 May 2002. A country signing the treaty becomes a signatory to the treaty (not a Party) and thereby demonstrates its political support for the treaty and intention to become Party. Signatory countries signal their moral and political commitment to the treaty, but are not legally bound by its provisions.

(ii) **A signatory State then must ratify**, accept or approve the treaty. This usually requires the adoption by parliament (or similar body) of implementing national legislation in order to transfer the international treaty provisions into national law. Once ratified, accepted or approved, an instrument confirming ratification (legal document) must be deposited with the designated treaty depositary (Secretary-General of the United Nations).

(iii) A State that does not sign during the period open for signature joins the treaty by “accession”. Accession is the legal term for joining the treaty after the signing period has closed. Reasons for not signing could be opposition to the treaty, but also could be internal process, administrative delays etc. Just like ratification, acceptance or approval, an instrument of accession must be deposited with the depositary at the UN.

(iv) The **treaty enters into legal force 90 days after the 50th instrument of ratification or accession is deposited with the UN**. At this point all those ratifying and acceding are Parties and legally bound in addition to being politically and morally bound (Article 26). Once the Convention is in legal force, each additional country that deposits its ratification or accession document with the UN becomes Party (legally bound) 90 days after such deposit.

(v) Pursuant to Article 27, **no reservations are allowed**. Reservations are when a country would exclude itself from parts of the treaty, e.g., one or more provisions when they ratify or accede.
The Convention must be domesticated. This means that the treaty is translated into municipal laws. In many countries (especially the Commonwealth) a re-examination of the existing statutes is always the first step in this process. This is done with a view to harmonizing the relevant sections and to integrate the convention statutes without necessarily contradicting the national constitution. The onus falls on the Attorney General’s office to draft the bill to be presented to the Parliament.

Kenya as an example

It is worth noting that the Ratification process of international conventions is, in some cases, not uniformly done. For example, in Kenya, this is a sole prerogative of the Executive (the President). The relevant department in Ministry of Environment would be asked to examine the Convention and identify stakeholders. The stakeholders would be consulted with a view to determining how the implementation of the convention would affect their functions within the government. After feedback, a memorandum is then drafted and forwarded to the Minister. The Minister, in turn, drafts a cabinet paper. Upon approval by the cabinet, the President then causes the seal of the government of Kenya, which is then deposited, with the repository of the convention. After this, the AG presents the Bill to discuss implementation. In parliament, the bill is forwarded to the parliamentary committee on Legal Affairs, which closely examines the legal authenticity before being read for the second time. After a third reading, the bill is then presented for debate and approval.
The IPEN Arusha Declaration on the Elimination of Persistent Organic Pollutants in African Countries

We, the undermentioned participants of the International Pops Elimination Network (IPEN) Skillshare and Workshop on Ratifying and Implementing the Stockholm Convention in Africa held in Arusha, Tanzania from July 15 to 19, 2002, recognizing and affirming the content of the Stockholm NGO declaration on POPs wish to further build on that declaration by articulating challenges, commitments, and calls to action reflecting the serious environmental and health concerns of African peoples.

We note the following challenges:

- The serious and persistent health impacts that POPs and other persistent toxic substances can cause, both in local areas, and by water and air transport to surrounding African countries, and to the rest of the world.
- Successful implementation of the Stockholm Convention and elimination of POPs and other persistent toxic pollutants will require the participation of African NGOs as effective stakeholders in joint activities involving government, industry groups, international agencies, educational institutions, scientific centres, and others.
- The initial list of twelve POPs identified under the Stockholm Convention is only a starting point. Future expansion of the list is needed in order to incorporate other toxic and persistent substances of global concern that harm ecosystems and human health.
- Malaria ravages the African population and there is an urgent need for effective prevention and curative measures. Nevertheless, the continuing reliance on DDT for the control of malaria vectors is not viable in the long term, as DDT has known and harmful impacts on human health in the environment.
- African stockpiles of POPs require urgent attention, and the expertise of African NGOs is required to assist governments in ensuring that the hazards represented by these stockpiles are adequately addressed.
- Waste incineration of various types emits over 100 different chemical pollutants, including dioxins, furans, and mercury, which pose a threat to human health and the environment.
- Without significant financial and technical assistance, African countries are largely lacking the capacity required to effectively implement the Stockholm convention.

We affirm our commitment to work towards:

- Creating a global community in which POPs and other persistent toxic chemical substances no longer pollute our environments or degrade our health ultimately contributing towards a sustainable future generation.
- Setting in place sustainable process, products and practices, while phasing out processes, products and practices that generate or lead to the generation of POPs and other persistent toxic substances, including waste incineration.
- Supporting the Polluter Pays Principle under which the producer is responsible for cleanup and ultimate elimination of obsolete POPs stockpiles.
- The complete destruction of obsolete pesticide stockpiles in Africa and prevention of their reoccurrence; and full inclusion of African NGOs in the direction and implementation of the Africa Stockpiles Programme.
We call on governments to:

- Fulfil their obligations under the Stockholm Convention by taking the required steps to ratify the Convention, by putting in place action plans and time frames for the phasing out and ultimate elimination of dioxins and furans, and by compiling an inventory of all POPs sources and stockpiles.

- Vigorously pursue and promote the development of effective and safe alternatives to DDT as a method of vector control for malaria.

- Forcefully pursue and promote the development of safe and sustainable alternatives to the use of pesticides in agriculture.

- Quickly secure and isolate African POPs stockpiles in such a manner as to prevent their release to the environment, as a prelude to their safe disposal.

- Phase out incineration as a method of dealing with wastes as soon as possible, preferably within four years of the Stockholm Convention entry into force and give priority to destruction technologies that;
  - can accomplish effectively total destruction of POPs in compliance with the aim of the Stockholm Convention to reduce “total releases” to all channels with the purpose of “their continuing minimization and where feasible their ultimate elimination”
  - operate in essentially closed systems where uncontrolled releases of POPs and other toxic substances of concern can be avoided and all residues from the destruction processes can be contained, scrutinized, and if necessary, further processed prior to release to ensure that no residues contain detectable levels of chemicals of concern or other harmful constituents.

- Develop and effectively enforce policies, laws and regulations that require monitoring of releases of toxic substances to air, water or land and that will result in the prevention and ultimate elimination of these substances and their sources.

- Urgently implement clean production as “best available techniques” in manufacturing and food production systems to ensure safe and sustainable processes and products.

- Acknowledge issues related to chemicals, health and environment that are addressed by the Stockholm Convention, governments and extend their actions by also ratifying the Basel, Rotterdam and Bamako and other relevant conventions.

We call upon donor governments to ensure the timely and transparent flow of funds and technical assistance required to effectively implement the provisions of the Stockholm Convention;

Correspondingly, we call on the recipient governments to ensure that the appropriate and necessary steps are taken to trigger the flow of funds and technical assistance in a timely and appropriate manner.

We also wish to announce the formation of the IPEN African Working Group, to continue and build upon the work begun at this meeting.
References

11. Case Study Detecting Pesticide Residues in Food (Texas Dept. and United States Dept. of Agriculture) and visit the website http://www.texascenter.org/almanac/Land/PESTICIDESP4.HTML.