



**AFRICA**  
STOCKPILES PROGRAMME



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## **Strategic Assessment of the Status of POPs Pesticides Trading in Ogun State, Nigeria**



**NGO: Sustainable Research and Action for Environmental Development**

**May 2007**

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## **ABOUT THE AFRICA STOCKPILES PROGRAMME**

Virtually every African country has stockpiles of obsolete pesticides and associated wastes that have accumulated over periods as long as 40 years. At least 50,000 tonnes of obsolete pesticides and severely contaminated soil have accumulated in African countries. These pesticides pose serious threats to the health of both rural and urban populations, especially the poorest of the poor, and contribute to land and water degradation. The stockpiles consist of toxic pesticides and associated contaminated materials. Many of the waste mixtures contain persistent organic pollutants (POPs), which is a growing concern and priority for the international community and GEF, culminating in the adoption of the Stockholm Convention in 2001.

The Africa Stockpiles Programme (ASP) aims to clear all obsolete pesticide stocks from Africa and put in place measures to help prevent their recurrence. The concept of a continent-wide stockpiles project grew out of informal discussions between NGOs and several inter-governmental organizations. Since December 2000, the ASP has evolved substantially as a multistakeholder partnership.

ASP's objective is to:

- Clean up stockpiled pesticides and pesticide-contaminated waste (e.g., containers and equipment) in Africa in an environmentally sound manner.
- Catalyze development of prevention measures; and
- Provide capacity building and institutional strengthening on important chemicals-related issues.

Several guiding principles have been agreed upon:

- ASP will be available to all countries that meet a number of basic criteria as part of their overall sustainable development strategies;

- Activities will be country-driven;
- ASP will work in conjunction with existing activities related to prevention and disposal of obsolete pesticides so as to prevent duplication;
- Prevention of future accumulation is as important as disposal of existing stockpiles;
- Management and destruction of POPs pesticides will be in compliance with relevant international and regional regimes.

ASP activities will also create opportunities to address broader hazardous waste management issues and evaluate new, cleaner disposal technologies.

Countries targeted for phase 1 clean-up activities include: Ethiopia, Mali, Morocco, South Africa, Tunisia, and Tanzania, with special preparatory activities planned for Nigeria.

## **PROJECT TEAM**

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## **TABLE OF CONTENT**

Title Page

About the Africa Stockpiles Programme

Project Team

Table of Contents

List of Tables

List of Figures

Acknowledgements

### **CHAPTER ONE**

1.0 Introduction

1.1 Preamble

1.2 Background Information

1.3 Project Scope

1.4 Project Duration

### **CHAPTER TWO**

2.0 Literature Review

2.1 Introduction

2.2 Origin of POPs Pesticides in Africa

2.3 POPs Pesticides Situation in Nigeria

2.4 Description of Study Area

## **CHAPTER THREE**

### 3.0 Methodology

#### 3.1 Desktop study

#### 3.2 Consultation

#### 3.3 Administration of questionnaires

#### 3.4 Site Visits – Physical Inspection

#### 3.5 Photo Documentation

#### 3.6 Constrains to the Study

## **CHAPTER FOUR**

### 4.0 Results and Discussion

#### 4.1 Socio-Demography Distribution of Respondents

#### 4.2 Knowledge Level About POPs Pesticide

#### 4.3 Attitude and Practice Associated with POPs Pesticides in Ogun State

#### 4.4 Sources and Types of POPs Pesticides in Ogun State

#### 4.5 Records of Enforcement and Sanctions against use of banned Pesticides

#### 4.6 Episodes of Pesticides Poisoning in Ogun State

## **CHAPTER FIVE**

### 5.0 Recommendations and Conclusion

#### 5.1 Recommendations

#### 5.2 Conclusion

Proposal for future Work

References

Appendix

## **LIST OF TABLES**

Table 1: POPs Pesticides known to have been used in Nigeria

## **LIST OF FIGURES**

Figure 1: A Pesticide Store in Abeokuta, Ogun State

Figure 2: A Pesticide Store in Ilaro, Ogun State

Figure 3: A Mobile Insecticide Hawker in Ogun State

Figure 5: Trafficking of Goods at the Border Post

Figure 6: Custom Officer at Work at the Border Post

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Finally, we wish to thank both the professional and administrative members of the project team and our staff who worked so hard and showed dedication to our task.

Above all, we thank the Almighty God for his grace.





# Introduction

## 1.1 Preamble

The Africa Stockpiles Program (ASP) is a multi-stakeholder initiative aimed at cleaning up obsolete chemicals stockpiles, preventing future toxic threats, and protecting human health and environment. The program was commenced in 2000 with the support of the United Nation's Food and Agriculture Organization (FAO), World-Wide Fund for Nature (WWF), Pesticide Action Network (PAN) and to be implemented over 10-15 years to tackle pesticide pollution through the clean-up and disposal of over 50,000 tonnes of obsolete pesticide waste stockpiled across the African continent. Nigeria is one of the seven countries participating in the first phase of the ASP program. This \$2.29 million program has multi-donor funding with Nigeria providing counterpart funding of \$380,000. The objective of N-ASP is to reduce the risk of obsolete pesticides to humans and the environment through clean-up and preventive measures and is premised on creating awareness of adverse effects of obsolete chemicals stockpiles, inventory of obsolete stockpiles, destruction of obsolete stockpiles, and prevention of stockpiles. The following achievements have so far been recorded:

- Inauguration of Nigeria- ASP Steering Committee
- Obtained due process certification for the release of the first year counterpart funding contribution
- Recruitment of full-time and part time officers of the project management unit
- Establishment of a Nigerian-Africa Stockpiles Program Implementation Network by Civil Societies.

## **1.2 Background Information**

The African Stockpiles Program (ASP) has been established to remove above 50,000 tonnes of stockpiles of obsolete pesticide, especially Persistent Organic Pollutants and prevent future accumulation, which may arise through unused stocks, illegal or unneeded imports.

To this end, a number of civil society groups from Nigeria attended the Anglophone Regional training Workshop on the ASP in 2005 held in Tanzania. In 2006, the Nigerian - Africa Stockpiles Program Implementation Network (NASPIN) was established with the support of PAN-UK and AGENDA, with Mr. Ane Leslie Adogame of the Nigerian Environmental Society (NES) as the National Coordinator. NASPIN is a network of public interest non governmental organizations with a commitment to work jointly towards awareness generation, clean-up of obsolete pesticides, and elimination of POP pesticides and avoid future accumulations.

In Nigeria, four NGOs, the Nigerian Environmental Society (NES), Friends of The Environment (FOTE), the Nigeria Environmental Study/Action Team (NEST), and Sustainable Research and Action for Environmental Development (SRADev) were involved in a National ASP case study titled Strategic Assessment of the Status of POP Pesticides Trading in Southwestern Nigeria.

The main aim of this project is to identify factors contributing to the build up of pesticide stockpiles and strategies for prevention in Nigeria. Specifically, the objectives of the project were:

- To assess the status, scale of availability and use of POPs pesticides and where possible identify wholesalers and retailers involved in trading these pesticides.
- To identify whether banned or restricted pesticides are available in Ogun State, and if so, how are they imported?

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- To identify the impact of illegal pesticides trading and the state of enforcement of regulation on the build up of obsolete pesticide stockpiles.
  - To identify gaps/loopholes and weaknesses in the national strategy to register, manage and monitor pesticides by a cradle to grave approach.
  - To generate sufficient knowledge-based information and create awareness on the socio-economic, environmental and health impact of continuous illegal trading on pesticides.

The involvement of SRADev in the case study was to actualize its successful implementation in Ogun State. SRADev is a professional, not-for-profit, non-political, think tank non-governmental Organization (NGO) committed to bridging the yawning gap between knowledge and action by carrying out research, information dissemination, networking, training to increase public awareness on environmental issues towards sustainable use of natural resources and better quality of life for all humanity. It seeks to be the voice for environmental development in Africa, particularly Nigeria.

### **1.3 Project Scope**

The geographic area covered by this study is Ogun State of Nigeria. The State is a good reflection of a border state (Idiroko border post between Nigeria and the Benin Republic) and characterized by a variety of human activities, which range from agricultural, industrial, commercial, municipal, and domestic activities. The thematic study area is limited to POP Pesticides trading, use and regulations in Ogun State. This covers the pesticides Importers/marketers, Distributors, Users, Regulatory Agencies and the general public.

### **1.4 Project Duration**

The project was executed between March and May 2007.

# 2

## Literature Review

### 2.1 Introduction

POP Pesticides are organic pesticides that, to a varying degree, resist photolytic, biological and chemical degradation. They are often halogenated and characterized by low water solubility and high lipid solubility, leading to their bioaccumulation in fatty tissues. They are also semi-volatile, enabling them to move long distances in the atmosphere before deposition occurs (L. Ritter et al 1996, Oris et al 2002, Ezemonye, 2003). Volatilization may occur from plant and soil surfaces following application of POPs used as pesticides, particularly POP pesticides such as DDT, chlordane, lindane, heptachlor, dieldrin, aldrin, toxaphene, mirex and chlordecone.

For some POPs, occupational and accidental high-level exposure is of concern for both acute and chronic worker exposure. The risk is greatest in developing countries where the use of POPs in tropical agriculture has resulted in a large number of deaths and injuries. In addition to other exposure routes, worker exposure to POPs during waste management is a significant source of occupational risk in many countries. Short-term exposure to high concentrations of certain POPs has been shown to result in illness and death. For example, a study in the Philippines showed that in 1990, endosulfan became the number one cause of pesticide-related acute poisoning among subsistence rice farmers and mango sprayers. Occupational, bystander and near-field exposure to toxic chemicals is often difficult to minimize in developing countries. Obstacles in managing workplace exposure are in part due to poor or non-existent training, lack of

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safety equipment, and substandard working conditions. As well, concerns resulting from near-field and bystander exposure are difficult to identify due to inadequacies in monitoring of the ambient environment and inconsistencies in medical monitoring, diagnosis, reporting and treatment. These factors contribute to a lack of epidemiological data. Earliest reports of exposure to POPs related to human health impact include an episode of HCB poisoning of food in south-east Turkey, resulting in the death of 90% of those affected and in other exposure related incidences of hepatic cirrhosis, porphyria and urinary, arthritic and neurological disorders. In another acute incident in Italy in 1976, release of 2,3,7,8-TCDD to the environment resulted in an increase of chloracne. The US EPA is currently reviewing dioxin related health effects especially for the non-carcinogenic endpoints such as immunotoxicity, reproductive disorders and neurotoxicity.

Of the twelve POPs identified under the Stockholm Convention, nine are pesticides used on agricultural crops and/or for public health vector control. These include DDT, chlordane, lindane, heptachlor, dieldrin, aldrin, toxaphene, mirex and chlordecone.

A description of some POPs pesticides and their applications are given as:

- **Aldrin** - A pesticide applied to soil to kill termites and other insect pests
- **Chlordane** - A broad spectrum pesticide used to control termites
- **Dichloro-diphenyl-trichloroethane (DDT)** - Used for mosquito control
- **Dieldrin** - A pesticide used to control termites and textile pests
- **Endrin** - An insecticide sprayed on leaves to control rodents
- **Heptachlor** - A pesticide put in soil to control termites and other insects
- **Mirex** - An insecticide used to combat fire ants and termites
- **Toxaphene** - An insecticide used to control ticks and mites in livestock

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- **Hexachlorobenzene (HCB)** - A by-product of the manufacture of some industrial chemicals (also used as a pesticide)
  - **Dioxins** - A product of incomplete combustion as well as during the manufacture of pesticides and other chlorinated substances

By the late 1970s, nine POPs pesticides and PCBs had been either banned or subjected to severe use restrictions in many countries. Current information indicates that some of these POPs are still in use in parts of the world where they are considered as essential for ensuring public health. In an effort to further reduce their use in these countries, it is important to understand what countries are using these POPs, and how they are applied. However, there is very little reliable data about the specific uses in developing countries. Although this lack of specific data makes it difficult to evaluate the rationale for the continued use of the nine pesticides, the available information still allows one to discuss the use patterns and barriers to adoption of alternatives in a generic fashion.

## **2.2 Origin of POP Pesticides in Africa**

Before the mid-twentieth century, pollutants with these harmful characteristics were virtually non-existent. Their origin and actual production is traced to after the World War II. This era witnessed increased production of chemicals and their by-products. POPs defy natural boundaries and when released in one part of the world can travel to remote areas (regions) far from the source.

Most, if not all, of the nine pesticides in question are still in use or existing in many countries. However, the actual quantity that specific countries may be currently using is unknown. There are no central registers of individual country use, although some organizations, like the FAO, United Nations Economic Commission for Europe, and the World Bank have begun to assemble aggregate use data.

The main categories of sources identified in the African region were production and imports, use of POPs pesticides, i

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ssue of stocks of and reservoirs of obsolete, discarded and banned PTS/POPs pesticides and PCBs (120,000 MT FAO Estimate) industrial sources (manufacture, mining and electricity), PCBs and dioxins/furans from open/uncontrolled burning of waste (Osibanjo 2006).

Up to 50,000 metric tones of disused obsolete pesticides or toxic products are lying unprotected around the Africa continent. The stockpiles are spread across the continent's 53 countries. Contaminations from obsolete pesticides are threatening the health of communities throughout Africa. The stockpiles according in WWF study include some extremely toxic pesticides, which may be up to 40yrs old. Many of these chemicals and their contaminants are in poor conditions threaten local and regional environments through the contamination of soil, water and air.

### **2.3 POP Pesticide Situation in Nigeria**

Chemicals are used for crops and seeds protection and are widely used in both developed and developing nations to improve their crop yield and therefore ensure their food security. In Nigeria, there are currently about 124 registered crop protection chemicals officially sanctioned by NAFDAC and its Directorate of Registration responsible for the registration of all chemicals regulated by law. Nigeria's consumption of fertilizer per hectare is the lowest in the world at about 10kg/hectare/annum which is less than 5 percent of the best practice rate of 210kg. Therefore, due to the low-level of chemical use in agriculture in Nigeria, it may be possible that stockpiles of obsolete pesticides may not be significant. The FAO in 2002 estimated that Nigeria had only about 22 tonnes of obsolete stock of 40 assorted pesticides in 55 different sites. The FAO source also revealed that pesticides accounted for most POPs contaminations in Nigeria.

POPs are not manufactured in Nigeria but imported mostly from developed countries. About 90 percent of all chemicals used in Nigeria are imported as finished pre-packed products from France, United Kingdom, Japan, and

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China among others. These include pesticides, industrial chemicals, fertilizers and consumer chemical products.

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. The Federal Environmental Protection Agency Regulations in 1990 banned the importation of POPs pesticides in response to international concern about POPs and their effects. However, it has been established that some of these banned or restricted chemicals are smuggled into Nigeria from the country's land borders from neighbouring French speaking countries. These countries have a higher rate of crop protection chemicals use and receive chemicals donations sometimes in excess of their needs from foreign donors. Labelling of such chemicals is usually in French and this makes them strong candidates for wrong application and abandonment in Nigeria. These types of chemicals constitute the majority of pesticides that come into Nigeria illegally through the land borders.

Today, Chemical formulated or produced in Nigeria are those for use in agriculture such as fertilizers and agro-chemicals and industrial chemicals like Sulphuric Acid, Alum, Linear Alkyl Benzene, Carbon Black etc.

POPs pesticides were used for pest control until the 1980s/1990s in food crops and export crops as well as malaria vector control. 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 a need basis. Data is generally lacking on POPs imports and consumption. Inadequate funding is claimed to be responsible for the low levels of obsolete stocks of POPs as chemicals were consumed as soon as they were purchased.



The Nigerian experience from available research shows that major POPs contamination of air, soil and water arises basically from the use of pesticides. Pesticides use in Nigeria includes certain chemicals that for environmental reason have been partially or completely banned in developed countries. However such chemicals continue to find their way into Nigeria for pest control mainly through illegal traffic.

Of the nine POPs pesticides, only seven (Table 1) are known to have been used or are in use in Nigeria. Mirex has never been reported to have been used in Nigeria. The seven pesticides are Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor and Toxaphene. Aldrin and Dieldrin have widely been used as insecticides in cash crops protection such as cocoa, rubber and cotton. Heptachlor, Chlordane and Dieldrin have been used for termite control in many parts of Nigeria. However, the current general response by most stakeholders is that all POP substances are no longer in use in Nigeria, but reports by some experts have revealed that Nigerian farmers still prefer some of these banned POPs because of their potency and relatively cheaper cost than their non POPs alternatives.

S/No.	Common Name (s)	Trade Name (s)	Characteristics
1	Aldrin	Aldrec, Aldrex, Aldrex 30, Aldrite, Aldrosol, Altox, Compound 118, Drinox, Seedrin	White, odourless crystals. Technical grades are tan to dark brown with mild chemical odour
2	Chlordane	Aspon, Belt, Chlориandin, Chlorkil, Corodan, Cortilan-neu, Dowchlor, HCS 3260, Kypchlor, M140, Niran, Octachlor, Ortho-Klor, Synklor, Tatchlor 4, Topichlor, Toxichlor.	Colourless to yellowish-brown viscous liquid with an aromatic, pungent odour
3	DDT	Agritan, Anofex, Artotine, Bosan	Odourless to slightly

		Bovidermol, Chloropenothane, Citox, Chlorophenotoxum, Dedelo, Deoval, Detox, Detoxan, Dicophane, Didigam, Didimac, Dykol, Estonate, Genitox, Gesafid, Gesapon, Gesarol, Gyron, Kopsol, Mutoxin, Pentachlorin.	fragrant colourless crystals or white powder
4	Dieldrin	Dieldrex, Alvit, Dieldrite, Illoxol, Panoram, D-31, Quintox.	White crystals or pale tan flakes, odourless to mild chemical odour
5	Endrin	Hexadrin, Endrex, Isodrin Epoxide, Mendrin, Nendrin.	White, odourless, crystalline solid when pure; light tan colour with faint chemical odour (tech. grade)
6	Heptachlor	Aehepta, Agroceres, Baskalor, Drinox, Heptachlorane, Heptagranox, Heptamak, Heptamul, Heptasol, Heptox, Soleptax, Rhodiachlor	White to light tan, waxy solid or crystals with a camphor-like odour
7	Toxaphene	Alltex, Alltox, Attac 4-2, Camphechlor, Camphochlor, Huilex, Chemphene, Kamfochlor, Malipax, Toxyphen, Octachorocamphene, Penphene, Phenatox, Phenphane.	Yellow, waxy solid with a chlorine-like odour

**Table 1:** Pops Pesticides known to have been used in Nigeria

The most commonly used pesticide is Lindane (Gamma BHC) on Kola-nuts (*cola nitida*) for protection against kola-nut weevils (*Balanogastriis Kolae*). It is also widely used by fishermen to kill fish for commercial purposes in Nigeria. Fenthion (an insecticide) is an effective avicide and is used mostly in northern part of Nigeria against bird pest. DDT and Gammalin-20 a

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rodenticide that has been outlawed but they are still illegally used in some parts of Nigeria.

Until recently, the adverse effects of pesticides and their residue on non-target organisms have not been seriously considered in Nigeria. For example information on lethal limits of pesticide on Nigeria fish or food crops scarcely exists. (Ezemonye and Ilechie are currently, (April 2006) working on a battery of biomalces and Altrazine toxicity to amphibian tadpoles; Ezemonye and Ohofosa are working on site-specific Gamalin 20 bioaccumulation in fish from Niger Delta waters). POPs have also been identified in the waters sediments and fish in Niger Delta water namely Ethiope, Benin, and Warri Rivers (Ezemonye 2005). This environmental alarm calls for regular monitoring of the water bodies. Earlier studies by Osibanjo and Bamgbose (1990) revealed the presence of POPs in the Nigerian Environment. Risk associated with drinking POPs contaminated surface and underground water supplies were highlighted.

Akingbade in his book "Nigeria, on the Trail of Environment" has reported uncommon ailments associated with POPs contamination to include:

- lack of brain coverage in children
- microcephaly (cases of small brains)
- macrocephaly (cases of extra large brain)
- congenital heat disease
- blocked anus in children
- urinogenital disorder.

## **2.4 Description of Study Area**

Ogun State is a state in South-western Nigeria. It has been in existence since the 70's, with 20 Local Government Areas and Abeokuta as it capital. The state borders Lagos State to the south, Oyo and Osun states to the North, Ondo State to the east and the Republic of Benin to the west. Ogun state is in the tropical rain forest zone and is blessed with good climatic

and soil formation. All these make the state one of the major agricultural zone of Nigeria.

There are numerous markets in which a considerable trade is done in native products and articles of European manufacture. Timber, cocoa, cassava, palm-oil, rubber, yams and shea-butter are the chief articles of trade. It is one of the largest cassava producing state in Nigeria, and Nigeria is the World's largest producer of cassava. The industry generates US \$5 billion in revenue annually.

# 3

## Methodology

The project involved the use of different, but complementary data collection methods. These are: desktop study, questionnaire administration, physical (site) inspection, photo documentation (pictorial illustration), and consultation. These methods are briefly described in this section of the report.

### **3.1 Desktop Study**

Existing data on the status of POPs Pesticides trading and use in Nigeria with specific emphasis on Ogun State was obtained from related literature and previous works from different sources.

### **3.2 Consultations**

Primary focus was on gathering existing data on POPs pesticide trading and use in Ogun State, Nigeria. This was done by means of consultations with different units of the Ministry of Environment, Ministry of Health, Ministry of Agriculture, Ministry of Forestry, Ministry of Commerce and Industry, University of Agriculture, Farmers groups and the Nigerian Custom Service, among other relevant organizations.

### **3.3 Questionnaire Administration**

The questionnaire data were important in obtaining first hand information on the status of POP pesticides trading in the area and compatibility to international intervention programmes. The

questionnaire sort information from respondents (individual and corporate) on awareness on POP Pesticides, sources of POPs pesticides, trading and use structure, health and environmental impact, existing regulatory policies and control measures, and level of adoption of alternatives to POPs pesticides.

Five structured questionnaire types were designed to target information from the five main identified classes of respondents as it relates to POPs issues in Ogun State.

The Type A Questionnaire was designed for the general members of the public – representing different socio-economic strata. 25 questionnaires were distributed among different respondents, reflecting urban-rural differential, chorological stratification, sex variation, and educational background.

The Type B Questionnaire was designed for importers of Agrochemicals, especially POPs pesticides. No questionnaire was administered to this category of respondents as no importer was identified in the State. The study team was informed that major pesticides and agro-chemical importers were based in Lagos, a coastal city with sea ports and land borders.

The Type C Questionnaire was designed for distributors of Agrochemicals in the state. Only 20 questionnaires were administered for this category due to the fact that few small scale distributors were present in the study area.

The Type D Questionnaire was designed for users of Agrochemicals in Ogun state, mostly farmers (crops and animals). 20 questionnaires

were administered to this category including but not limited to farmers, researchers and household users.

The Type E Questionnaire was designed for relevant Regulatory agencies in the state and their officers. 10 questionnaires were administered, as many of the earlier identified Regulatory agencies, decline from been interviewed as they are not involved in any chemical, specifically pesticides regulations.

The questionnaires were administered on a minimum of 75 respondents.

### **3.4 Site Visits -Physical Inspection**

Visits were scheduled to the border post, agrochemical dealers/marketers shops, sawmills and agricultural farms for physical inspection using the observation checklist designed for assessing POP Pesticides trading in South-western Nigeria.

### **3.5 Photo-Documentation (Pictorial Illustration)**

Photo shots of relevant sites were taken during the site visits for pictorial illustration. Some of the photo shots are presented in this report.

### **3.6 Constrains to the Study**

Data gathering: it was not easy to convince most of the respondents to provide the required answers to necessary questions in the questionnaire. It took time to convince them that the purpose of the study was not to extract tax or any form of payment, and that their response will be

completely confidential, as no individual questionnaire will be made available to any authority. Moreover, there is currently not enough documented data on issues of POPs pesticides in the state, even among the regulatory agencies and research institutions.

Language Barrier: the level of education among most of the respondents was low, and most of them were unable to communicate in English language. Therefore, some interviews were conducted in local languages like Yoruba, and translated to English on the questionnaire.

Research instrument: the questionnaire was not well designed as it posed difficulty in its administration and getting desired response from the targeted respondents. A response of "NO" to a particular answer may result to no response to 3 to 4 subsequent questions.



# 4

## Result and Discussion

### **4.1 Socio-demographic Distribution of Respondents**

The sample included people of different gender, age, educational level, social class, marital status and ethnic group. 75% of the respondents were male and 25% females. This is not unconnected to the fact that most of the farmers, distributors and heads of regulatory agencies were males. Age distribution was between 26-67years. Most respondents were elderly with long time experience and practice, expected to have good and long time knowledge of pesticides and pesticides related issues. Most of the users, specifically farmers had low academic backgrounds. 66% had no formal education, 20% had primary education, and 12% had secondary education, while those with tertiary education accounted for 2%. The academic background of the distributors was not far from that of the users. The case was not the same among the regulatory agencies and general public, as most have higher educational background. Tertiary education (56%), secondary (25%), primary (12%), and 7% with no formal education.

### **4.2 Knowledge Level About POPs Pesticides**

Out of the total number of respondents, only 32% have heard of POPs pesticide (as chemicals used for crop protection and pest destruction), while 68% claimed ignorance of POPs pesticides. Awareness level among the regulatory agencies and distributors were higher than among the users. 11% of the users have used POP pesticides before and only 7% still use it for crop protection and mosquito control. Only four POPs pesticides were identified by the respondents as commonly used, namely Lindane, Aldrin dust, Grammasonne and Gammalin 20.

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About 17% know that POPs Pesticides persist in the environment and that they cause injury and defects. The implication of the observation is that, the awareness status of most of the respondents was low and a massive awareness and enlightenment programme is imperative.

### **4.3 Attitude and Practices Associated with POPs Pesticides in Ogun State**

The common practice of pesticide distribution/sale in the state is through small scale pesticides stores which dot various parts of the states and rodenticide/insecticide hawking. The study revealed that POPs pesticide have been well used in the area for pest and vector control until late 80s but, it is no longer a common practice in the state. The Ministry of Agriculture informed the team that present day farmers in the state rarely use pesticides accept when there is a major pest outbreak, which the state has not experienced in the last 25 years. The pesticides distributors and retailers further confirmed this fact, as they claim to suffer very low patronage of pesticides by users unlike as it use to be. An attempt to determine what they do to expired pesticides revealed that they still sell expired pesticides to farmers, but at cheaper price. The Ministry of Health informed the team that the state does not use DDT for malaria control, but encourage the use of Insecticides Treated Nets among the populace. Most of the farmers attributed the use of POPs pesticides in the past and when need be, to high efficacy, effectiveness (fast knocking ability on insects and last longer). Some household also patronizes Gammallin 20 for termite control from wood and home furniture.



Fig.1: A pesticide Store in Abeokuta, Ogun State



Fig. 2: Pesticides stocked in a Store in Ilaro, Ogun State

#### **4.4 Sources and Type of POPs Pesticides in Ogun State**

The survey revealed that there is no POPs pesticide importer in the state, but POPs pesticides still find it way into the state. The pesticide traders claim to get supply from importers in Lagos and at times from Ogunpa market in Ibadan. Common types of POPs pesticides identified in the state include Gammalin 20 (used for protecting kola nut from pest, fishing and also used for formulating local insecticides and rodenticides), Lindane (used for Cocoa protection), Grammassonne. Common types of locally formulated insecticides mostly used by household are 'ota pia pia' and G.O 90. They are mainly used for the control of mosquitoes, flies, crawling insects such as bed bugs and cockroaches, and also used to kill rodents. They are said to be far cheaper and fast in action than the branded pesticides. A brief interview with a mobile insecticide hawker revealed that the locally formulated insecticides are made from Gammalin 20 mixed with solvents like kerosene and packaged in small bottles or paper sachets. Lindane powder and other unknown chemicals are also used to formulate local rodenticides. These locally formulated rodenticides and insecticides are mainly hawked on the streets by mobile salesmen and patronized by the general public.



Fig.3: A mobile Rodenticide Hawker in Ogun State



Visit to the Idi-Iroko border post revealed illegal trafficking of goods, but it was impossible for the study team to really ascertain the content of such goods as they are well packaged and carried no label on them. The Custom officers at the border post affirm to the study team that there is no illegal trafficking of POPs pesticides at the border post. Though personal communication with the Custom Officers revealed that their knowledge on POPs pesticides is low and awareness on banned POPs pesticide is very poor.



Fig.4: Trafficking of goods at the Border Post

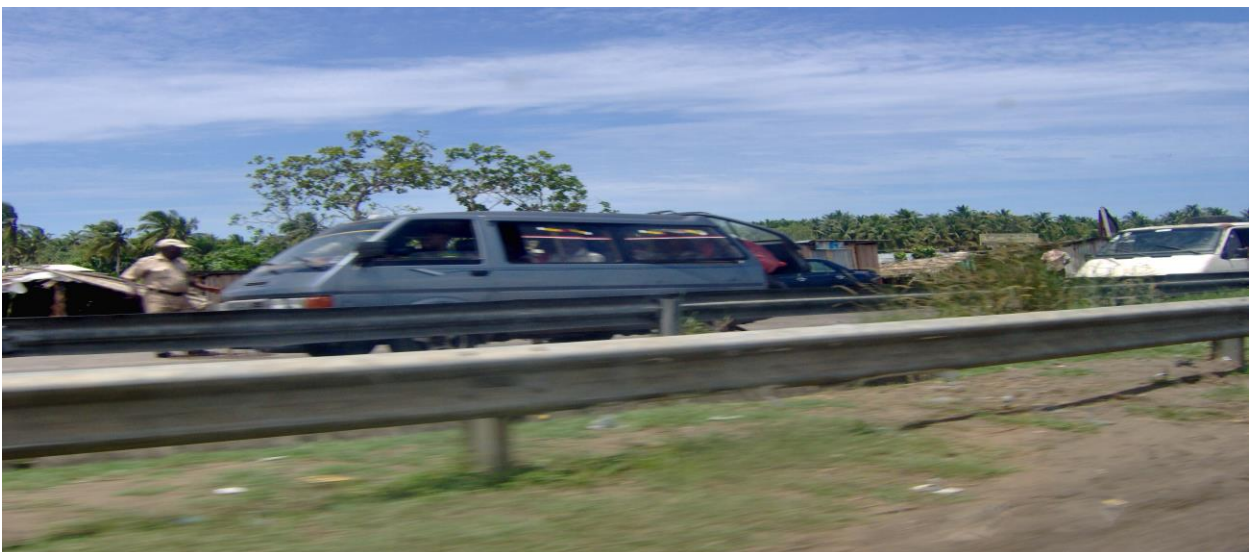


Fig.5: A custom officer at work at the border post

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## **4.5 Records of Enforcement and sanctions against use of banned pesticides in Ogun State**

An attempt was made to determine the records of enforcement and sanctions against use of banned pesticides in the state. The regulatory agencies that were shot listed to be administered questionnaire are those that are concerned with chemicals management in Ogun State. The assumption was that they will be very knowledgeable about activities on POPs pesticides in the state. Contrary to this, was the surprised we experienced at the State Ministry of Environment which declined from knowing anything about POPs pesticide activities, policies, enforcement and sanctions in the state. The Ministry of Agriculture claimed to be aware of some existing regulations and sanction on banned POPs pesticides, but not involved in its enforcement. The Custom Officers at the border post denied the existence of POPs chemicals in the state as they have enforcement strategies in place to check the importation of POPs pesticides.

However, POPs Chemicals have since been banned by the FEPA Decree of 1988, and other efforts related to POPs chemicals in Nigeria include but not limited to the Ministry of Environment Guidelines on Pesticide Management Handbook 2000, NAFDAC Decree 15 of 1993, and the Nigerian Pesticide Council (Draft) Pesticide Legislation 1970.

## **4.6 Episodes of Pesticides poisoning in Ogun State**

An officer of the Ministry of Health informed the study team that cases of health hazards from pesticide and insecticide use in the state, but there is no proper documentation of such. A disheartening discovery was that, containers of used pesticides and insecticides were being used by the local people to store consumable products like water, palm

oil and vegetable oil.

The Ministry of Environment has a laboratory for testing industry effluents and where necessary enforce mitigation measures. But it was discovered that the laboratory can only carry out simple physico-chemical parameter text and cannot text for POPs pesticide contents or related substances.

Some of the respondents claim to suffer symptoms such as Nervousness, irritability, dizziness, palpitation and dermatitis during or after application of pesticides and insecticides.

# Recommendations and Conclusion

## **5.1 Recommendations**

Having undergone this study, it is obvious that, there is still much to be done in Ogun state to rescue the present ugly situation, especially in the area of illegal trading of POPs pesticides, its continuous use and concomitant health and environmental implications. Some of these suggestions are recommended for adoption so as to stem the negative impacts of the current practice on pesticides.

- ❖ Government should narrow down regulation to be specific on POPs pesticides, unlike the present broad regulations on toxic chemicals.
- ❖ A particular regulatory agency should be charged with the responsibility of regulating and enforcing sanctions on POPs Pesticides in Ogun state, unlike the present situation where no agency is actively in charge.
- ❖ Customs officers at the ports and border post should be sensitized and trained to enhance effective control of illegal POPs pesticide smuggling.
- ❖ Government should subsidize the cost of alternatives to POPs pesticides.



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- ❖ There is a need for intensive sensitization of the Ogun state populace on POPs pesticides and its environmental and health hazards effects.
  - ❖ Encourage Integrated Pesticide Management (IPM).
  - ❖ Government should provide poison control centre to keep proper records of pesticide poisoning cases.
  - ❖ The society will be better off, if POPs pesticide importers are held liable for the losses they imposed on others, and non-POPs pesticides distributors should take responsibility for proper disposal of used pesticide containers.

## **5.2 Conclusion**

The status of illegal trading of POPs Pesticides in Ogun state as perceived by the general public, distributors, users, and regulatory agencies have been identified and enumerated. There is poor public awareness and education, existing legislations on hazardous chemicals control are too broad and not specifically focused on POPs pesticides, no government ministry in the state is taking responsibilities for the control and management of POPs pesticides, enforcement is weak and borders are porous to POPs pesticide smuggling, and Alternatives to POPs pesticides are expensive for users.

To halt the problem and stem the imminent damage to the environment

and health of the population in Ogun state, the above recommendations should be properly visited.

### **Proposal for Future Work**

SRADev will suggest subsequent work to be aimed at obsolete pesticide inventorization to obtain better database as the bases for determining the scale of the problem and their component element.

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## **APPENDIX I: Plates**



**Plate 1: Study Team at Work (Ministry of Health)**