



Workshop Report

Regional workshop for Arab states on the environmentally sound destruction of POP and decontamination of POP containing waste in the context of the Basel Convention and the Stockholm Convention

**Holiday Inn Amman Hotel
28-31 August 2005
Jordan**



**This workshop report is prepared by
BCRC-Cairo**

Workshop Identification

Workshop Title: Regional Workshop for Arab States on the Environmentally Sound Destruction of POP and Decontamination of POP Containing Waste in the Context of Basel Convention and Stockholm Convention.

Geographic Scope: Arab States serviced by the BCRC-Cairo

Venue: Holiday Inn Amman Hotel, Ballroom

P.O. Box 941825 Amman, 11194 Jordan

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Organizers:

- Jordanian Ministry of Planning and International Cooperation (MOPIC),
- The Secretariat of the Basel Convention, and
- The Basel Convention Regional Centre for Training and Technology Transfer for the Arab States (BCRC-Cairo),

Stakeholders: Arab States parties to Basel Convention and parties and signatories to the Stockholm Convention, and those participating in the WHO DDT project.

Official Language: The official working language of the workshop is English. Translation to Arabic was provided.

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1- Executive Summary

The Secretariat of the Basel Convention, UNEP Chemicals, World Health Organization (WHO), Food and Agricultural Organization (FAO), the Basel Convention Regional Centre for Arab States based in Cairo (BCRC-Cairo), and the Government of Jordan have jointly organized the above-mentioned regional workshop in Amman from 28 to 31 August 2005.

The meeting in Amman was the second of that type after a similar regional workshop was organized for South American States in Sao Paulo, 06-10 December 2004 by the Basel Convention Regional Centre based in Argentina

The workshop provided training to 34 Government delegates from mainly Ministries of Environment and Ministries of Health of 19 countries in the region on the main aspects of the preparation and implementation of POPs waste disposal operations as developed in the Basel Convention General Technical Guidelines for the ESM of POPs Containing Waste (2004). Training was also delivered on the Stockholm Convention Draft Guidelines on Best Available Techniques and Provisional Guidance on Best Environmental Practices Relevant to Article 5 and Annex C as well as the FAO Guidelines on Pesticides Management and Their Safe Disposal.

The technologies and techniques qualified as environmentally sound in the Basel Convention General technical guidelines for the ESM of POPs containing waste (2004) were reviewed in a comprehensive and systematic manner, including with an indication of the operating conditions and the costs involved. A decision making model for the preparation of POPs waste disposal operations and for the selection of POPs waste treatment/destruction technologies developed by the Secretariat of the Basel Convention was introduced to participants through practical training exercises with a view to being utilized in their respective countries.

The topics addressed represent some of the most critical aspects of the implementation of the above-mentioned conventions as they engage the parties for long-term planning, prioritization of activities in the context of their hazardous waste national management plans, and substantial financial commitments.

Some of the main recommendations made by the participants to the meeting include to study the feasibility of the development of a regional approach for the environmentally sound management of POPs as wastes, the need for improved monitoring and control of transboundary movements of chemicals and hazardous waste in the region and, enhanced training both at the regional level and the national level to assist parties in the conduct of POPs waste disposal programmes.

A site visit to the Pesticides Residue and Formulation Analysis Laboratories of the Jordanian Ministry of Agriculture was also included in the programme. A soft copy of this report as well as the workshop power point presentations are included in the attached CD. The full report of the meeting and the documentation will be made available on SBC and BCRC-Cairo web-sites in the weeks to come.

2- Introduction

2-1 Background

Persistent organic pollutants (POPs) are organic compounds of natural or anthropogenic origin that resist photolytic, chemical and biological degradation. They are characterized by low water solubility and high lipid solubility, resulting in bioaccumulation in fatty tissues of living organisms. POPs are semi-volatile and, therefore, able to move long distances in the atmosphere, and are also transported in the environment in low concentrations by movement of fresh and marine waters, resulting in a wide-spread distribution across the earth, including regions where they have never been used and thus, may cause a long range of detrimental environmental and health effects.

Persistent organic pollutants (POPs) are grouped on the basis of a common characteristic, i.e. persistence in the environment, longer than that required for their intended use. The 12 POPs, all are chlorinated compounds, are the pesticides aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex and toxaphene; the industrial chemicals polychlorinated biphenyls (PCBs) and hexachlorobenzene which is also a pesticides; and the unintended by-products of combustion and industrial processes, polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans, numbering 210 congeners, were never produced commercially, and have no intended use.

None of the nine chlorinated hydrocarbon pesticides is presently recommended for the use in agriculture, although many incidents of their misuse on food and cases of acute toxic exposure are still being reported. In public health programmes, only a few persistent chlorinated hydrocarbon pesticides are still being used in various countries, especially DDT in vector disease control, chlordane in termite control and aldrin in locust control, but their use is in constant decline, either because of voluntary withdrawal, or due to legal action.

Over the past several years, the risks posed by POPs have become of increasing concern to many countries, resulting in actions to protect human health and the environment being taken or proposed at the national level, the regional level and more recently, in international initiatives,

2-2 POPs Situation in the Arab Countries

POPs present a special challenge to developing countries, including the Arab countries, which typically lack the capacity to identify and respond to sources of releases of POPs to the air, water and soil. They have also been victims of shipments of toxic chemicals from industrialized countries. In addition, other public health considerations, such as the fight against the malarial mosquito and tse-tse fly, make developing countries reluctant to agree to curtail the use of effective pesticides like DDT.

Many Arab countries do not control releases of POPs, or fail to implement existing legislation. These problems are often compounded by lack of treatment, unsafe transport, concentration in urban areas and inadequate management. Even, when tough standards are occasionally imposed, that might result in dioxin-free emissions from incinerators.

However, the dioxin remains in the ash, which is often land filled, such that the dioxin merely reaches the environment by another route.

The POPs related problems are worsened by lack of inventory of the following:

- POPs releases and risk assessment;
- PCBs-containing equipment, metal or plastic empty drums, tins;
- Potential sources of dioxins and furans
- Unwanted POPs, pesticides stock piles as well as the lack of information and training on internationally approved technologies for POPs disposal

Regardless of a country's decision to ban, or severely restrict the use of some, or all, persistent organic pesticides, there is hardly any country not facing the problem of disposal of some remaining stocks. The situation is worse for the Arab countries because the strict requirements for proper disposal of these chemicals, for example, by incineration at very high temperatures, create an enormous burden both economically and technologically. There are very few adequate incinerators in the world, and almost all of these are located in developed countries. To date, sustainable local and regional technical solutions have not been put in place. Also, should transboundary movements of hazardous waste be required, the associated legal and technical requirements would need to be taken into consideration.

Despite some initiative of POPs destruction and decontamination of POP containing waste, the permanent storage of hundreds of tons of unwanted POPs awaiting proper final disposal, though not entirely appropriate, seems to be the most common way of managing POPs waste in most Arab countries. Feasibility studies and consultations regarding the destruction of POPs containing wastes in cement kiln are undertaken by some Arab countries. Other POPs destruction, treatment, and/or disposal technologies such as chemical dechlorination, plasma arc treatment, thermal desorption, or the use of mobile destruction units have not yet been seriously envisaged and experimented. The landfilling option is generally discouraged.

A complementary task of this workshop is the evaluation of the data collected from the countries serviced by BCRC-Cairo on the preparation and undertaking of disposal operations for POPs containing waste. The results showed that, lack of financial resources and data availability together with the lack of management experience are the main obstacles for POPs disposal management in the Arab countries. The questionnaire as well as the analysis of the answers are shown in annex II. and annex III respectively.

2-3 Aims of the Workshop

The workshop was organized with the following objectives:

- To provide training on the Basel Convention General technical guidelines for the ESM of POPs containing waste (2004), the Stockholm Convention draft guidelines on best available techniques and provisional guidance on best environmental practices (2004) as well as the FAO Guidelines for the management of small quantities of unwanted and obsolete pesticides (1999).
- To provide training on the preparation of national plans for the environmentally sound disposal and decontamination of wastes containing persistent organic

pollutants, through the use of a decision support tool for the selection of destruction and disposal technologies;

- To facilitate the coordinated implementation of the Basel Convention and the Stockholm Convention at the national level through enhanced institutional collaboration between the Focal Points to the above mentioned two conventions and the coordinating institutions for the WHO regional programme on DDT prevention and safe use (in eight countries in the region);
- Review and analysis of the difficulties encountered in the disposal operations for POPs as wastes in the region.
- Review of the obligations and commonalities and inter-relationships between the Stockholm Convention and the Basel Convention with regards to POPs waste disposal related issues.
- Address the widespread problem of large obsolete stocks of pesticides in the Arab countries and the need for their containment and safe disposal as a priority issue.

3- Agenda

Regional workshop for Arab states on the environmentally sound destruction of POP and decontamination of POP containing waste in the context of the Basel Convention and the Stockholm Convention

**Holiday Inn Amman Hotel
28-31 August 2005**

<i>Sunday 28 August</i>	
Inaugural Session 8.30 – 9.30	<p>Session 1 - Opening of the regional workshop.</p> <p>Welcome addresses by:</p> <ul style="list-style-type: none"> • Dr Mortada El Aref, Director, BCRC-Cairo • Dr Ala'Din Alwan, Representative of WHO, Jordan • Mr. Kevin Helps, Programme Coordinator, FAO • Dr Heidelore Fiedler, Scientific Affairs Officer, UNEP Chemicals • Mr. Vincent Jugault, Programme Officer, Secretariat of the Basel Convention • Eng. Faris Al-Juneidi, Secretary General, Ministry of Environment • Mr. Maher Madadha, Secretary General, Ministry of Planning and International Cooperation
09.30 - 10.00	Tea / Coffee Break
10.00 – 10.30	<p>Session 2 – Organizational matters and introduction to the training programme</p> <ul style="list-style-type: none"> • Secretariat of the meeting: <i>organization of the meeting, introduction to the training programme and the documentation of workshop; Presentation of the participants</i>
10.30 – 13.00	<p>Session 3 - Principles and criteria for ESM of POPs containing waste.</p> <ol style="list-style-type: none"> 1. General technical guidelines for the ESM of POPs containing waste and other relevant technical Guidelines of the Basel Convention (PCBs, DDT, Pesticides, Dioxins and Furans) <ul style="list-style-type: none"> • Mr. Vincent Jugault, Secretariat of the Basel Convention (40 min): <i>description of the adopted Technical Guidelines on POPs containing waste and other technical guidelines under development.</i> 2. Draft BAT/BEP Guidelines and obligations for POPs as wastes under the Stockholm Convention <ul style="list-style-type: none"> • Dr. Heidi Fiedler, UNEP Chemicals (40 min): <i>description of the draft BAT/BEP Guidelines and of the obligations and criteria for ESM of POPs waste under the Stockholm Convention</i> 3. Guidelines for the ESM of POPs pesticides <ul style="list-style-type: none"> • Mr. Kevin Helps, Food and Agriculture Organization (20 min): <i>guidelines for POPs waste disposal operations under the FAO Code of conduct.</i>

	<p>4. Criteria for environmentally sound landfilling in hyper dry areas</p> <ul style="list-style-type: none"> • Dr. Ashraf El Maghraby, BCRC-Cairo (20min): <i>preparation of a set of tools for the selection, design and operation of hazardous waste landfills in hyper dry areas.</i> <p>5. Discussion (30 min)</p>
13.00 – 14.00	Lunch Break
14.00 – 15.30	<p>Session 4 - Specific issues related to the preparation of destruction plans for POPs containing waste and other waste.</p> <p>6. ODS Waste Management.</p> <ul style="list-style-type: none"> • Abdulelah Al Wadaee, UNEP-ROWA (30 min): <i>the experience in undertaking phase out programme for ODS under the Montreal Protocol.</i> <p>7. Specific issues concerning the preparation and undertaking of disposal operations for POPs containing waste</p> <ul style="list-style-type: none"> • Prof. Said Abol-Ela, BCRC-Cairo (20 min): <i>results of a regional enquiry on disposal operations.</i> <p>8. Disposal plans for POPs containing waste in Arab States</p> <ul style="list-style-type: none"> • Prof. Mohamed Belal, BCRC-Cairo (20 min): <i>needs and technical requirements.</i> <p>9. Discussion (20 min)</p>
15.30 – 16.00	Tea / Coffee Break
16.00 – 17.30	<p>Session 5 - Financial considerations for the preparation of disposal plans for POPs containing waste in the context of the Basel Convention and the Stockholm Convention</p> <p>10. Financial mechanisms under the Stockholm Convention</p> <ul style="list-style-type: none"> • Dr. Heidi Fiedler, UNEP Chemicals (30 min) <p>11. Introduction to the financial aspects of POPs waste disposal operations.</p> <ul style="list-style-type: none"> • Dr. Kåre Karstensen, SINTEF, Mr. John Vijgen, IHPA (45 min) <p>12. Discussion (15 min)</p>

	<i>Monday 29 August</i>
9.00 – 11.00	<p>Session 6 - Treatment and destruction technologies for POPs containing waste.</p> <p>13. Review of treatment and destruction alternatives</p> <ul style="list-style-type: none"> • Dr. Ron McDowall, University of Auckland (60 min): <i>presentation of a decision-making model for the preparation of POPs waste disposal</i>

	<p><i>operations and for the selection of POPs waste treatment/destruction technologies in the context of the Basel Convention.</i></p> <p>14. Introduction to treatment and destruction technologies</p> <ul style="list-style-type: none"> • Mr. John Vijgen, IHPA (30 min): <i>Gas Phase Chemical Reduction</i> • Dr. Kåre Karstensen, SINTEF (30 min): <i>processing in cement kilns</i>
11.00 – 11.30	Tea / Coffee break
11.30 – 13.00	<p>15. Criteria for the selection and use of POPs waste treatment and destruction technologies in the context of the Stockholm Convention</p> <ul style="list-style-type: none"> • Dr. Heidi Fiedler, UNEP Chemicals (30 min) <p>16. Introduction to treatment and destruction technologies (cont.)</p> <ul style="list-style-type: none"> • Mr. John Vijgen, IHPA (30 min): <i>Base Catalyzed Dechlorination</i> • Dr. Kåre Karstensen, SINTEF (30 min): <i>Incineration</i>
13.00 – 14.00	Lunch break
14.00 – 15.15 (including coffee break)	<p>17. Introduction to treatment & destruction technologies (cont.)</p> <ul style="list-style-type: none"> • Mr. John Vijgen, IHPA (20 min): <i>Plasma Arc</i> • Dr. Kåre Karstensen, SINTEF (30 min): <i>Auto-claving</i> • Mr. John Vijgen, IHPA (20 min): <i>Sodium Reduction</i>
15.15 – 15.30	Coffee/Tea break
15.30 – 18.00	<p>Session 7 – Preparation of treatment and disposal plans for PCBs and PCB containing waste.</p> <p>18. Training</p> <ul style="list-style-type: none"> • Dr. Ron Mc Dowall, University of Auckland (150 min): <i>participants will be invited to use a decision making model for the preparation of treatment and disposal operations.</i>

<i>Tuesday 30 August</i>	
9.00 – 10.30	<p>Session 8 - Preparation of disposal plans for obsolete pesticides.</p> <p>19. Regional Project for DDT sound management and reduction.</p> <ul style="list-style-type: none"> • WHO-Environmental Health (30 min): <i>presentation of the WHO DDT project in the region and aspects relevant to the preparation of disposal plans for obsolete stocks.</i> <p>20. Obsolete pesticide disposal project in Syria</p> <ul style="list-style-type: none"> • Dr Hajjar, Ministry of Agriculture and Agrarian Reform, Syria (30 min) <p>21. Discussion (30min)</p>
10.30 – 11.00	Coffee/Tea break
11.00 – 13.00	<p>22. Training</p> <ul style="list-style-type: none"> • Dr. Ron Mc Dowall, University of Auckland (120 min): <i>Participants will be invited to use a decision making model for the preparation of DDT waste disposal operations.</i>
13.00 – 19.00	<p>Section 9 - Site visit</p> <p>23. Site visit organized by the Ministry of Environment, Jordan</p>

<i>Wednesday 31 August</i>	
9.00 – 11.00	<p>Section 10 – Disposal of waste under consideration of formation and release of dioxins and furans</p> <p>24. Training</p> <ul style="list-style-type: none"> • Dr. Heidi Fiedler, UNEP Chemicals (120 min): <i>participants will be invited to develop steps in an action plan for the ESM of dioxin-containing wastes and under consideration to potential formation and releases of PCDD/PCDF.</i>
11.00 – 11.30	Tea / Coffee break
11.30 – 13.00	<p>Section 11 – Preliminary elements for the development of regional approaches</p> <p>25. Development of regional projects in the context of the Basel Convention and the Stockholm Convention</p> <ul style="list-style-type: none"> • Vincent Jugault, SBC (30 min) <p>26. Potential synergies at the regional level in the context of the African Stockpile Project</p> <ul style="list-style-type: none"> • Kevin Helps, FAO (30 min)

	27. Discussion
13.00 – 14.00	Lunch Break
14.00 – 15.30	Session 12 - Challenges for the development and implementation of treatment and disposal plans in the region. 28. General discussion <ul style="list-style-type: none">• <i>BCRC-Cairo, MoE-Jordan:</i> The participants will be invited to highlight the main issues to be considered for the preparation of POPs Waste Treatment and Disposal Plans, including development of decision-making models, training and capacity building needs, financial mechanisms, technical requirements, potential synergies, i.e. national versus regional plans, PCB and pesticides, etc. Recommendations to be prepared in small working-groups.
15.30 – 16.00	Coffee/Tea break
16.00 – 17.00	Session 13 - Closing of the meeting 29. Conclusions and discussion <ul style="list-style-type: none">• BCRC-Cairo (30 min): <i>presentation of the results of the discussions. Finalization of recommendations</i> 30. Closing remarks by participants, organizers and host Government.

4- Workshop Activities

Sunday 28 August

Session 1-Inaugural Session

The workshop started, at 9 am in the 28th of August 2005, by inaugural session. This session was moderated by Dr. Kamal Khdir, MOPIC advisor, Jordan, who welcomed participants and extended his appreciation to the Secretariat of the Basel Convention and the Swiss Government as the main financial contributor to the workshop. Dr. Khdir also emphasized that the Ministry of Planning and International Cooperation views this workshop as an important milestone in managing POPs related problems.

Dr. El Aref, Director of Basel Convention Regional Centre for Training and Technology Transfer for the Arab States (BCRC-Cairo), invited participants to seize the opportunity of this workshop to bring together high level decision makers, expertise and interested stakeholders to interact and express views, queries and /or constraints with a view to building a transparent and constructive partnership aiming at the environmentally sound management of POPs as waste in Arab States. Dr. El Aref then briefly described the objectives of the workshop and wished a successful achievement.

Dr. Ala'Din Alwan, WHO representative-Jordan, thanked the Government of Jordan for hosting this workshop and for the excellent organization of this event. He referred to the importance of this workshop not only in the context of Basel and Stockholm Conventions but also to the World Health Organization. He mentioned the role of pesticides in the control of various vector borne diseases and the potential harm they can cause to human health if they are not managed properly and used wisely. He also emphasized on the commitment of WHO to support and strengthening relevant country capacities to ensure that sustainable safeguards are implemented.

Dr. Kevin Helps, Programme Coordinator FAO, thanked the Government of Jordan for hosting this workshop. He clarified that management of POPs pesticides is a top priority issue among the FAO activities in developing countries. He referred to the FAO project on Obsolete Pesticides which has been in operation since 1994 and on-going projects in Yemen, Lebanon, and Syria. Dr. Kevin Helps also stressed the importance and adequacy of different guidelines and training manuals issued by FAO for the better management of POPs pesticides and the commitment of FAO to continue to work in the subject area of the environmentally sound management and disposal of obsolete pesticides, including POPs pesticides.

Dr. Heidelore Fiedler, Scientific Affairs Officer, UNEP Chemicals, referred to the importance of this workshop in joining efforts for the coordinated implementation of the obligations for the Stockholm Convention and the Basel Convention. Dr. Heidelore Fiedler explained the potential for an integrated approach on the environmentally sound management of POPs as waste in the context of the Basel Convention and the Stockholm Convention and how the two instruments should be considered complementary rather than duplicative or contradictory. She stressed on the outcome of the new guidelines on

best available techniques and provisional guidance on best environmental practices relevant to article 5 and annex C of the Stockholm Convention on persistent organic pollutants that should be taken into account when making decisions on the destruction of POPs Wastes. She also announced that the Draft version of these guidelines will be used during the training part of the workshop.

Mr. Vincent Jugault, Programme Officer, Secretariat of the Basel Convention, thanked the Government of Jordan and BCRC-Cairo for jointly organizing the workshop in Amman, Jordan. Mr. Vincent Jugault indicated that the workshop was taking place in the context of the implementation of the Basel Convention General technical guidelines for the ESM of POPs containing waste (2004) as well as the Stockholm Convention (draft) guidelines on best available techniques and provisional guidance on best environmental practices. He stressed that the subject of the meeting, namely the preparation of disposal operations of POPs as wastes represent a critical aspect of the implementation of the Basel Convention and the Stockholm Convention. Mr. Jugault also confirmed that the government of Finland was supporting financially a three year long work-programme worth one million Euros of the Basel Convention Regional Centre based in Cairo to serve the Arab States (BCRC-Cairo), which he considered as a key regional partner on matters relating to hazardous waste. Mr Jugault finally mentioned that the present regional workshop for Arab States being held in Jordan was the second edition of such training workshop, thanked the Government of Switzerland for making it happen and noted with appreciation the technical and financial support provided by the WHO and FAO which he considered as an illustration of the commitment of the multilateral system to addressing issues of great concern with visible impact on the environment and human health.

Eng. Faris Al Juneidi, Secretary General of the Ministry of Environment, spoke on behalf of his Excellency the Minister of environment Eng. Khalid Aniss Alerany. He expressed his appreciation for choosing Jordan for such workshop. He added that Jordan is ratifying all the international environmental conventions and agreements and is committed to those conventions at the national, regional, and international level. Mr. Al Juneidi pointed out that the Jordanian Ministry of Environment is considering hazardous waste management including POPs waste as a top priority issue. He concluded by expressing warm welcome to the attendees, wishing them a nice stay in Jordan and fruitful working sessions.

Mr. Maher Madadha, Secretary General, Ministry of Planning and International Cooperation, started his speech with a warm welcome wishing all the participants a nice stay. Mr. Madadha highlighted the similar situations faced by the countries of the region as regards the impact of development and globalization to the environment as most developing countries were not sufficiently prepared to tackle the waste related problems created. Mr. Madadha added that this situation necessitate to enhance cooperation in the region to better manage hazardous waste. Mr. Maher concluded by expressing his willingness to put all MOPIC wellbeing at the disposal of the workshop.

Session 2- Organizational matters and introduction to the training programme.

Moderators: Dr. Kamal Khdir and Eng. Faris Al Juneidi

The session started by giving the participants a chance to introduce themselves and their affiliations. The floor was then given to Mr. Vincent Jugault and Dr. Heidelore Fiedler who introduced the adopted agenda, the documentation and the working documents for the training sessions.

Session 3- Principles and criteria for ESM of POPs containing waste.

Moderators: Dr. Kamal Khdir and Eng. Faris Al Juneidi

The session started by a presentation of Mr. Jugault on the concept of Environmentally Sound Management as developed and adopted by the Basel Convention concerning hazardous waste in general and POPs waste in particular. A general description was given of the Basel Convention COP7 adopted 'General' Technical Guidelines for the ESM of POPs as Waste as well as other technical guidelines for the ESM of PCBs/PBBs/PCTs, DDT, pesticides, and PCDD/PCDF. Specific attention was given to the levels of POPs destruction, the methods that would constitute environmentally sound disposal, and definition of 'low POPs content' as presented in the guidelines. The scopes and obligations of the Stockholm Convention, Rotterdam Convention and Basel Convention as regards the ESM of POPs as waste and their relationship were also discussed.

The floor was then given to Dr. Heidelore Fiedler, UNEP Chemicals, who described the content of the Draft BAT/BEP Guidelines and the obligations for POPs as Wastes under the Stockholm Convention that will be submitted for adoption in the next SC-COP. Dr. Fiedler pointed out some of the issues in the BAT/BEP Guidelines, including that all new sources listed in Annex C, Part II, should be tested for PCDD/PCDF emissions and the guidelines do not list a special method for testing. She also pointed to the fact that the Guidelines remain open for amendments and updating as new information becomes available.

Dr. Kevin Helps, Programme Officer, FAO, was given the floor. He extended over the previous presentation on ESM of POPs waste by a step-by-step approach based on practical experience of implementation. Dr. Helps's presentation addressed the regulatory context of ESM of POPs waste that includes the institutional arrangements, the inventory, the environmental assessment, safeguarding and repacking of obsolete stocks, and the disposal standards applicable, including the Basel Convention and Stockholm Convention and EU regulations. Dr. Helps also added that analysis of the lessons learnt, the availability of adequate financial resources and political support as well as technical ability were key additional elements to take into consideration when planning for POPs pesticides disposal operations at the national level.

Dr. Ashraf El Maghraby, BCRC-Cairo, made a presentation on the outcome of a project implemented by the BCRC-Cairo in the context of the Strategic Plan of the Basel Convention as decided by the Basel Convention COP6, and entitled "Preparation of a set of tools for the selection, design and operation of hazardous waste landfills in hyper dry areas" that is implemented by BCRC-Cairo". Dr. El Maghraby introduced some of the

hydrological characteristics of arid sites which make them different from humid sites. He emphasized that arid sites, particularly in the Arab region, require consideration beyond ideal design, operation, and monitoring that satisfy the minimum regulatory requirements. Dr. El Maghraby pointed out that the project suggested of using alternative approaches in the lining and cover systems of landfills that are cost-effective and allow re-used of some waste streams.

During the debate period of this session a question raised on how far the landfilling option is applicable to POPs waste. Dr. El Maghraby answered “it is not a good idea as it might pose potential threat to the groundwater”. Mr. Jugault added that the Basel Convention guidelines do not consider landfilling of POPs waste as an environmentally sound option. Dr. Heidelore and Dr. Helps also commented on questions related to the DDT use permissions and the quantity of POPs pesticides compared to other pesticides and the compensation and liability of POPs producing countries and/or manufactures.

Session 4 - Specific issues related to the preparation of destruction plans for POPs containing waste and other waste.

Moderators: Dr. El Aref and Mr. Jugault

The session started by the talk of Dr. Abdulelah Al Wadaee, UNEP-ROWA, on the waste management under the Montreal Protocol (MP), particularly the substances that deplete the ozone layer (ODS). Dr. Al Wadaee went through the historical development of the Montreal Protocol and the MP approach in dealing with ODS. He addressed the ODS waste disposal policy and emphasized that although the MP does not require regulations against the atmospheric release of ODS, the emission prevention is still a concern to parties. Dr. Al Wadaee presented an inventory for the potential ODS for destruction based on global and regional quantities. Dr. Al Wadaee concluded his talk by reviewing the approved and suggested regulatory standards for the ODS destruction technologies.

Dr. Said Abol-Ela, BCRC-Cairo presented the results of a pre-distributed questioner on a specific issues concerning the preparation and undertaking of disposal operations for POPs containing waste in the countries serviced by BCRC-Cairo. Dr. Abol-Ela clarified that the analysis was carried out on the basis of seven questions and specific indicative criteria for each question to the aim of identifying problems and encountered difficulties concerning the preparation and undertaking of POPs waste disposal. Dr. Abol-Ela claimed that, lack of financial resources and data availability together with the lack of management experience are the main obstacles for POPs disposal management in the Arab countries.

Dr. Mohamed Belal, BCRC-Cairo, presented a talk on the needs and technical requirements for the disposal plans of POPs containing waste in the Arab States. Dr. Belal went through the different POPs disposal options and evaluated the suitability of each option to the common circumstances in developing countries including the Arab States. Dr. Belal also presented some criteria for the selection of the disposal methods.

Session 5 - Financial considerations for the preparation of disposal plans for POPs containing waste.

Moderators: Dr. El Aref and Mr. Jugault

Dr. Fiedler started the session with a talk on the financial mechanisms under the Stockholm Convention. Dr. Fiedler referred to the urgent need for financial resources to help developing country Parties and Parties with economies in transition to fulfil their obligations under this convention. She mentioned that the Global Environment Facility (GEF) is the principal entity on an interim basis entrusted with the operations of the financial mechanism in accordance with Article 14 of the Stockholm Convention and went through the various GEF financial opportunities. Dr. Fiedler emphasized that the GEF will not be the only source of funding and urged the countries to search for other funding sources. She also presented an example on how to evaluate costs for disposal operations for obsolete PCBs. The example showed that different scenarios have to be developed in order to estimate costs and that many factors have to be taken into account such as type of PCB, volume of PCB, storage, domestic and international transportation, training, technology implementation, *etc.* The example clearly demonstrated that there is not ONE solution and that countries have to carefully describe and analyze their special situation.

Dr. Kåre Karstensen, Foundation for Scientific and Industrial Research (SINTEF), Norway and Mr. John Vijgen, (IHPA) Denmark, made a presentation on the cost of POPs clean-up and final disposal in the context of implementation of the Stockholm and the Basel Conventions. Dr. Karstensen reviewed the cost implications related to the various steps and phases in disposal projects of POPs waste while Mr. Vijgen addressed the costs related to the actual destruction of POPs waste. Dr. Karstensen pointed out that good cost estimates, analysis of the uncertainties, and risk assessment are necessary for the proper evaluation of clean-up and disposal options. He presented a case study in Mozambique where cost estimation was filled with uncertainties, and as such, a significant degree of risk was introduced. Mr. Vijgen went through the different final disposal and decontamination options of POPs waste that have been identified as environmentally sound by the Basel Convention General Guidelines for the ESM of POPs as Waste. He then analyzed the cost of each disposal options and the considerations that should be taken for each option.

During the discussion that followed, questions were raised regarding the time period and ceiling limit to start a full-size project. Other questions concerning the co-financing difficulties were also raised. Country eligibility to receive funding from the GEF financial mechanism was also a matter of discussion.

Monday 29 August

Session 6 - Treatment and destruction technologies for POPs containing waste.

Moderators: Dr. Kamal Khdier and Dr. Heidelore Fiedler

Dr. Ron McDowall, University of Auckland, started the session with a presentation of a decision-making model for the preparation of POPs waste disposal operations and for the selection of POPs waste treatment/destruction technologies in the context of the Basel

Convention. Dr. McDowall pointed out that there are approximately 50 technologies that can be used for treatment and destruction of POPs containing waste and can be categorized into five groups. These are commercialized technologies with considerable experience, technologies near or at the start of commercialization, promising technologies, technologies which require significant research, and technologies which are unlikely to be applicable for destruction of POPs. Dr. McDowall, a co-author of the training manual

for destruction and decontamination technologies for PCBs and POPs being used in the context of the workshop, went through the content of the manual. Dr. McDowall stressed the need for the development of a decision support system based on two matrices of criteria. The first matrix involves criteria that reflect the adaptation of the technology to the developing country and the second reflects the adaptation of the developing country to technology. All criteria elements are scaled 0-100 points or 0-1 Binary. Dr. McDowall pointed out that the two sets of criteria are to form a double set of matrices that can be easily analysed where a conclusion can be reached as to the selection of appropriate technology.

Mr. Vijgen, IHPA, described the technology of gas phase chemical reduction as a feasible method for POPs destruction, particularly for PCBs, HCBs and DDT, where efficiencies of at least 99.9999 % were demonstrated. Mr. Vijgen applied the Technology - Country adaptation criteria and the Country - Technology adaptation criteria that were previously described by Dr. McDowall earlier in this session. Mr. Vijgen concluded by demonstrating the strengths and weaknesses of this technology.

Dr. Heidelore Fiedler, UNEP Chemicals, made a presentation on criteria for the selection and use of POPs waste treatment and destruction technologies in the context of the Stockholm Convention. Dr. Heidelore reviewed the available technical guidelines on POPs as wastes that have been adopted by the Basel Convention. She also clarified that, although not adopted, these Technical Guidelines were welcomed with appreciation by the Stockholm COP and should be used in the National Implementation Plans. Dr. Heidelore compared some issues in the draft BAT/BEP Guidelines (not yet adopted by the Stockholm Convention) with Basel Technical Guidelines as to the levels of destruction, the methods that would constitute environmentally sound disposal, and definition of 'low POPs content'. Dr. Heidelore drew the attention of participants to possible discrepancies between the air limit values under the Stockholm Convention and the Basel Convention.

The issue of treatment and destruction technologies was continued by Mr. Vijgen, IHPA. He described the Based Catalyzed Dechlorination as a technology for POPs destruction. Mr. Vijgen mentioned that, all POPs, PCB's and pesticides can be efficiently destroyed using this technology without release of toxic emissions into environment. He then went through the application of the Technology - Country and the Country - Technology adaptation criteria to this method and concluded by demonstrating the strengths and weaknesses of this technology.

Dr. Kåre Karstensen, SINTEF, described the high temperature incineration as another POPs destruction technology. Dr. Karstensen stressed on the benefits of volume reduction and energy recovery by using this technology. Dr. Karstensen pointed out that,

rotary kilns offer the 1100- 1200 °C temperature range and 2 seconds residence time necessary for destruction of all POPs where the destruction efficiency can achieve more than 99.9999 %. He then went through the application of the Technology – Country and the Country – Technology adaptation criteria to this method and concluded by demonstrating the strengths and weaknesses of this technology.

Mr. John Vijgen, IHPA, described the Plasma Arc (PLASCON) POPs destruction technology. He mentioned that this technology was commercialized since 1992, where nine plants are now operating in Australia, Japan, and United Kingdom. Mr. Vijgen went through the application of the Technology – Country and the Country – Technology adaptation criteria to this method and concluded by demonstrating the strengths and weaknesses of this technology.

Dr. Ron McDowall described autoclaving technology. He stressed on the fact that, although not a destruction method, autoclaving technology is used as a solvent decontamination process that extracts PCBs from the oil and oil residues on casing wall surfaces and internal cores, coils and windings of contaminated electrical transformers and capacitors. He also pointed out that this technology is designed only for PCBs and not for other POPs. Dr. McDowall then went through the application of the Technology – Country and the Country – Technology adaptation criteria to this method and concluded by demonstrating the strengths and weaknesses of this technology.

Mr. John Vijgen, IHPA, described the Alkali metal reduction (sodium reduction) treatment technology. He emphasized that this technology has been used commercially in North America, France and in Germany for approximately 20 years to treat PCBs contaminated oils above 50 ppm. Mr. John explained two alternative modes for the operation of this method, either a direct operation mode with transformer or indirect operation mode using intermediate oil tank. He then went through the application of the Technology – Country and the Country – Technology adaptation criteria to this method and concluded by demonstrating the strengths and weaknesses of this technology.

Session 7 – Preparation of treatment and disposal plans for PCBs and PCB containing waste (Training).

Moderators: Dr. El Aref and Dr. Abdulelah Al Wadaee

The first training session was led by Dr. Ron Mc Dowall and Mr. John Vijgen. Dr. Ron Mc Dowall explained the technology assessment exercise as based on the Technology – Country and the Country – Technology adaptation criteria. He pointed out that such system would be valuable for communities as well as governments who are seeking to determine appropriate technologies for managing POPs. He also added that, as a country or region applies the system, decisions can be stored within the database to provide a clear profile of the weighting factors and decision making process.

Dr. Mc Dowall and Mr. Vijgen then asked the participants to split into two groups with the aim of experiencing the decision making tool discussed in plenary for the preparation of treatment and disposal technology options. Each group was split into three subgroups.

The subgroups had the following composition: Group one consisted of subgroup A (Sudan and Lebanon), subgroup B (Syria, Qatar, Jordan), and subgroup C (Egypt, Kuwait, Mauritania). Group two consisted of subgroup D (Libya, Oman, Palestine), subgroup E (Morocco, Djibouti, Tunisia), subgroup F (Yemen, Bahrain, Iran). A rapporteur was appointed for each subgroup.

Each group was asked to compare between two destruction and/or decontamination technologies of POPs by using the provided Fact Sheets describing each technology and the adaptation spread sheets (Technology – Country and the Country – Technology adaptation matrices). Each group provided a weighting scale and thus compared the two technologies.

Group one compared between (GPCR) (Gas Phase Chemical Reduction) and Autoclave technologies assuming waste is 25,000 tones of mixed PCB transformers and capacitors with average contamination of 5000 ppm. While group two compared between Plasma Arc (Plascon) and BCD (Base Catalyzed Dechlorination) technologies assuming waste is 15,000 tones of mixed obsolete pesticides with average contamination of 1000 ppm. Dr. Mc Dowall and Mr. Vijgen served as facilitators.

Tuesday 30 August

Session 8 - Preparation of disposal plans for obsolete pesticides.

Moderators: Dr. El Aref, Dr. Kamal Khdir and Dr. Jacob Williams

Dr. Jacob William, WHO/HQ Geneva, started the session by reviewing the Stockholm Convention DDT Provisions and the decisions taken on DDT during COP 1. He then described the EMRO DDT/IVM regional project entitled “Demonstration of Sustainable Alternatives to DDT and Strengthening of National Vector Control Capabilities in Middle East and North Africa”. He went through the project objectives and stressed the benefits of increasing the national capacity for planning and implementation of vector control through using cost-effective alternatives to DDT. Dr. William also described some EMRO DDT/IVM project activities that are related to the present workshop objectives such as DDT disposal and the National action plans on vector control.

Obsolete pesticide disposal project in Syria

Dr Hajjar, Ministry of Agriculture and Agrarian Reform, Syria, presented the Syrian experience in the effective and safe disposal of obsolete, banned and unwanted pesticides. Dr Hajjar referred to the UNEP/FAO supported project of safe guarding and disposal of obsolete pesticides and associated wastes in Syria. He indicated that the project was phased into three distinct levels. Phase one included the preparation of complete detailed inventory of obsolete pesticides stock-piles. A FAO funded (US\$380,000) Phase two, still in progress, include the safeguarding of stocks that pose a direct threat to the population and environment. Phase three involve the centralization of the new packages to strategic location for safe and controlled storage. A fourth Phase, yet to be developed, will consider export of repackaged stocks and local disposal of old pesticide containers. Dr Hajjar then went through the pesticides inventories taken over in

a statistical approach. He then concluded by showing some video clips demonstrating the inventory and repackaged processes.

Dr. Ron Mc Dowall invited the participants to evaluate the results of the training on Technology Assessment Exercise. He appreciated the efforts done by the subgroups and the logic entries they submitted that made the training objectives achieved with a considerable success. Some of the subgroups presented the weighting entries and thus indicating which of the technology was relevant to the group of countries having similar POPs situation. Presentations of sample matrix entries of the different subgroup revealed a wide range of entries. Some subgroups submitted close entries that made the selection between the candidate technologies extremely difficult. Dr. Mc Dowall concluded by suggesting to add other criteria to the matrices in order to be able to differentiate between candidate technologies.

Session 9 - Site visit organized by the Ministry of Environment, Jordan

The Ministry of Environment arranged a site visit to the Pesticide Residue and Formulation Analysis Laboratories that belongs to the plant protection department of the Ministry of Agriculture, Jordan. A group of technicians and chemical engineers received the workshop participants and introduced themselves. They provided the participants with information regarding the historical development of the laboratory (established since 1984) and the analytical instrumentations available which include High Performance Liquid Chromatography (HPLC) with different detectors (UV, Diode array, and FTIR/IR) and Gas Chromatography with different detectors (ECD, NPD, FPD, and MS). The instruments were distributed in three separate laboratories, a pesticide extraction lab., a pesticide residue lab., and active ingredients lab.

The chemical engineers of the laboratory explained to the participants the role of the laboratory in monitoring all the imported and local agricultural products by analyzing the samples and ensuring permissible limits of pesticides residues before entering the Kingdom. A live analysis of a sample residue was demonstrated by one of the technicians.

The chemical engineers of the laboratory also pointed out to the role of the laboratory in terms of quality control for the locally produced and imported permissible pesticides to ensure that the relevant international and national regulations are applied. A brochure describing the activities of the laboratory was distributed at the end of the visit.

Wednesday 31 August

Session 10 – Disposal of waste under consideration of formation and release of dioxins and furans (Training)

Moderators: Dr. Kamal Khdier and Dr. Kevin Helps

Dr. Heidelore Fiedler, UNEP Chemical, led the second training session. She invited the participants to develop steps in an action plan for the ESM of dioxin-containing wastes and under consideration to potential formation and releases of PCDD/PCDF. Dr. Heidelore assumed a developing country she named “Utopia” that has imported second hand cars from Europe since more than 20 years. “Utopia” was assumed to have an active

metal production sector composed of a number of recycling and valorization industries which imports metal-containing end-of-life consumer goods and scrap materials as well as fly ashes from the iron and steel plants from countries in the region.

Dr. Heidelore asked the participants what they should do if they were the dioxin team leader and were faced with the following questions:

To prepare a report on compliance with the Basel and Stockholm Conventions to make the dioxin/furan action plan for the metal production sector. Include the following questions:

Establish the dioxin and furan inventory and the action plan for the automobiles. What needs to be taken into account?

Which are the options for the car batteries?

The PCDD/PCDF releases from the battery recycling plants are accounted for: in Utopia? in the country where the cars did run?

From a regional point: Which of the imported/exported raw materials are subject to the Basel Convention?

Another exercise was demonstrated on “Utopia” regarding the PCP Legacy. “Utopia” was assumed to have

- An old timber industry, which in the past has extensively used pentachlorophenol (PCP) and pentachlorophenate (PCP-Na);
- Large amounts of PCP-treated wood has been used in the construction business;
- The saw mills are located along Utopia’s main river and saw mill residues/meal were left on the ground since decades.

Dr. Heidelore asked the participants what they should do if they were the dioxin team leader and were faced with the following questions:

To develop a strategy to resolve the PCP problem by addressing, among others, the following questions:

- Why is PCP a problem? (Note: PCP is not a Stockholm POP);
- What are the problems resulting from the application of PCP? (List applications according to use pattern and potential implications). Who are the stakeholders?
- What actions can be taken to address and resolve these problems?

The participants responded to the exercise through long discussions that revealed in some instances a lack of background information, and a lack of reliable and accurate information. The participants were directed to the Standardized Toolkit, 2nd edition as of February 2005, to identify those chemicals and wastes that are contaminated with PCDD/PCDF (for example PCP) and the Draft Guidelines for BAT/BEP to refer to typical operations of plants and processes that are considered as a dioxin source. For example, the Draft Guidelines clearly state that lead acid batteries are typical input materials for secondary lead plants (= lead recycling plants) and that secondary zinc

plants typically use fly ashes from other metal sector plants, *e.g.*, electric arc furnaces of the steel industry, as raw materials. However, countries, when importing such secondary raw materials have to take into consideration the rules of the Basel Convention as to transboundary movement of such wastes (*e.g.*, obsolete batteries, fly ashes, scarp metals). For PCP, care has to be taken as to the dioxin contamination of the product and the wood that will be treated with PCP. PCP saw dust generated in the timber industry has been found to cause severe environmental contamination of soils and sediments not only with PCP but also with PCDD/PCDF.

Session 11 – Preliminary elements for the development of regional approaches

Moderators: Dr. Kamal Khdier and Dr. Kevin Helps

Mr. Jugault, Secretariat of the Basel Convention, made a presentation on the preliminary elements for the development of a regional approach for the ESM of POPs as wastes. Mr. Jugault went through the main factors of decision for the development of regional approaches which include factors such as policy development – political capital, legal and regulatory frameworks, training and awareness needs, infrastructure, and the financial considerations. He pointed out to some examples of regional projects on POPs such as African Stockpile Project (ASP) on obsolete pesticides or the Regional Project for the ESM of PCBs in West Africa. Mr. Jugault concluded by demonstrating the advantages and disadvantages of regional approaches.

Dr. Kevin Helps, FAO, introduced the potential synergies to be gained of a regional approach for the ESM of obsolete pesticides and drew on the lessons learnt from the Africa Stockpiles Programme (ASP). Dr. Helps introduced the Africa Stockpiles Project and its main objectives. Dr. Helps concluded by raising some questions such as, is the scale of the problem significant?, is a regional approach desirable?, is a regional approach possible?, do we have base line inventory data on which to base a project outline?, and finally can we use the NIP data?

Session 12 - Challenges for the development and implementation of treatment and disposal plans in the region (general discussions).

Moderators: Dr. Kamal Khdier (MOPIC) and Dr. El Aref, BCRC-Cairo, Dr Jacob Williams, WHO, Mr. Vincent Jugault, SBC, Dr. Heidelore Fiedler, UNEP Chemicals, and Dr. Abdulelah Al Wadaee, ROWA.

The session was in the form of a general discussion. The participants had the opportunity to discuss and highlight the main issues to be considered for the preparation of POPs Waste Treatment and Disposal Plans, including development of decision-making models, training and capacity building needs, financial mechanisms, technical requirements, potential synergies, for example, national versus regional plans, PCB and pesticides, etc. The participants were also asked to split in small working-groups to discuss and develop recommendations to be addressed in the closing session.

Session 13 - Closing of the meeting (Discussions, Conclusions, and Recommendations)

Moderators: Dr. Kamal Khdier (MOPIC), Dr. El Aref, BCRC-Cairo, Dr Jacob Williams, WHO, Mr. Vincent Jugault, SBC, Dr. Heidelore Fiedler, UNEP Chemicals, and Dr. Abdulelah Al Wadaee, ROWA.

Each working group was asked to present the suggested recommendations. The subgroups agreed on several issues regarding POPs management. Some recommendations were relevant to particular countries and others were general urging coordination among countries of the region. After omitting the repeated ones, the relevant recommendations were finalized. The session was concluded by closing remarks by participants, organizers and host government, and thanks to the Government of Jordan for hosting the workshop and congratulations to the organizers for a successful workshop.

5- Recommendations of the workshop

The participants of the workshop agreed upon the following statements and recommendations:

The meeting:

- 1- Encourages Arab Countries which are not yet parties to the Basel Convention and the Stockholm Convention to ratify and/or complete the ratification process.
- 2- Urges the Arab States to implement the obligations under the Basel Convention and Stockholm Convention at the national level and the regional level concerning the environmentally sound management of POPs, including the prevention of release into the environment, the environmentally sound management of stockpiles until their final disposal and the control of their trans-boundary movements, as well as the full implementation of the National Implementation Plans under the Stockholm Convention.
- 3- Urges UNEP, WHO, FAO, and other funding agencies to provide technical and financial support to the Arab States to implement the obligations under the Basel Convention and Stockholm Convention with regard to the environmentally sound management of POPs as waste, including inventories, storage, and final disposal and/or destruction of POPs waste. Also, the meeting invites countries in the region to collaborate in supporting resource mobilization initiatives that aim at fulfilling the objectives of the Basel Convention and the Stockholm Convention.
- 4- Requests the Secretariat of Basel Convention and the secretariat of the Stockholm Convention to contribute to any evaluation on the present situation concerning the ESM of POPs in Arab States, in particular lesson learnt from countries experience¹.
- 5- Recognizes the need for the development of a regional project for the undertaking of inventories of POPs, including POPs in use, in storage/stocks and in wastes
- 6 – Invite the BCRC-Cairo to take an active role, in the long-run, in assisting the countries in the region in undertaking POPs waste disposal activities in particular by monitoring POPs waste disposal operations.
- 7- Requests the Secretariat of the Basel Convention, the Secretariat of the Stockholm Convention and the Regional Centre for Training and Technology Transfer for the Arab States (BCRC-Cairo) to organize regional and sub-regional workshops on such matters as awareness raising and training on the ESM of hazardous wastes, including POPs, and best available technologies for hazardous waste disposal, including POPs
- 8- Requests BCRC-Cairo, UNEP Chemicals, and the Government of Jordan to collaborate with a view to preparing a proposal for the strengthening of a regional network of laboratories to cover the needs for sampling and analysis of all kinds of POPs, including a Central Analytical Laboratory serving the countries of the region.
- 9- Taking into consideration the political situation in Palestine and Iraq, invites BCRC-Cairo to collaborate with UNEP-PCAU and UNEP-ROWA, the government of Jordan, the secretariat of the Basel Convention and the secretariat of the Stockholm Convention

as well as the Focal Points to the two above mentioned conventions in Iraq and Palestine with a view to organizing and undertaking a training and capacity building programme concerning the environmentally sound management of hazardous wastes including POPs as waste. In this context, the meeting urges the international organizations to help the Palestinian Authority to implement an integrated program on the ESM of hazardous wastes and chemicals, that would also include the organization of a sub-regional workshop on the ESM of POPs as waste

10- Requests BCRC-Cairo to collaborate with the Jordanian Government, the Secretariat of the Basel Convention and the Secretariat of the Stockholm Convention with a view to developing a proposal and a work plan concerning the control and monitoring of the transboundary movements of hazardous waste and chemicals including POPs as waste.

11- Encourages the involvement of community groups and local NGOs in the implementation of the national plans of POPs in the context of the implementation of the Basel Convention and the Stockholm Convention.

12- Recognizes the need for translating the POPs technical guidelines and manuals issued from the relevant organizations into Arabic.

13- Urges FAO to help introduce and implement the FAO technical guidelines on pesticides management and disposal through the organization of training workshops.

6- Side Meeting of Basel Convention Focal Points

A side meeting was prepared for the participants who are focal points to the Basel Convention. The meeting was moderated by Mr. Jugault, SBC, and Dr. El aref, BCRC-Cairo. The meeting addressed several issues and informal discussions were made including the following:

Implementation of the three-year work plan of BCRC-Cairo

The director and the staff of the BCRC-Cairo discussed with Mr. Jugault (SBC) the future details of the work plan for the coming three-year that is funded by Finland. Dr. El Aref referred to a preliminary work plan that includes a number of workshops and projects. Dr. El Aref and Mr. Jugault expressed their anxiousness to the best use of this fund. They added that the work plan is open for any suggestions and urged the participant to present proposals to be included in the work plan of the BCRC-Cairo and would welcome expert advice including the SBC. In this context Dr. El Aref announced that he received a number of proposals including the following:

Projects

- Information Management System for Hazardous Chemicals and wastes (Egypt)
- Environmentally Sound Treatment, Disposal, and Management of Hazardous Liquid Waste (Bahrain)
- Regional Inventories of Hazardous Waste and Waste Producing Activities (Syria)

Workshops

- Promotion of the Ratification of the Protocol on Liability and Compensation and for Improving Understanding of the Ban Amendment in the Arab States.
- Environmentally Sound Management of Oil Spills as Waste
- Second edition of the workshop ‘The Training Seminar for Port Enforcement Officers- Prevention and Combating of Illegal Traffic of Hazardous Wastes’ held on Port Said-Egypt.

Financial sustainability of BCRC-Cairo

The aim of achieving sustainability of the centre operations at the end of the three-year work-programme was discussed, and the need to make the best use of the financial resources available and turn them towards financial sustainability was shared. All participants appreciated a long-term financial planning and mechanisms for BCRC-Cairo to increase its own fund-raising activities. In this context Mr. Jugault suggested using the Guidelines for the Minimum Requirement for Hazardous Waste Landfill’s Site Selection, Design, Operation, and Monitoring in Hyper Dry Areas, that is implemented by BCRC-Cairo and accredited by and will be soon a Basel Convention publication, for repeated local and regional training programs that may lead to potential financial benefits.

Mr. Vincent urged BCRC-Cairo to undertake a review of other local and regional financial institutions, funds and mechanisms of relevance to the implementation of the Basel Convention that BCRC-Cairo could envisage for long-term support or specific support on a project basis. In this context, Mr. Jugault mentioned the Arab Fund for Socio- economic Development (Kuwait) as a possible funding agent.

Current projects

The meeting addressed the status of the project “preparation of a set of tools for the selection, design and operation of hazardous waste landfills in hyper dry areas”. The meeting discussed the delay of the last activity of the above-mentioned project, namely the undertaking of a pilot field exercise in Yemen aiming at field proving the set of tools, that was suggested during the second expert group meeting. The participants learnt from the Yemen representative that, due to financial difficulties, a prefabricated MOU could not be passed from the Yemeni side.

Taking into consideration the expressed wish of BCRC-Cairo not to further extend the duration of this project, the proposal was made to cancel the initially planned last activity and, proposal was made to organize a training workshop on waste land-filling instead, possibly in Bahrain and in close collaboration with UNEP-ROWA. The meeting could be limited to neighboring countries only with few other countries in order to save on costs. The existence of an engineered landfill in Bahrain combined with the existence of a (BCRC-Cairo) regionally developed methodology for land-filling of hazardous waste in hyper dry areas were considered complementary and a useful opportunity to organize advance training in this matter.

Participation of non Parties in the region to the activities of BCRC-Cairo

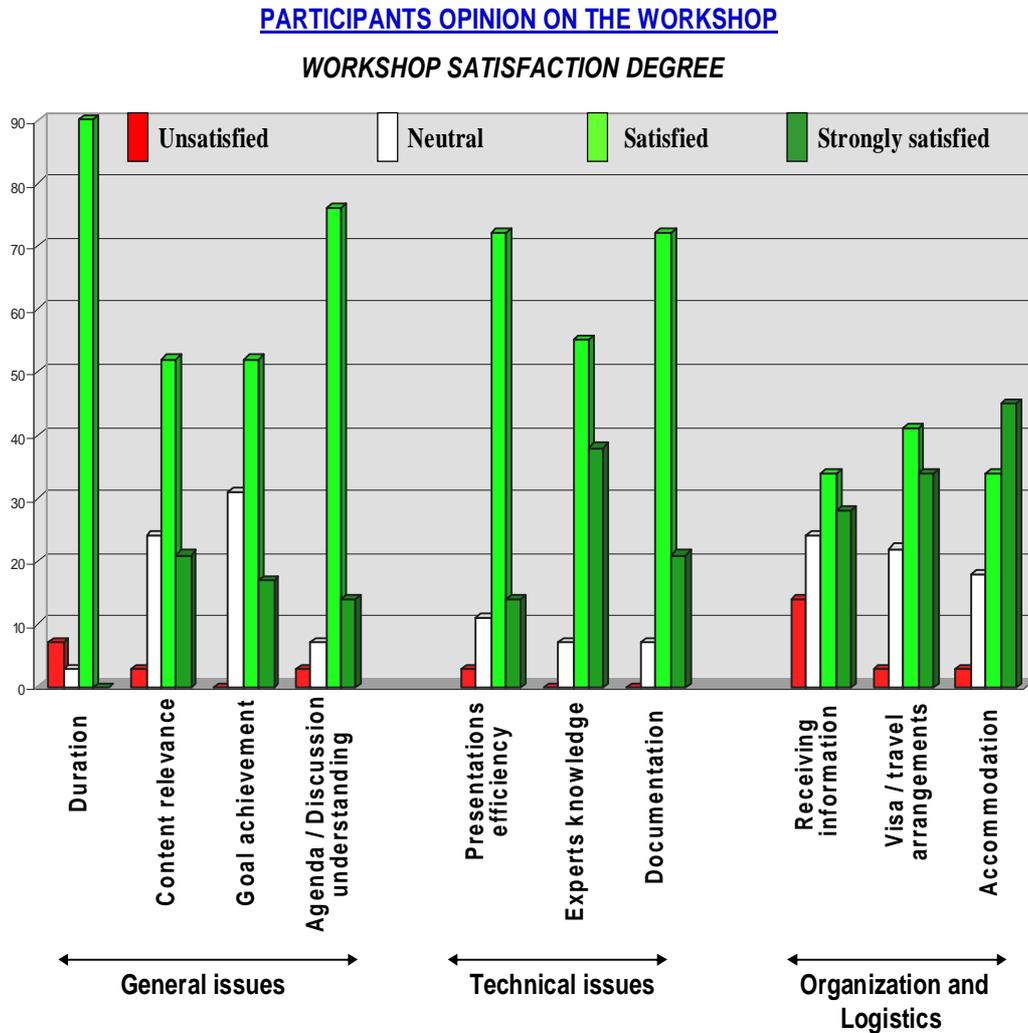
The question of BCRC-Cairo servicing non-parties Arab States was discussed (Iraq, Palestinian Authority, Sudan). Taking into account that the extension of the BCRC services to non parties to the Basel Convention would necessarily be at the expense of the parties being serviced by BCRC-Cairo (in accordance with Basel Convention COP decision), the matter was left to a meeting of the Board of Directors of the BCRC-Cairo for taking a decision.

Collaboration with the Palestinian Authority and the Iraqi Government

The meeting suggested that the SBC and BCRC-Cairo, in close collaboration with UNEP-Post Conflict Unit and ROWA, facilitate the development of training/capacity building activities to address the specific needs of the Iraqi Government and the Palestinian Authority.

7- Workshop Evaluation

Evaluation sheets were distributed among the participants for the purpose of workshop evaluation. Most of the evaluation sheets were returned fully filled out. The following histogram describes the statistics of the evaluation results.



Percentage of participant's satisfaction degree for the workshop activities

criteria	Unsatisfied	Neutral	Satisfied	Highly Satisfied	Total %	Unsatisfied	Satisfied
Workshop duration	7	3	90	0	100	7 %	90 %
Content relevance	3	24	52	21	100	3 %	73 %
Goal achievement	0	31	52	17	100	0 %	69 %
Agenda/Discussions	3	7	76	14	100	3 %	90 %
Presentation efficiency	3	11	72	14	100	3 %	86 %
Experts knowledge	0	7	55	38	100	0 %	93 %
Documentation	0	7	72	21	100	0 %	93 %
Receiving information	14	24	34	28	100	14 %	62 %
Visa & travel arrange.	3	22	41	34	100	3 %	75 %
Accommodation	3	18	34	45	100	3 %	79 %

Taking into consideration all the evaluation criteria, the table above show that the participants expressed their satisfaction for the workshop activities. This satisfaction ranged between 93 % and 62 %. The most satisfactory issue was the experts understanding of the subjects, expressed by 93 % of participants [55 % satisfied (S) + 38 % highly satisfied (HS)], followed by the documentation coverage (93 % satisfaction, 72 % S. + 21 % HS). 14 % of participants expressed their unsatisfactory for the delay of receiving the information and workshop material.

Annex I

**Regional workshop for Arab states on the environmentally sound destruction of POP and decontamination of POP containing waste in the context of Basel Convention and Stockholm Convention
Jordan, August, 28-31, 2005**

List of participants

Country	Basel Convention	Stockholm Convention
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Annex II

Regional Survey Questionnaire POPs Waste Disposal Operations

Country:
Name of participant:
Organization/Authority:
Date:

Instructions: place a number (from 1 to 5) on each option to the questions which follow:

[1] Very infrequently

[2] Infrequently

[3] Neutral

[4] Frequently

[5] Very frequently

Question No. 1/7

Which are the problems arising from the information on inventories?

- Lack of inventory or analysis of inventory data
- No data available by provinces
- No sufficient data available submitted by electricity companies
- Companies having POPs do not give information because of the responsibility

Question No. 2/7

Which are the main obstacles to the disposal of POPs?

- Lack of scientific experience
- Lack of funds
- Lack of Project Managers
- Lack of data
- Inadequate infrastructure, transport, etc
- Lack of public services (electricity, water, fuel, etc. on the spot)

Question No. 3/7

Which are the local obstacles to the establishment of disposal technology of POPs?

- Lack of qualified personnel
- Lack of public support (no will to support disposal installations in the outskirts of the city involved)
- Lack of support of the industry (insecurity with respect to market expectations in connection with the local installation)
- Financial solvency
- Difficulties in developing/transferring technology

Question No. 4/7

Which are the obstacles to export POPs for its disposal abroad (in the sub-region or off-shore)?

- High costs
- Lack of infrastructure in the sub-region
- Maritime transport risks
- Difficulties of organizing maritime transport
- Incapacity to obtain contractors for certified packaging
- Difficulties encountered when drafting the terms of reference and contractual documents carrying out the works

Question No. 5/7

Which are the obstacles to establishing a national committee for the selection of treatment and disposal technologies?

- Incapacity to define the team's terms of reference
- It is very expensive
- Lack of levels of experience required for the management of that kind of committee
- Insufficient technical information on evaluation processes and methodology

Question No. 6/7

Which are the main limitations at the country level for the development and implementation of disposal of POPs policies?

- Lack of inadequate regulatory national / provincial regime
- Lack of interest from the Government
- Lack of methodology and clear instructions on behalf of the government
- Lack of experience of the personnel administration
- Lack of financial resources

Question No. 7/7

Which are the areas in which you need more help?

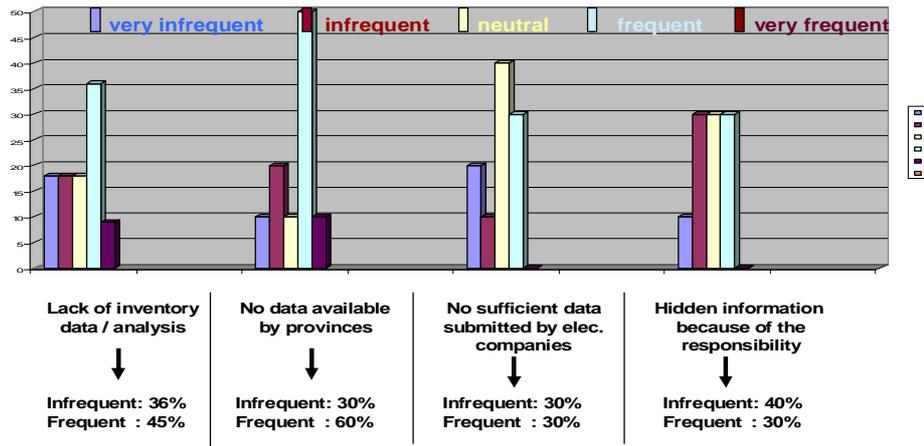
- Recollection of inventory data
- Analysis of inventory data
- Strategy of the rationalization of the inventory
- Preparation of offers and contracts
- Composition of the project teama
- Certification of ISO regulations
- Management of contracts
- Technology evaluation
- Funds

Annex III

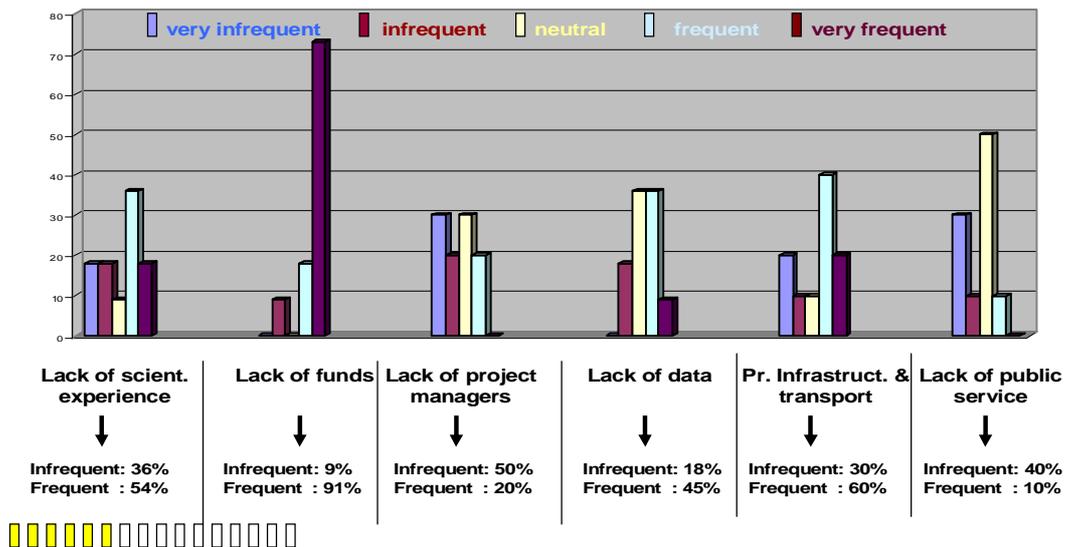
RESULTS OF A REGIONAL INQUIRY ON DISPOSAL OPERATIONS



1- PROBLEMS ARISING FROM THE INFORMATION ON INVENTORIES

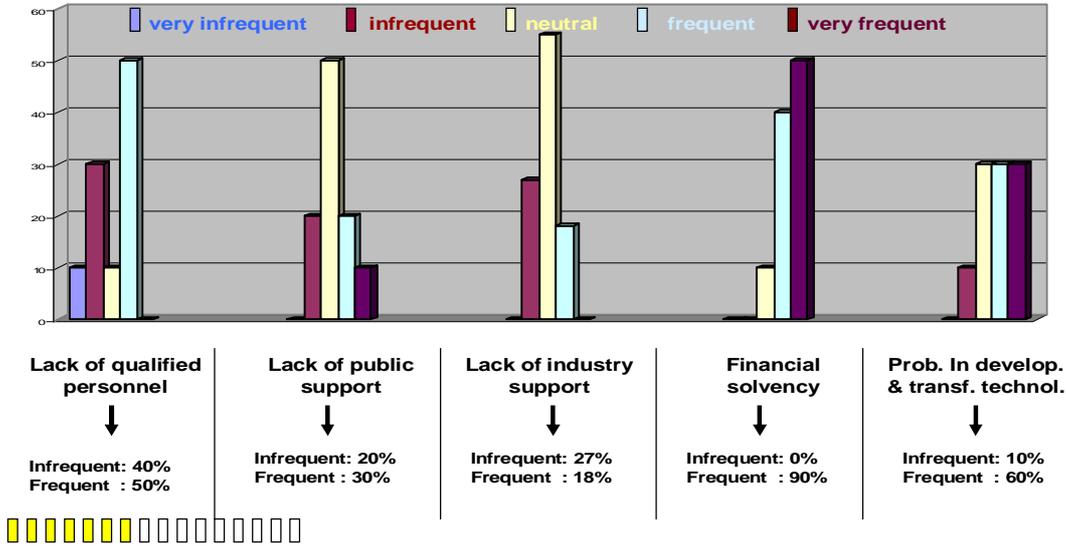


2- MAIN OBSTACLES TO THE DISPOSAL OF POPs

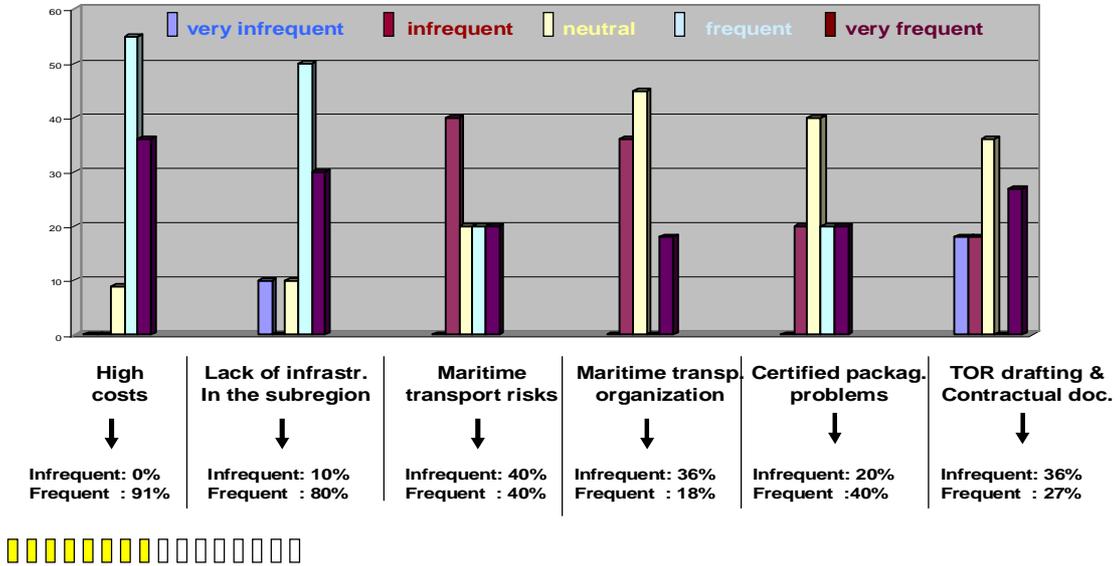




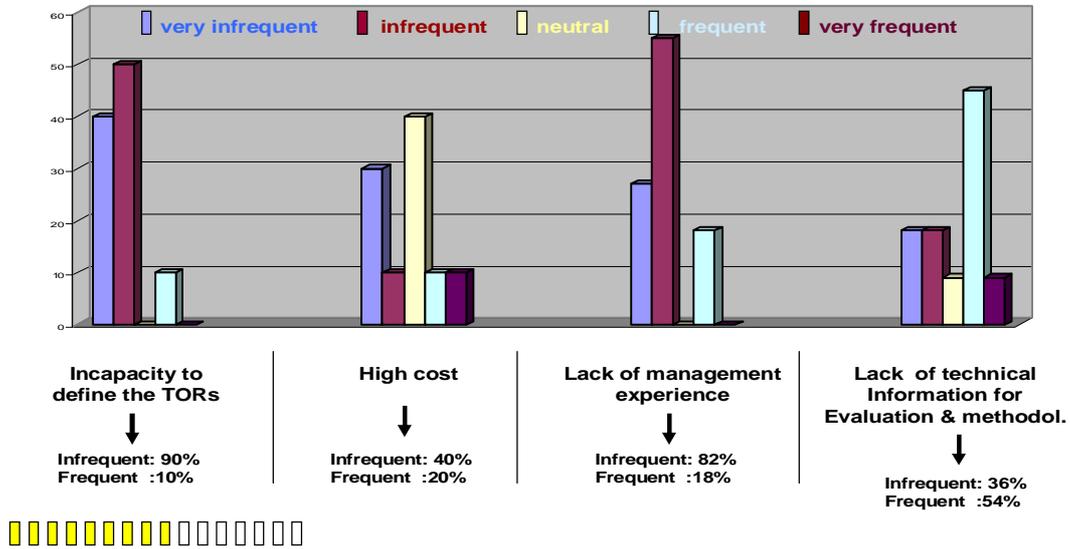
3- LOCAL OBSTACLES TO THE ESTABLISHMENT OF DISPOSAL TECHNOLOGY OF POPs



4- OBSTACLES OF POPs EXPORTATION FOR ITS DISPOSAL ABROAD



5- OBSTACLES TO ESTABLISHING A NATIONAL COMMITTEE FOR THE SELECTION OF TREATMENT AND DISPOSAL TECHNOLOGIES



6- LIMITATIONS AT THE COUNTRY LEVEL FOR THE DEVELOPMENT AND IMPLEMENTATION OF POPs DISPOSAL POLICIES

