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The International POPs Elimination Project

*Fostering Active and Effective Civil Society Participation in
Preparations for Implementation of the Stockholm Convention*

Stakeholders Reflection and Workshop on the Nigerian POPs Situation



Friends of the Environment (FOTE)

**Nigeria - Anglophone Africa
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106/110 Lewis Street
P.O. Box 10627
Lagos, Nigeria
Tel: +234-1-2633988
Fax: +234-1-613386
E-mail: jmaduk2@yahoo.co.uk
Website:

ABOUT THE INTERNATIONAL POPs ELIMINATION PROJECT

On May 1, 2004, the International POPs Elimination Network (IPEN <http://www.ipen.org>) began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP). The Global Environment Facility (GEF) provided core funding for the project.

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;
- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;
- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP will support preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities will be supported by IPEP: participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

For more information, please see <http://www.ipen.org>

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The views expressed in this report are those of the authors and not necessarily the views of the institutions providing management and/or financial support.

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LIST OF ABBREVIATIONS

AIT	African Independent Television
FEPA	Federal Environmental Protection Agency
FOTE	Friends of the Environment
GEF	Global Environment Facility
IPEN	International POPs Elimination Network
IPEP	International POPs Elimination Project
NAFDAC	National Agency for Food and Drugs Administration and Control
NES	Nigerian Environmental Society
NEST	Nigerian Environmental Study/Action Team
NGO	Non Governmental Organization
NIP	National Implementation Plan
NTA	National Television Authority
POPs	Persistent Organic Pollutants
SON	Standards Organization of Nigeria
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization

ACKNOWLEDGEMENT

Our profound gratitude goes to the entire IPEP team and financiers for sponsoring this workshop. We must mention in particular, Silvani Mng'anya, the Anglophone Africa Hub Coordinator, for his understanding and assistance throughout these programs.

Our appreciation also goes to the entire members of the Federal Ministry of Environment Liaison Office, Lagos, especially Mrs. O. O. Babade, the Liaison Officer and Controller, Pollution Control.

1. INTRODUCTION

Friends of the Environment (FOTE) in collaboration with the Federal Ministry of Environment, Lagos Zonal Office organized a one-day National Workshop on the theme “Stakeholders’ Reflection on the Nigerian POPs Situation.” The workshop was held on 9th of March, 2006 at the Conference Hall of the Federal Ministry of Environment Zonal Office at the Games Village, off Bode Thomas Street, Surulere, Lagos. The workshop was attended by over 50 participants including 7 media representatives from both the print and electronic media (Annex 6). The participants included people from government, private sector, NGOs, academia and the media.

The objective of the workshop was to raise the level of awareness with respect to the damaging effects of POPs on human beings, wildlife and the environment. This is in line with Article 10 of the Stockholm Convention which calls for the development and exchange of educational and public awareness materials on Persistent Organic Pollutants (POPs) at the national and international levels.

As part of its contribution to the successful implementation of Article 10 of the Stockholm Convention, the Global Network of NGOs on the elimination of POPs and other toxic chemicals called the International POPs Elimination Network (IPEN) in May 2004 began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP) with core funding from GEF. The IPEP has three principal objectives namely:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;
- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;
- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP supported preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities supported by IPEP include participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

Three Nigerian NGOs who are participating organization members of IPEN were selected to participate in the IPEP to contribute to the preparation and implementation of the Stockholm Convention on POPs in Nigeria. The workshop and other IPEP activities were guided by the Anglophone Africa Hub, AGENDA for Environment and Responsible Development (AGENDA) based in Tanzania.

The objective of the workshop was to raise the level of awareness with respect to the damaging effect of POPs on human beings, wildlife and the environment. This is in line with Article 10 paragraph 1c of the Stockholm Convention which calls for the “development and implementation, especially women, children and the least educated, of educational and public awareness programmes on persistent organic pollutants, as well as on their health and environmental effects and on their alternatives,” for exchange at national and international levels.

The full project brief for FOTE and the other two NGOs in the IPEN Nigeria is listed in Annex 2. At the time of the workshop, the three NGOs were executing their various mandates and the workshop on ‘Stakeholders Reflection on the Nigerian POPs Situation’ was one of FOTE’s activities while the second activity which was for the Assessment of the Lagos Lagoon for POPs Sources, Types, and Impacts.

2. POPs SITUATION IN NIGERIA

POPs chemicals are not manufactured in Nigeria but imported mostly from developed countries such as France, United Kingdom and Japan. Formulation plants for POPs pesticides, owned by multinational companies which existed in Lagos, Kaduna and Port Harcourt were shut down in the late 1980s and early 1990s in response to international concern about POPs and FEPA regulations in 1990 banning the importation of POPs pesticides. Anthropogenic activities in agriculture, industrial manufacturing, waste burning, energy production and use are identifiable sources of POPs release into the environment.

POPs pesticides were used for pest control until the 1980s/1990s in food crops and export crops as well as malaria vector control. Nonetheless POPs pesticides are still available for sale in the informal market “under cover.”

The Nigerian Federal Ministry of Health indicated that aldrin, dieldrin, chlordane, DDT and endrin are POPs pesticides used for control of arthropods of medical and veterinary importance and their use was stopped in 2002. The use of DDT continues on a continual basis for malaria control on as needed basis.

Uncontrollable management of domestic refuse has been an intractable problem in the country over the years. Co-disposal of non-hazardous domestic waste and hazardous industrial waste including POPs wastes and containers is generally practiced. The solid wastes are normally set on fire to tame the mountains of refuse which many times adorn urban landscapes in major cities. Based on per capita waste generation of 0.43 kg/person/day, an estimated total TEQ 11,397 mg TEQ/day emission releases from domestic waste burning was earlier reported for Nigeria (Osibanjo *et. al* 2002), this suggests that solid waste combustion could be a major source of POPs release in Nigeria.

Osibanjo in his paper “Review of Literature, Existing POPs Types and Sources, Storage, Exposure Risks and Existing Efforts for Containment” (2006) cited the illegal market for banned POPs substances and formulation of policies and translation into local languages as some of the challenges in eliminating the use of POPs chemicals in Nigeria.

2.1 POPs AND CHEMICALS USE IN NIGERIA

The Nigerian experience from available research shows that major POPs-contaminated air, soil and water arise basically from the use of pesticides. Over 95% of all pesticides are imported as finished pre-packed products. Pesticides use in Nigeria include certain chemicals that for environmental and health reasons have been partially or completely banned in developed countries. However, such chemicals are smuggled into Nigeria for pest control, and these are problematic because they are cheap and not subject to any regulation.

Until recently, the adverse effects of pesticides and their residues on non-target organisms have not been seriously considered in Nigeria. For example, information on lethal limits of pesticides on Nigeria fish or food crops scarcely exists. (Ezemonye and Ilechie are currently – April 2006 working on Atrazine toxicity to amphibian tadpoles also Ezemonye and Ohofosa are working on Gamalin 20 bio-accumulation in fish from Niger Delta waters).

PCBs have also been identified in water sediments and fish in Niger Delta water namely Ethiope, Benin and Warri Rivers (Ezemonye, 2005). Earlier studies by Osibanjo and Bamgbose (1990) revealed the presence of PCBs in the Nigerian environment. Risks associated with drinking PCBs-contaminated surface and underground water supplies were highlighted. Some experts have reported traces of PCBs at the massive Oshodi – Oworonsoki expressway dumpsite and Adeniji Adele areas of Lagos.

These activities and remains of POPs and other toxic chemicals could find its way into the environment like the Lagos lagoon and other related bodies and continue to affect the Nigerian population.

Akingbade in his book ‘Nigeria on the Trail of Environment’ has reported uncommon ailments associated with PCB contamination to include:

- lack of brain coverage in children
- microcephally (case of small brains)
- macrocephaly (cases of extra large brain)
- congenital heart disease
- blocked anus in children
- urogenital disorder.

2.2 EFFORTS FOR CONTAINMENT

As part of national efforts to protect human health and the environment from the effects of the exposure to POPs, Nigeria signed the Stockholm Convention in May 2001 and ratified it in May 2004. The country in collaboration with the Food and Agriculture Organization of the United Nations (FAO), the Secretariat of the Basel Convention (SBC), and UNIDO organized an awareness seminar on hazardous substances in 2004, and in conjunction with UNEP is also conducting an inventory of dioxins and furans in Nigeria. Prior to the actual inventory exercise, the country organized sensitization workshops in the northern zone (Kaduna), southern-eastern zone (Port-Harcourt) and south-western zone (Lagos).

The country also organized a training workshop on Inventory of Obsolete Pesticides in Nigeria in 1999. Also a Standing Committee on National Chemicals Management Control Actions has been put in place.

3. OPENING OF THE WORKSHOP

The opening ceremony was graced by many eminent personalities like Prof. Dapo Afolabi, Director, Pollution Control of the Federal Ministry of Environment, Mrs. Funke Babade, Controller of Environment, Federal Ministry of Environment and Head Lagos Zonal Office, Dr. (Mrs) Uchenna Udeani, Coordinator Diploma II Programme, Faculty of Education, University of Lagos, Engr (Mrs) Olu Maduka, Chairperson, Friends of the Environment, Mr. Leslie Adogame, Executive Secretary, Nigeria Environmental Society and Engr Chike Chikwendu, General Secretary, Friends of the Environment, Mr. Bosun Oladimeji, the UNIDO National Expert on POPs and representative of the Nigerian Maritime Authority.

The workshop commenced at 10am according to the programme (Annex 1) with the welcome address read by Mrs. J.O. Maduka (Annex 3). In summary, her paper listed the 'dirty dozen' and their harmful characteristics and threat to people's health and the need for their elimination. She welcomed the partnership of the three IPEN participating organizations collaborating on the IPEP project and wished the participants successful deliberations.

Next was the Keynote paper by Prof. Dapo Afolabi, the Director of Pollution Control in the Federal Ministry of Environment (Annex 4). The paper talked about the benefits of the ratification of the Stockholm Convention to Nigeria which includes improved health to the citizenry, reduction in the illegal trading of POPs chemicals and that fewer resources will be used to monitor or control the usage, transport and importation of these types of chemicals. The paper also emphasized the effort of the Nigerian government towards implementing the Stockholm Convention.

Goodwill messages were next given by the Minister of Environment, Mrs. Helen Esuene and a representative of the Nigerian Environmental Society (NES). The Minister in her address read by Dr. (Mrs.) Chinwe Mogo informed the audience that she identifies with NGOs in their effort to ensure a better environment and for sustainable development in Nigeria. She informed the audience that Nigeria has signed the Stockholm Convention and ratified same. She congratulated participating members of IPEN in Nigeria for their efforts in creating the necessary awareness in response to Article 10 of the Stockholm Convention. She finally pledged the willingness of her Ministry to partner with all three organizations in ensuring the success of their campaign. Mr. Leslie Adogame in his goodwill message congratulated FOTE for hosting the workshop and pledged his support and cooperation in ensuring the support of his organization in ensuring the success of the FOTE component of the IPEP in Nigeria.

Mr. Bosun Oladimeji conveyed the greetings of the UNIDO Resident Representative to FOTE. He reiterated that his organization has always partnered with FOTE in the implementation of country programmes and pledged the support of UNIDO in implementing Article 10 in Nigeria.

4. PLENARY SESSION

The plenary session commenced by 12 noon with a 30-minute presentation by Mr. Leslie Adogame. Mr. Adogame's paper (Annex 5) was a combination of the two papers by the two resource persons namely Review of Literature, Existing POPs Types and Sources, Storage, Exposure Risks and Existing Efforts for Containment and Environmental and Health Implication of POPs and Likely Remediation Measures. This was because Prof. Osibanjo travelled out of the country on a short notice and agreed to that arrangement. Prof. Oladele Osibanjo is the Director of the African Regional Centre for Basel Convention, Ibadan, Nigeria. There was an interactive session and during lunch, the Communiqué writing group convened and drafted the Communiqué (section 6) which was read and adopted when the meeting reconvened after lunch.

During the interactive session, a question was asked on the difference between POPs and obsolete pesticides with the latter defined as pesticides no longer in use that are meant to be destroyed/disposed most of which could be POPs since most of them are not labelled.

One of the participants suggested that stakeholders should include local farmers most of who use these POPs chemicals as pesticides in future workshops, and indigenous knowledge for pest control should be considered if useful or worked on based on new technology in eliminating the use of POPs chemicals.

Another participant suggested creating awareness at the grassroots level to enlighten people about the health and environmental implications of using POPs chemicals for farming, as most people are not aware of these implications. The need for networking and coordination of the efforts of the various stakeholders in the environmental sub sector to come out with a national action plan to control and eliminate POPs in Nigeria formed

part of the resolutions at the end of the workshop (communiqué). The vote of thanks was given by the General Secretary of FOTE and the workshop was brought to an end.

5. CONCLUSION

In conclusion, it was learnt from the workshop that Nigeria still has a long way to go in terms of awareness creation towards eliminating POPs. It was surprising that some of the regulatory agencies in the country like the Standards Organization of Nigeria (SON) and National Agency for Food and Drugs Administration and Control (NAFDAC) burn seized substandard goods and chemicals in open dumpsites without considering the likely health and environmental impacts. Burning in open dump sites still remains the main method of waste disposal in the country while most of these dumpsites are situated close to residential areas (Plate 1).

6. COMMUNIQUÉ

A Communiqué issued by the Friends of the Environment at the end of a Stakeholders' Workshop on the Nigeria's POPs Situation Held on 9th March, 2006

A one day national workshop on "Stakeholders' Reflection on the Nigerian Persistent Organic Pollutants (POPs) Situation" was organised by the Friends of the Environment in collaboration with the Federal Ministry of Environment at the Ministry's Conference Hall on 9th of March, 2006.

The objective of the workshop was to raise the level of awareness in respect of the damaging effects of POPs on human beings, wildlife and the environment. This is in line with Article 10 of the Stockholm Convention which calls for the "development and exchange of educational and public awareness materials at national and international levels" on persistent organic pollutants (POPs).

Participants numbering over 50 were drawn from major stakeholders such as:

Government Agencies - Power Holding Company of Nigeria, Federal Ministry of Environment, National Maritime Authority (NMA), Lagos State Ministry of Environment, Lagos State Environmental Protection Agency (LASEPA).

Academia - University of Lagos, University of Ibadan Linkage Centre

Media – African Independent Television (AIT), National Interest, Punch, Guardian, Nigeria Television Authority (NTA), Delta News

NGOs – Nigeria Environmental Society (NES), FOTE, Community Conservation and Development Initiatives (CCDI), Mankind Safety

Intergovernmental Agency – UNIDO

At the end of the Workshop, the following resolutions were taken and adopted as follows:

- (1) The Nigerian Government should hasten up the process of domestication of the Stockholm Convention which came into force since May 2004.
- (2) Nigeria should identify, document and enforce the use of alternative biodegradable chemicals to POPs in line with global trends on alternative technology.
- (3) Security at the borders should be beefed up to prevent the illegal importation of obsolete chemicals.
- (4) There is a need to establish a more coordinated networking among NGOs, researchers and other relevant stakeholders on awareness creation on POPs and related issues concerning the use of alternative technology.
- (5) National research into alternative chemicals for the eradication of pests and disease vectors.
- (6) The use of organic manure at subsistence level agriculture should be encouraged.
- (7) An awareness campaign should be carried out not only in urban centers but also at the grassroots level with jingles and handbills in local languages.
- (8) Coordination of the efforts of the various stakeholders in the environmental sub sector to come out with a national action plan to control and eliminate POPs.
- (9) Training of relevant stakeholders on the health and environmental challenges of POPs.
- (10) The Poison Centre at the Federal Ministry of Environment POPs reference centre and laboratory in Lagos should be reactivated and upgraded to form the core of the national chemical poison centres.

The motion for adoption of the Communiqué was moved by Mrs. Kate Nwuba of NMA and supported by Mrs. Ehi –Ebewele of Federal Ministry of Environment, Lagos.

SIGNED

Engr. (Mrs.) J.O. Maduka
(Chairperson)

Engr. C. Chike Chikwendu
(Gen. Secretary)

7. DISSEMINATION

There was ample media (both print and electronic) coverage of the proceedings of the workshop which was aired by major television stations in the country. The African Independent Television (AIT) station aired it as an Inter-News Bulletin on Saturday 11th March at 12 noon. It was again aired on the searchlight segment of the news at 9 p.m. of the same day. The Nigeria Television Authority (NTA) aired it as a news item on Monday 13th March on its flagship prime News at 9 p.m. The newspaper publications are attached as Annex 9.

ANNEXES

Annex 1: Workshop Programme

Time	Activity
09.00 – 10.00	Registration
	Opening Ceremony
10.00 – 10.15	Welcome Address by Engr. (Mrs.) J.O. Maduka (Chairperson FOTE)
10.15 – 10.35	Keynote Address – Prof. Dapo Afolabi (Fed. Min. of Environment)
10.35 – 10.45	Goodwill Messages, Fed. Min. of Environment, NES
10.45 – 11.00	Break
11.00 – 11.30	Presentation on “ <i>Review of Literature, Existing POPs Types and Sources, Storage, Exposure Risks and Existing Efforts for Containment</i> ” by Prof. Oladele Osibanjo (Director, African Regional Centre, Basel Convention and HOD, Chemistry Dept. UI)
11.30 – 12.00	Presentation on “ <i>Environmental and Health implications of POPs and likely remediation measures</i> ” by Ane Leslie Adogame (NES)
12.00 – 01.00	Interactive Discussion Session
01.00 – 02.00	Lunch
02.00 – 02.20	Communiqué
02.20	Closing Remarks

Annex 2: Specific Mandates for three Nigerian IPEN Members

A2.1 Friends of the Environment (FOTE)

A. Stakeholders’ Reflection on the Nigerian POPs Situation

The project will conduct a national stakeholders’ workshop on POPs to reflect the POPs situation in Nigeria. Participants will be drawn from the six geopolitical zones of Nigeria based on their roles, contributions and knowledge of the Nigerian POPs situation, their environmental and health implications and likely remediation measures. The workshop will consider POPs substances banned under the Stockholm Convention and the newly proposed candidate POPs during COP1. It will involve reviewing of literature, existing POPs type and sources, conditions of storage, exposure risks and existing efforts for containment and remediation measures. The workshop will attempt to produce a comprehensive document on the Nigerian POPs situation.

B. Assessment of the Lagos Lagoon for POPs Sources, Types, and Impacts

The project will conduct an assessment of the Lagos lagoon as a suspected POPs site receiving enormous wastewater from an estimated 2000 significant industrial user, small industrial users, commercial establishments and domestic sources. The project will consider POPs banned under the Stockholm Convention and the newly proposed candidate POPs during COP1. It will involve extensive literature review, consultation with key stakeholders, identification of POPs sources and types, associated risks and existing efforts for containment and remediation measures.

A2.2 Nigerian Environmental Study/Action Team (NEST)

A. Awareness-Raising on Socio-economic Effects of POPs in Nigeria

Nigeria is one country where use of chemicals for agriculture, health and other economic activities is high. The socio-economic implications of these chemicals (POPs) in Nigeria are grave. These implications border on the health and well-being of people, especially women and children, who constitute the majority of Nigerians that use them. The toll this has on the human development index to society requires in-depth awareness creation among segments of society, encompassing occupational, gender and other stakeholder groups. This project thus hopes to build awareness across key actors of POPs usage, with a view to coming out with further action programmes. The target groups will include NGOs, CBOs, farmers' and workers' groups, government departments and private sector among others. It will involve literature review, workshop organization, report writing and dissemination.

A2.3 Nigerian Environmental Society (NES)

A. Global Day of Action: Public Awareness-Raising on POPs

Volunteer Youths meets-the-media interaction for the first day. These volunteer youths are selected from secondary and high schools in Lagos State registered in the pool of the organisation as National Youth Volunteer for Environmental Service Scheme (NYVESS). Major print and electronic media representatives would also be invited to participate in the discussion of the Dirty Dozen and the Environment. Resource persons would present short lectures from either, the government, NGOs or Basel Convention Regional Office in Nigeria to help stimulate an interactive atmosphere.

The Youths would be engaged on an aggressive full-day outdoor campaign around specific hot spots in Lagos with information about POPs or chemical safety message in posters and handbills. A public address system would be used to draw the attention of the people around hotspots such as: PVC factories, Ikeja Military Cantonment (organic stockpiles), pulp and paper industries (dioxin), Olusosun open dumping and Wemabod industrial waste treatment sites. The address will centre on the POPs sources and

harmfulness to the health and environment in reference to that particular hotspot and related sources.

The Youths would re-assemble to re-assess effort towards the sustainability of the campaign and “keep the promise” initiative.

A communiqué on “save our future from POPs” issued and delivered to the Honourable Minister of Environment, Federal Ministry of Industry, Lagos State Ministry of Environment, Manufacturers Association of Nigeria (MAN) and other key government offices/officers.

B. Identification and Control of POPs Contaminated Sites in Lagos and South-western Nigeria

The project will involve conducting a basic study and report on POPs contaminated sites in Nigeria. This will comprise a Regional Planning Meeting with stakeholders and chemical safety experts, data gathering through literature review, visits to suspected POPs contaminated sites/stores for on-the-spot assessment, as well as interviewing relevant government departments and officials. The study will identify and document types and status of POPs present, quantities, ownership, time of storage, condition of stocks and assessment of likely impacts of such contaminants in the various contaminated areas in Lagos metropolis. Some practically feasible intervention measures will be to recommend and propose the necessary plans for cleaning-up of the sites during the National Implementation Plan (NIP).

Annex 3: Welcome Address

Welcome Address by the Chairperson of Friends of the Environment Engr. (Mrs) J.O. Maduka

All protocols Observed

I wish to welcome you to this workshop, which is an awareness campaign being undertaken by three NGOs in Nigeria, including the Friends of the Environment (FOTE). Chemicals are essential in food security (both in the planting and preservation) and industrial development. Included in such chemicals are groups known as persistent organic pollutants (POPs). POPs are essentially products and by-products of human industry that are relatively recent in history. They are persistent in the environment and resist degradation through physical, chemical or biological processes. POPs are generally semi-volatile; they evaporate relatively slowly. With this property, they tend to enter the air and travel long distances, thousands of kilometres away from their original sources. POPs generally have low water solubility (they do not dissolve readily in water) and high lipid solubility (they dissolve easily in fats and oil). Persistent substances with these properties bio-accumulate in fatty tissues of living organisms. In the environment,

concentrations of these substances can increase by factors of many thousands or millions as they move up the food chain. POPs have the potential to injure humans and other organisms even at the very low concentrations at which they are now found in the environment, wild life and humans.

For a start, twelve of these substances (“called the dirty dozen”) used primarily in industry, agriculture and disease vector control had formed the main targets in international negotiations. Out of these, nine are pesticides used for crops and/or public health vector control (e.g. malaria-carrying mosquitoes) and because of the social and economic consequences of the use of these substances, technologies, policies and measures to shift to safer alternatives are being encouraged and promoted by various countries of the world. The 12 POPs chemicals are:

1. Aldrin – A pesticide applied to soil to kill termites and other insect pests.
2. Chlordane – A broad spectrum pesticide used to control termites.
3. Dichlorodiphenyltrichloroethane (DDT) – The most infamous POP, used for vector (mosquito) control.
4. Dieldrin – A pesticide used to control termites and textile pests.
5. Endrin - An insecticide sprayed on leaves to control rodents.
6. Heptachlor - A pesticide put in soil to control termites and other insects.
7. Mirex - An insecticide used to combat fire ants and termites.
8. Toxaphene – An insecticide used to control ticks and mites in livestock.
9. Polychlorinated biphenyls (PCB) - Used in industry as heat fluids, in electric transformers, and capacitors, as additives in paints etc.
10. Hexachlorobenzene (HCB) - A by-product of the manufacture of some industrial chemicals as well as a fungicide.
11. Dioxins - A product of incomplete combustion as well as during the manufacture of pesticides and other chlorinated substances.
12. Furans – Produced unintentionally like dioxins and during the production of PCBs and other chlorinated substances.

In this regard, while these chemicals have been banned or subjected to severe use restrictions in many countries for more than 25 years, many of them are still in use in many countries and stockpiles of obsolete POPs exist in many part of the world. For example, replacing DDT (widely used to control malaria mosquitoes) with less hazardous forms of insect control measures has been very challenging. Integrated pest management systems, consisting of the sparing use of pest-specific pesticides and biological control methods have been adopted. Till date, none of the methods has been fully or 100% effective.

In Nigeria, the management of chemicals is cross-sectoral in nature. There are existing legal instruments which address chemical management. These legislations have in-built administrative and management schemes such as permitting, classification, restriction, reporting and feedback mechanisms to monitor implementation. There is also in existence, a list of banned and severely restricted chemicals.

Governments of the world signed the Stockholm Convention in 2001 with the intention of reducing and eliminating persistent organic pollutants (POPs), including those formed as unintentional by-products. In May 2004, the treaty came into legal force, triggering the first conference of the parties (COP) in May 2005. Article 10 of the Stockholm Convention calls for the “development and exchange of educational and public awareness materials at the national and international levels” and “development and implementation, especially for women, children and the least educated, of educational and public awareness programmes” on persistent organic pollutants.

Nigeria signed the Stockholm Convention on the 23rd May, 2001 and ratified it on the 24th May, 2004. However, enlightenment and information sharing on POPs and other hazardous chemicals, associated health and environmental implications among Nigerian Stakeholders is very poor. Few experts have individually reported traces of hazardous chemicals in some major areas across many cities of Nigeria, but there exists no efficient information sharing network on same among stakeholders.

POPs threaten the global environment due to their toxicity, persistence, mobility, and tendency to bio-accumulate in higher organisms. Most of the banned POPs substances have been used and some are still in use today. Most of them are being used in agriculture as pesticides, in industries as chemicals, and as by-products of various industrial processes. Experts have recently reported traces of PCBs and other hazardous chemicals in dumpsites across major cities in Nigeria with concomitant health effects among Nigerians. Medical experts confirmed that the common types of deformities linked to ingestion of dangerous chemicals such as PCBs found in these areas include; lack of brain coverage, microcephaly, macrocephaly, anencephaly, cases of children born with imperforate (blocked) anus and those whose opening of their urethra is not at the pointed end of the penis, polydactyl, and other congenital heart diseases (CHDs).

The main aim of this project is therefore to strengthen national capacity and facilitate better planning for elimination of POPs in Nigeria. Also the project will direct specific attention to vulnerable segments of the population like handlers, illiterates, women and children on the hazards of POPs and attempt to increase the level of awareness among the population.

Three Nigerian NGOs (participating organizations of a Global Network of NGOs called IPEN (International POPs Elimination Network)) were selected under the International POPs Elimination Project (IPEP) for a GEF funded global project for the elimination of POPs. FOTE is also undertaking the study of the POPs pollution of the Lagos lagoon with our team of researchers already in the field collecting data from industries in the Apapa and Ikorodu industrial axis, where many of our industries are located.

The others two NGOs who are partnering with FOTE in the IPEN have their own specific modules and all three members are currently busy in the execution of their various mandates. Nigerian Environmental Society (NES) and Nigerian Environmental Study Team (NEST) have already had similar workshops.

I wish to thank the Federal Ministry of Environment especially for all the assistance we received during the planning of this workshop and for facilitating our access to the different industries being surveyed.

Once again, I welcome you all and hope you will have a fulfilling workshop.

Engr. (Mrs) J.O. Maduka

Annex 4: Key note Address

Implementation Plan to Control the Use and Release of Persistent Organic Pollutants (POPs) Overview of the National Implementation Plan to Control the Use and Release of POPs

By Prof. Dapo Afolabi, Director, Pollution Control: Federal Ministry of Environment

Overview of Stockholm Convention

- Stockholm Convention
- Relevant Articles of Convention
- Implications to Nigeria
- Implications to Industries
- Actions taken so far
- Way forward

Stockholm Convention

- The Stockholm Convention is aimed at reducing and eliminating the production and use of persistent organic pollutants (POPs)
- Convention was adopted on 22 May 2001 in Stockholm, Sweden.
- signed by 90 States and the European Community in 2001
- Entered into force on 17 May 2004, 90 days after the submission of the fiftieth instrument of ratification.

Objective of Stockholm Convention

The objective of the Convention is to protect human health and the environment from the deleterious effects of persistent organic pollutants (POPs)

POPs

- POPs are chemicals that:
- Are extremely stable and persist in the environment.
- Bio-accumulate in organisms

- Are toxic to humans and animals and have chronic effects such as disruption of reproductive, immune and endocrine systems as well as being carcinogenic and
- Are transported in the environment over long distances to places far from the points of release.

POPs

The dirty Dozen comprises **Nine Pesticides**

- Aldrin
- Toxaphene
- DDT
- Chlordane
- Dieldrin
- Endrin
- Hexachlorobenzene (HCB)
- Heptachlor
- Mirex
- **By-products of incineration process**
- Furans

Polychlorinated bi-phenyls (PCBs) used as transformer oils

Dioxins

Articles

- The Convention has 30 Articles
- Relevant Articles include Articles 3, 5, 6, 7:
- Article 3 deals with measures to reduce or eliminate releases from intentional production and use of POPs.
- States that each party prohibits and /or take legal and administrative measures necessary to eliminate.
- Its production and use of the chemicals listed in Annex A subject to the provisions of that Annex and its import and export of the chemicals listed in Annex A in accordance with the provisions of paragraph 2 and restrict its production and use of the chemicals listed in Annex B in accordance with the provisions of that Annex.

Article 5

Measures to reduce or eliminate releases from unintentional production. It states that each party shall at a minimum take the following measures to reduce the total releases derived from anthropogenic sources of each of the chemicals in Annex C, with the goal of their continuing minimization and where feasible, ultimate elimination.

Develop an action plan or where appropriate, a regional or sub-regional action plan within two years of the date of entry force of this Convention for it and subsequently implement it as part of its implementation plan specified in Article 7.

Article 6

Measures to reduce or eliminate releases from stockpiles and wastes.

Develop appropriate strategies for identifying stockpiles consisting of or containing chemicals listed either in Annex A or Annex B and products and articles in use and wastes consisting of, containing or contaminated with a chemical listed in Annex A, B, or C.

Actions taken so far

- Commenced the National Implementation Plan (NIPs) in 2001
- Activities carried include:
- Data generation which involved taking inventory of POPs including dioxins and furans in six geopolitical zones of Nigeria
- Established a National Steering Committee comprising all stakeholders including relevant Ministries, agencies, academics, NGOs, CBOs, farmers etc.
- Commenced the Africa Stockpiles Programme (ASP) project
- Submitted project brief for developing appropriate strategies for identifying and treating selected sites contaminated by chemicals listed in Annex A, B, and or C of the Stockholm Convention
- Hosted a training programme conducted by UNEP on Chemicals Information Exchange and Network (CIEN) and on Environmentally Sound Technology Information System (ESTIS), for webpage design, database development and networking within the framework of CIEN, 2006

Implications to Nigeria

Benefits include:

- Reduction in birth defects
- Reduction in rate of cancer occurrences
- Environmentally friendly products
- Sustainable agriculture
- Capacity building and institutional strengthening

Implication to Industries

- Institutional strengthening and capacity building
- Chemicals may not be available and this will make industries to look inward for alternatives

Thank you

Annex 5: Environment and Health Implications of POPs

ENVIRONMENT AND HEALTH IMPLICATIONS OF PERSISTENT ORGANIC POLLUTANTS (POPs) AND LIKELY REMEDIATION MEASURES

BY

Ane Leslie Adogame, MPH, Fellow LEAD, FIAMN
Executive Secretary, Nigerian Environmental Society (NES)

PRESENTED AT

THE NATIONAL WORKSHOP ON “***STAKEHOLDERS REFLECTION ON THE NIGERIAN PERSISTENT ORGANIC POLLUTANTS (POPs) SITUATION***” ORGANISED BY FRIENDS OF THE ENVIRONMENT (FOTE) AT FEDERAL MINISTRY OF ENVIRONMENT ZONAL OFFICE, GAMES VILLAGE, SURULERE, LAGOS ON 9TH MARCH 2006

1.0 INTRODUCTION

The Stockholm Convention on Persistent Organic Pollutants (POPs) is an international treaty designed to end the production and use of some of the world’s most poisonous chemicals. Many of these chemicals have been used to kill insects and other pests. Others were used as industrial chemicals or were produced as a by-product of industrial process.

After the 1992 Rio de Janeiro Summit about 103 world governments began negotiations to establish a global, legally binding agreement to reduce or eliminate the ***health*** and ***environmental*** threat posed by POPs, with a target completion date of fall 2000.

The convention was signed in May 2001 in *Stockholm, Sweden* after several years of negotiations between representatives of more than 120 countries. After fifty of those countries officially ratified the convention, it came into force.

2.0 WHAT ARE POPs?

POPs are carbon-based, chlorine-containing (organic) chemical compounds and mixtures that are highly toxic, persist in the environment, bio accumulate in fatty tissues of living organisms.

What do they have in common: - highly toxic

- persistence in the environment
- travel long distances

3.0 TYPES OF POPs POLLUTANTS

The initial list of **twelve** POPs whose releases the Stockholm Convention will aim to eliminate are:

- POPs Pesticides - **DDT, Chlordane, Heptachlor, Aldrin, Dieldrin, Endrin, Mirex, Toxaphene**
- POPs Industrial Chemicals - **PCBs and HCB**
- By- Products (unwanted by-products) - **Dioxins and Furans**

4.0 WHAT ARE OBSOLETE CHEMICALS OR PESTICIDES?

- ✓ All pesticides technical and formulations past their expiry date (*2years post manufacture date*)
- ✓ All banned pesticides
- ✓ Damaged and degraded products
- ✓ Unusable formulations and packages
- ✓ Unidentified products
- ✓ Associated contaminated empty containers and old application equipment
- ✓ Other contaminated materials and equipment
- ✓ Buried pesticides and containers
- ✓ Heavily contaminated soils (via visible inspection).

5.0 THE GLOBAL POPs PROBLEM

POP_s differs in a number of ways from most conventional pollutants. Other pollutants tend to remain close to their sources and often can be effectively controlled through measures that reduce inputs to levels that then dilute and are assimilated without harm. POP_s, on the other hand, tend to travel long distances and upon entering ecosystems, tend not to dilute but rather to build up through the food chain, accumulating in the tissues of mammals. This process is called **Bioaccumulation**. POP_s not only bioaccumulate, they also increase in intensity as they move up the food chain. This process is called **Biomagnification**.

5.1 EFFECTS OF POPs IN THE GLOBAL ENVIRONMENT

The effects of POP_s in the global environment have been widespread, affecting broadly disparate regions from the Great Lakes of North America to the Arctic regions in both hemispheres to the Sub Sahara Africa. Effects have been found in wildlife species are now being observed in some human populations.

5.2 ENVIRONMENTAL IMPACTS/DAMAGE OF POPs

- ❖ Direct toxicity to non-target organisms
- ❖ Destruction or contamination of food sources
- ❖ Habitat destruction
- ❖ Bio accumulation to critical levels
- ❖ Reduced reproductive success
- ❖ Immunosuppression
- ❖ Doses may be as low as 0.000000000001g/kg

Acute Toxicity	Chronic Toxicity
<ul style="list-style-type: none"> • 3 million poisonings & 20,000 deaths each year 	<ul style="list-style-type: none"> • Measured in ug/kg body weight
<ul style="list-style-type: none"> • Exposure may be oral, dermal or inhaled 	<ul style="list-style-type: none"> • Cancer
<ul style="list-style-type: none"> • Casualties includes: those working with pesticides, accidental exposure, children, suicides 	<ul style="list-style-type: none"> • Neurological effects • Reproductive toxicity • Developmental toxicity
<ul style="list-style-type: none"> • Lack of understanding, training & protection is a major cause 	<ul style="list-style-type: none"> • Endocrine disruption
<ul style="list-style-type: none"> • Acute doses are measured in mg/kg body weight 	<ul style="list-style-type: none"> • Organic disorders • Others

a) Effects on Wildlife Species

- Population decline and reproductive effects
- Eggshell thinning
- Metabolic changes
- Deformities and birth defects
- Tumors and cancers
- Behavioral changes
- Abnormally functioning thyroids
- Hormonal system dysfunction
- Immune suppression
- Feminization of males and masculinization of females

b) Effects on Humans

Evidence of the effects of POPs on wildlife prompted research into whether these chemicals were also affecting humans. Humans are generally exposed to POPs through their food. Foods rich in animal fats, such as **meats, fish and dairy products**

are the most important means of exposure. A study in the US reported POPs levels in common fast foods like **hamburgers, pizza and ice cream.**

Generally, effects on humans are:

- Cancer
- Neurobehavioral impairment including learning disorders, reduced performance on standard tests and attention deficits
- Immune system biochemical alterations
- Reproductive deficits
- A shortened period of lactation in nursing mothers
- Diabetes.

5.3 ROUTES OF HUMAN/ANIMAL EXPOSURE

Oral: - eating contaminated food
- contacting or ingesting contaminated soil
- drinking contaminated water
- contaminated irrigation water

Dermal: - spillage and splashes
- working with pesticides
- touching contaminated objects

Inhalation: - vapours
- dusts
- sprays

5.4 ROUTES OF ENVIRONMENTAL EXPOSURE

- Leaching through soil
- Surface runoff
- Spillage into water
- Wind dispersion
- Evaporation
- Food contamination

5.5 MEASURING TOXICITY

LD50: is the "*Lethal Dose*" at which half the animals in a test population die. It is expressed in terms of mg of poison *per kg* of animal body weight.

The smaller an LD50 is, the more toxic the chemical,

LD50 = 10mg/kg - very toxic chemical

LD50 = 5,000mg.kg - not very toxic chemical.

6.0 BRIEF DESCRIPTION, HEALTH EFFECTS OF THE TWELVE POPs

A) ALDRIN AND DIELDRIN

Aldrin and **Diieldrin** are common names for two closely related chemicals that have been widely used for controlling soil insects and certain insect vectors of diseases. Aldrin is used to control soil pests (namely termites) on corn and potatoes crops. Diieldrin is also an insecticide used on fruit, soil and seed and has been used to control tsetse flies and other vectors of tropical diseases. It persists in soil with half-life of five years. Diieldrin is 40 to 50 times as toxic as DDT. In Nigeria, Aldrin dust was found to be used for treatment of yam seedlings against yam beetle attack.

Health Effect

- Carcinogenic potential
- Neurobehavioral effects
- Reproductive effects

B) ENDRIN

Is a rodenticide used to control mice and voles, and an insecticide used on cotton, rice and maize. Closely related to aldrin and diieldrin, endrin is the most toxic of the three.

Health Effect

- Neurobehavioral effects
- Reproductive effects

C) CHLORDANE

Is an insecticide used in fire ant control on lawns, and on a variety of crops, chlordane is very persistent in the environment, surviving in the soils for more than 20years.

Health Effect

- Carcinogenic potential- cancer and tumor promoter i.e. *Carcinogen*
- Neurobehavioral effects
- Reproductive effects

D) DDT (1,1,1-trichloro-2,2-bis-(P-chlorophenyl) ethane)

Is an organochlorine-based pesticide used in agriculture as an insecticide to control insect vectors of diseases such as **malaria** and **typhus**. DDT is one of the earliest and most well known pesticides and one of the most widely used.

Because of its effectiveness at killing insects with few acute effects on people, DDT has been a mainstay of many countries, also widely used in Nigeria, to fight against malaria. **DDT** and **Gammalin 20** which have rodenticide properties, although outlawed, are still being used illegally in some parts of the country.

Health Effect

- Carcinogenic potential - Breast cancer - *human Carcinogen*
- Reproductive effects - environmental estrogens, anti androgenic effects on the sexual development of the fetus and breast-feeding infant. In a study in **India**, a group of men who worked with DDT show decreased fertility, significant increase in stillbirth's, neonatal deaths, and congenital defects among their children. **Israeli** men with unexplained fertility problem were also found to have high blood levels of DDT.
- Neurodevelopmental effects - nausea, headaches, diarrhea, tremor and convulsion, malaise and hypersensitivity to contact.

E) **HEPTACHLOR**

Heptachlor is a termiticide and an insecticide used on seed grain and crops; also used extensively for fire ant control.

Health Effect

- Carcinogenic potential- breast tumor promoter & *human Carcinogen*
- Neurodevelopmental effects
- Reproductive effects

F) **HEXACHLOROBENZENE (HCB)**

Used as both a pesticides and an industrial chemical.

Health Effect

- Carcinogenic potential- cancer and tumor promoter i.e. *Carcinogen*
- Neurodevelopmental effects and other effects.

G) **MIREX**

Mirex is a bait insecticide used against a number of insect pests; a secondary use of mirex is as a fire retardant in plastics, paints, and electrical goods.

Health Effect

- Carcinogenic potential
- Reproductive effects

H) TOXAPHENE

Is an insecticide and acaricide, especially against maggots and on cotton.

Health Effect

- Carcinogenic potential
- Reproductive effects

I) PCB (polychlorinated biphenyls)

Are a group of highly toxic chlorinated industrial chemicals used as **coolants** and **lubricants** in electrical transformers and other electrical equipment, weather-proofing agents, dielectrics and to prolong residual activity of pesticides. PCBs had been in use for more than 25 years. In Nigeria, PCB-containing transformer oils are used extensively by the PHCN to supply power.

Health Effect

- Carcinogenic potential
- Neurodevelopmental effects- e.g. short term memory and spatial learning effects and long term effects on intellectual function (*IQ test*)
- Reproductive effects
- Immune effects

J) DIBENZO-p-DIOXINS AND FURANS

Dioxins and furans are two structurally similar families of compounds that include 75 and 135 congeners respectively. At least twenty are considered highly toxic. Dioxins are not commercially produced but are by-products of combustion and industrial processes, including the manufacture of chlorinated chemicals, the incineration of hospital waste, hazardous and municipal waste, and the bleaching of paper products.

Dioxins have a half-life of seven to twelve years in the human body. Dioxin and furans have similar effects to human health and will be referred to collectively as dioxins.

Sources

- Municipal and medical waste incinerators
- Pulp and paper mill (that use chlorine bleaches)
- Hazardous waste incinerators
- Cement kilns
- Chlorine based compounds e.g. *PVC*

Health Effect

- Carcinogenic potentials
- Neurodevelopmental effects
- Reproductive effects
- Immune effects

7.0 REMEDIATION MEASURES

Many countries have already banned or severely restricted the production and use of the twelve POPs in recent decades. Yet they remain a serious problem around the world. One of the challenges involved in eliminating POPs is the destruction of obsolete chemicals. PCBs and pesticides have been stored awaiting destruction in many locations. For example, it is estimated that there are more than **50,000 tons** of obsolete pesticides in Africa countries (*basically DDT and Dieldrin*)

Donor countries, aid agencies, agrochemical companies and recipient governments are all responsible for the steady accumulation of these pesticides, which in Africa alone will cost more than US\$100 million to dispose (*Africa Stockpiles Programme -ASP*).

Another challenge is the remediation of environmental reservoirs. For example, contamination of the Great Lakes in North America with PCBs, and the Hudson River of 200 miles. The clean up would involve dredging the riverbed.

It is recognized that the elimination of all significant POPs sources and the remediation of POPs environmental reservoirs will in many cases be difficult, expensive, and time consuming. For this reason, interim management regimes will often be required and appropriate, while longer-term phase out regimes are initiated and begin to take effect.

Three of the 12 POPs, the pesticide **DDT** and industrial chemical **PCBs** and the by-product **dioxin**, pose particular challenges because of the way they are currently used or generated.

- Development of a viable alternative to DDT toward a phase out plan for DDT that will attempt to eliminate all use and production by 2007. **Mexico** is involved in an aggressive research. Alternative to house spraying with DDT includes the use of **synthetic pyrethroid insecticides**.
- Russia producing PCBs was given (*Aarhus Protocol on POPs*) special exemption that allows production until 2005 and calls for destruction of the last of its PCBs by 2020.
- **Alternative treatment technologies**- Gas phase hydrogenation (*as against land filling or incineration*), which is performed at very high temperature and leaves

only inorganic ash is now been proposed for PCBs. The PCBs are reported destroyed within 99.9999%. However, the cost of this method, roughly \$400/tons for soils and \$2000/tons for liquids is very high, as is the case with most of the treatment technologies.

- In the case of dioxins and furans a major shift toward alternatives to chlorine in any industrial processes. Chlorine-free plastics include polyolefins such as polypropylene or polyethylene may be substituted for PVC in many products. In the **pulp and paper industry**, alternative bleaching methods that rely on oxygen are now commonly used in developed countries.
- Generally, an environmental management practice like waste minimization and reduction is required, education and awareness-raising especially by NGOs, persuasion and sometimes if necessary, enforcement of regulatory requirements are required for remediation processes.

Annex 6: List of Participants

No	Name	Organization	Address
1	Dr. Uchenna Udeani	University of Lagos	University of Lagos, Akoka, Lagos
2	Mrs. O.M. Ogungbuyi	Basel Centre University of Ibadan, linkage centre	University of Ibadan, Oyo.
3	Leslie Adogame	Nigerian Environmental Society (NES)	3/5 Adeyemo Alakija Street, Victoria Island, Lagos
4	Mr. Yomi Dickson	Federal Ministry of Environment	Federal Ministry of Environment, Lagos Office
5	Mrs. Ehi-Ebewele	Federal Ministry of Environment	Federal Ministry of Environment, Lagos Office
6	Mr. A.O. Olugbemi	Standards Organization of Nigeria	Lagos Office
7	Prof. Dapo Afolabi	Federal Ministry of Environment	Federal Ministry of Environment, Abuja
8	Mr. J.A. Olabode	Pharmaceutical Chemical and Allied Products, MAN	Manufacturing Association of Nigeria (MAN), Ikeja, Lagos.
9	Mrs. Nwuba C.C.	National Maritime Authority (NMA)	Maritime House, Burma Road, Apapa, Lagos
10	Najjashi B. Danbatta	NMA	Maritime House, Burma Road, Apapa, Lagos
11	Jimmy Atte	J. Abed	Ikoyi, Lagos
12	Ephraim Odeje	Mankind Safety	Oworonsoki, Lagos
13	Mrs. B.A. Odeneye	Textile Group (MAN)	Manufacturing Association of Nigeria (MAN), Ikeja, Lagos.
14	MB C.O. Okunubi	Textile Group (MAN)	Manufacturing Association of Nigeria (MAN), Ikeja, Lagos.
15	Mrs. M.O. Adesida	Federal Ministry of Environment	Lagos Office
16	I.E. Abiola-Awe	Federal Ministry of	Lagos Office

		Environment	
17	A.A. Oyewola	Standards Organization of Nigeria	Lagos Office
18	Olusanya .O	Federal Ministry of Environment	Federal Ministry of Environment, Lagos
19	Adeola O.O	Standards Organization of Nigeria	Lagos Office
20	Adenale O.O	Federal Ministry of Health	Lagos Liaison Office
21	Oyegbola F.S	Federal Ministry of Environment	Lagos Office
22	Ms Chibuzo O. Daniel	NMA	Lagos Office
23	Mr. Adeoye .B.	Lagos State Ministry of Environment	Alausa, Ikeja, Lagos State
24	Mrs. Alade R.O	Lagos State Ministry of Environment	Alausa, Ikeja, Lagos State
25	Mrs Ajiboye T.O	Lagos State Ministry of Health	Alausa, Ikeja, Lagos State
26	Mrs Akinyemi O.W.	Federal Ministry of Environment	Lagos Office
27	Akinwa L.I.	Friends of the Environment	Lagos Office
28	Dr. Tola Adetayo	Friends of the Environment	Lagos Office
29	Abiaka Raymond	Community conservation & Development Initiatives CCDI	1, Got Oboh Drive Oniru Estate, Lekki
30	Dr. (Mrs.) Chinwe Mogo	Head, Oil and Gas Division Federal Ministry of Environment Lagos	Federal Ministry of Environment, Lagos
31	Ismaila Otahiru	Federal Ministry of Environment	Federal Ministry of Environment, Abuja
32	Mr. A.J. Adegbite	Pharmaceutical Chemical and Allied Products, MAN	Manufacturing Association of Nigeria (MAN), Ikeja, Lagos.
33	Agbenla O.O. (Mrs.)	Federal Ministry of Environment Lagos	Federal Ministry of Environment, Lagos

34	Engr. Adetayo M.O.	Federal Ministry of Environment	Federal Ministry of Environment, Lagos
35	Olayemi J.S.	Federal Ministry of Environment	Federal Ministry of Environment, Linkage Centre.
36	Irhiamosime T.O.S.	PHCN Marina Office	PHCN Liaison Office Marina
37	Akinlade O.T.	PHCN Marina Office	PHCN Liaison Office Marina
38	Chiedu C.I. (Mrs.)	Member NES	33, Akinmorin Okota, Lagos
39	Bosun Oladimeji	UNIDO POPs Division	Plot 4, Oregun Road, Ikeja, Lagos
40	Shuaibu Sanusi	NMA Lagos	4, Burma road Apapa Lagos
41	O.O.Babade	Federal Controller of Environment	Federal Ministry of Environment, Lagos
42	Mustapha.B.S	LASEPA	LASEPA Alausa Ikeja
43	Adekayaoja .O.	LASEPA	LASEPA Alausa Ikeja
44	Adeyinka M.A.	Federal Ministry of Environment	Federal Ministry of Environment, Lagos
45	Davidson Kenneth	NES	3/4 Adeyemo Alakija Street, Victoria Island, Lagos
46	Abdulai O.R	Federal Ministry of Environment	Games Village
47	Engr. C.C. Chikwendu	Friends of the Environment (FOTE)	106/110 Lewis Street, Obalende Lagos.
48	Idris Rufus Olufemi	FOTE	106/110 Lewis Street, Obalende Lagos.
49	Folake Salawu	FOTE	106/110 Lewis Street, Obalende Lagos.
50	Mrs. J. Olu Maduka	FOTE	106/110 Lewis Street, Obalende Lagos.

Annex 7: Plates



Plate 1: An open dump site in Lagos situated very close to a residential area



Plate 2: Opening session



Plate 3: Group photograph



Plate 4: Cross Section of participants during the plenary session



Plate 5: Contribution from participants

HOMES & PROPERTY

Environmentalists review impact of 'dirty dozen' chemicals

TOWARDS fulfilling the requirements of a binding global treaty, concerned stakeholders last week engaged in talks on how to reduce and secure the elimination of a group of dangerous chemicals known as Persistent Organic Pollutants (POPs), otherwise called "the dirty dozen," in the country.

The stakeholders, mostly environmentalists, met at a workshop organised by Friends of the Environment (FOTE) in collaboration with the Federal Ministry of Environment, Lagos Zonal Office.

FOTE and two other Non-Governmental Organisations (NGOs), that are members of

International POPs Elimination Network (IPEP), were piloting the Global Environment Facility (GEF) project in Nigeria.

The event was part of a wider project under Article 10 of the Stockholm Convention, which stipulates the development and exchange of education as well as public awareness materials at the national and international levels and development and implementation of educational and public awareness programmes POPs.

POPs threaten the global environment due to their toxicity, persistence, mobility and tendency to bio-accumulate in higher organ-

Nigeria has joined the global community in the search for a solution to the danger posed by the dirty dozen, considering the devastating effects that these chemicals have on the health of humans, animals and plants and the environment

The Environment

By
Chinedu Uwaegbulam

Nigeria with concomitant health effects among Nigerians.

FOTE chairperson, Mrs. Joan Maduka, said that the project aimed to strengthen national capacity and facilitate better planning for elimination of POPs in Nigeria. It will also focus on the vulnerable

isms. Most of the banned POPs substances had been used and some are still in use today. Most of them were being used in agriculture as pesticides, in industries as chemicals and as by-products of various industrial processes.

Experts have recently reported traces of PCBs and other hazardous chemicals in dumpsites across major cities in

segments of the population like handlers, illiterates, women and children on the hazards of POPs and attempt to increase the level of awareness among the population.

According to Maduka, who is an engineer, "the management of this types of chemicals in Nigeria is cross-sectoral in nature. There exist legal instruments that

address chemical management. This legislation has in-built administrative and management schemes such as permitting, classification, restriction, reporting and feedback mechanisms to monitor implementation. There is also in existence, a list of banned and severely restricted chemicals. Sadly, there have been some hiccups in their implementation."

She stated that the organisation intended to undertake the study of POP pollution of the Lagos lagoon as a suspected site receiving enormous wastewater from an estimated 2000 significant industrial users, small industrial

users, commercial establishments and domestic sources.

Prof. Dapo Afolabi, a director at the Federal Ministry of Environment, disclosed that industrial chemicals or their products had potential deleterious effects on the environment and human health.

He noted that specific actions to facilitate the implementation of the convention included reinforcing vigilance at the country's entry points to monitor illegal trafficking and transboundary improvement of POPs and the strengthening or upgrading of public and private sector analytical facilities to identify the substances.