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## The International POPs Elimination Project (IPEP)

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

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### Community and Workplace Monitoring as a Tool for the Identification of POPs Exposures



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## 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

AGENDA	AGENDA for Environment and Responsible Development
AI	Active Ingredient
AP	Asia and the Pacific
CBO	Community Based Organisation
CSO	Civil society Organisation
CWM	Community and Workplace Monitoring
DDT	Dichlorodiphenyltrichloroethane
FAO	Food and Agriculture Organisation (UN)
GEF	Global Environmental Facility
ILO	International Labour Organisation
IPM	Integrated Pest Management
IPEN	International POPs Elimination Network
MAFSC	Ministry of Agriculture, Food Security and Cooperatives
MLEYD	Ministry of Labour, Employment and Youth Development
MoHSW	Ministry of Health and Social Welfare
NGO	Non Governmental Organisation
PAN AP	Pesticide Action Network - Asia and the Pacific
PIC	Prior Informed Consent
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipment
SDC	Swiss Agency for Development and Cooperation
TPAWU	Tanzania Plantation and Agricultural Workers Union
TPRI	Tropical Pesticides Research Institute
UNIDO	United Nations Industrial Development Organisation
UNITAR	United Nations Institute for Training and Research
WHO	World Health Organisation

## **ACKNOWLEDGEMENT**

Since this was a community and workplace activity, the success of study was to a great extent dependent on contributions from community leaders, farmers, commercial farm owners, workers and extension staff in Arumeru District. TPAWU would like to extend sincere words of gratitude to all of them for their willingness and commitment throughout the study.

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# 1. INTRODUCTION TO THE STUDY

## 1.1 Background

Though stakeholders' involvement is recognized as a key component for the success of any programme it has yet to gain ground in the field of chemicals management particularly in the area of monitoring. This is due to several reasons, first, chemicals management is assumed to be a 'technical' subject that can be dealt with by government 'experts'. Second, governments have enacted legislations that do not allow other stakeholders apart from government 'experts' to deal with chemicals management. Third, most CSOs and NGOs have not taken chemicals management as one of priority issues in their agenda thus have not demanded for involvement in national programs.

This project under the International POPs Elimination Project (IPEP) was intended to demonstrate that even ordinary farmers and workers can play a significant role in chemicals management. It also aimed at demonstrating capacities of Civil Society Organisations (CSOs) in the implementation of the Stockholm Convention on POPs, Rotterdam Convention on Prior Informed Consent (PIC) Procedures for Certain Hazardous Chemicals and Pesticides in International Trade and the International Labour Organization (ILO) Conventions.

The project involved farmers and workers in Arumeru District in monitoring of pesticides used in vegetable, maize, coffee and cut flower farms. Though the duration was short, the group was able to identify different types of pesticides that are commonly used in the district. Before their involvement in monitoring, the group of farmers and local farmers were trained for two days from 7<sup>th</sup> – 8<sup>th</sup> January 2005 on aspects of the Stockholm Convention and POPs chemicals, Status of the Convention in Tanzania towards implementation and handling of chemicals and data/ information interpretation. The training was held in Arusha and involved 20 trainees from flower farms and one agricultural extension officer. The extension officer later trained 20 farmers in Arumeru District prior to field-information collection.

## 1.2 The Community and Work Place Monitoring

In Tanzania chemical inspections are done by Government Inspectors from lead Ministries such as the Ministry of Labour, Employment and Youth Development (MLEYD) Ministry of Health and Social Welfare (MoHSW) and the Ministry of Agriculture, Food Security and Cooperatives (MAFSC) through the Tropical Pesticide Research Institute (TPRI). There are a lot of weaknesses associated with this type of inspection system, namely under motivation, under-staffing, and poor equipping etc. These may lead to corruption and delay or poor service provision.

The advantages of involving other stakeholders in chemicals monitoring are obvious; increased commitment since local communities and workers are the victims of POPs effects and other hazardous chemicals. The problem of under-staffing is overcome by sheer number of stakeholders (local communities and workers) while instead of restricting chemical management within the domain of *inspections*; the scope can be

expanded to *monitoring* without much additional costs.

The participation of stakeholders in monitoring hazardous chemicals particularly POPs is a critical element in any chemical management programme. Unfortunately, this is not the normal practice in Tanzania and in many African countries. For many years monitoring has been perceived as a prerogative of the government institutions. This is due to a misconception of equating monitoring and legal inspections i.e. 'police-man/woman attitude' in monitoring. Involvement of other stakeholders such as NGOs/CSOs, workers and employers would ensure more responsibility and participation towards POPs management and implementation of the Stockholm Convention on POPs and other chemical and hazardous waste conventions.

Community and Workplace Monitoring (CWM) is an active tool for management of pesticides and other chemicals. It involves direct and repeated *observations* for the purpose of identifying pesticides or other chemicals and the associated risks to human health and the environment. Community and Workplace Monitoring can also be used to *verify* risk reduction measures and to *check* compliancy or non-compliancy to national and international standards, laws, conventions or agreements. For a CWM to function properly, the participation of agricultural workers, farm owners, trade unions, farmers, farmers' associations and public interest groups is necessary.

### **1.2.1 Study methodology**

In this study, three target groups were identified: workers in the flower farms, farmers involved in maize, coffee and vegetable farming and extension staff. The study area was Arumeru District in Arusha Region. This district was selected due to intensive agriculture in the area particularly flower, coffee, maize and vegetable farming.

A simple monitoring protocol was prepared with the objective of identifying POPs that are still in use in the respective farms and area. The protocol also allowed for data collection on other types of pesticides. A two days' training workshop on how to use the protocol and on how to identify POPs and other categories of pesticides was conducted in Arusha from 7<sup>th</sup> – 8<sup>th</sup> January 2005.

The training also briefed participants on the Stockholm Convention on POPs, POPs characteristics and effects, handling of chemicals and data/ information interpretation from the labels, and it involved 21 participants (20 flower farm workers and one agricultural extension officer). Each data collector was allocated two (2) weeks to collect and submit data and pesticide labels to the Project Coordinator.

Later in early February 2005, the agricultural extension officer conducted training to 20 farmers in Arumeru District before data collection. After submission of all the field work reports, a two days' working session was organized in Moshi in the first week of April 2005, where 3 experts from TPAWU (Trade Union), AGENDA (NGO) and TPRI (Government) analyzed the collected information.

## **1.2.2 Study findings**

### **1.2.2.1 General observation**

The duration of two weeks for data collection exercise was too short compared to the amount of data (types of pesticides, number of farmers and flower farms) existing in the study area. This short duration was due to financial limitation.

Accessibility to information was relatively easier with local farmers than in commercial farms where data collectors had to obtain prior permission from farm owners or supervisors before collecting any information. It is assumed that farm owners were not fully convinced about the objective of the study and were afraid that probably legal action will be taken against them. Some supervisors were reluctant to release information for fear of breaching company policies.

### **1.2.2.2 Specific observations**

#### ***The use of POPs***

The exercise did not identify the use of any POPs among the current list of POPs in Arumeru District. However, these findings cannot be used as absolute proof that POPs are no longer used in agriculture. This is due to the fact that the time for data collection was limited, poor record keeping and difficulties in accessing company information workers and local farmers may have missed out important information. Endosulfan, which a number of stakeholders have proposed for inclusion in the new POPs list, was found in use in coffee and vegetable farms.

It may be important to highlight in general terms that the amounts of pesticides reported are only indicative of the extent of pesticide use in the area. Tables below show some categories of pesticides found in the area.



**Table 1. Carcinogenic pesticides**

Crop	Active Ingredient (AI)	Trade Name	Registration Status	WHO Class	Usage
Chinese Cabbage	Chlorothalonil 75 w/w	Bravo 75 WP	Unregistered	II	Fungicide
Tomato and Coffee	Chlorothalonil 75 w/w	Bravo 75 WP	Unregistered	II	Fungicide
	Triadimefon	Bayleton 25 WP	Registered	III	Fungicide
Coffee	Mancozeb 80 % w/w	Dithane M45	Registered	U	Fungicide
Flowers	Carbaryl	Carbaryl	Unregistered	II	Insecticide
	*Triforine 190g/l	Meltamex	Unregistered	U	Fungicide
	*Dimothoate	Dimothoate	Registered	II	Insecticide
	Mancozeb 800 mg/kg	Milthane Super	Unregistered	U	Fungicide
	Permethrin	Permethrin	Unregistered	II	Insecticide
	* Profenofos 400g/l	Polytrin 440 EC	Unregistered	U	Insecticide
	*Propamocarb hydrochloride	Pyrethrins	Unregistered	No Class	Insecticide

\* = Possible carcinogenic, U = there was not enough information for identification of class

**Table 2. Cholinesterase inhibitors**

Crop	Active Ingredient (AI)	Trade Name	Registration Status	WHO Class	Usage
Egg Plant	Profenos 720g/l	Selecron 720 EC	Registered	II	Insecticide
Tomato	Diazinon	Diazinon 60 % EC	Registered	II	Insecticide
Coffee	Profenofos 720 g/l	Selecron 720 EC	Registered	II	Insecticide
	Chlorpyrifos	Dursban 4 E	Registered	II	Insecticide
Cabbage	Chlorpyrifos	Dursban 4 E	Registered	II	Insecticide
	Diazinon	Diazinon 60 % EC	Registered	II	Insecticide
Round potatoes	Chlorpyrifos	Dursban 4 E	Registered	II	Insecticide
Flowers	Carbaryl	Carbaryl	Unregistered	II	Insecticide
	Diazinon	Diazol	Unregistered	II	Insecticide
	Profenofos 400g/l + Cypemethrin 40g/l	Polytrin 440 EC	Unregistered	U	Insecticide
	Profenofos	Selecron 720 EC	Registered	II	Insecticide
	Aldicarb	Termic	Unregistered	1a	Insecticide

**Table 3. Suspected endocrine disruptors**

Crop	Active Ingredient (AI)	Trade Name	Registration Status	WHO Class	Usage
Tomato	Triadimefon	Bayleton 25 WP	Registered	III	Fungicide
	Endosulfan 350g/l	Thionex 35 EC	Registered	II	Insecticide
Coffee	Endosulfan 350g/l	Thiodan / Thionex 35 EC	Registered	II	Insecticide
	Lambda Cyhalothrin	Karate 5 EC	Registered	II	Insecticide
	Mancozeb 80 % w/w	Dithane M45	Registered	U	Fungicide
	Lambda cyhalothrin	Helarat 5 EC	Registered	II	Insecticide
Sukuma Wiki	Endosulfan 350g/l	Thiodan	Registered	III	Insecticide
Cabbage	Chlorpyrifos	Dursban 4 E	Registered	II	Insecticide
	Diazinon	Diazinon 60 % EC	Registered	II	Insecticide
	Endosulfan	Thionex 35 EC	Registered	II	Insecticide
Round potatoes	Chlorpyrifos	Dursban 4 E	Registered	II	Insecticide
Flowers	Carbaryl	Carbaryl	Unregistered	II	Insecticide
	Diazinon	Diazol	Unregistered	II	Insecticide
	Profenofos 400g/l + Cypemethrin 40g/l	Polytrin 440 EC	Unregistered		Insecticide
	Profenofos	Selecron 720 EC	Registered	II	Insecticide
	Aldicarb	Termic	Unregistered	1a	Insecticide
	Endosulfan	Endosulfan	Registered	II	Insecticide
	Lambda cyhalothrin	Helarat 5 EC	Registered	II	Insecticide
	Mancozeb	Mancozeb	Registered	U	Fungicide
	Triforine 190g/l	Meltatox	Unregistered	U	Fungicide
	Mancozeb 800mg/kg	Milthane Super	Unregistered		Fungicide
	Permethrin	Permethrin	Unregistered	II	Insecticide
	Endosulfan	Thiodan / Thionex 35 EC	Registered	II	Insecticide

**Table 4. Comparison between small scale farming and large scale farms**

Activity Description	Farmers	Flower Farms
Crops	Coffee, banana, maize, tomato, mnafu	Flowers - Roses
Usage purpose	Insecticides, fungicides and herbicides	Insecticides, fungicides and herbicides
Quantity purchased at a time	0.1 – 2L, 1.0 – 10 kg	0.25 – 20L, 1.0 – 10 kg
Spray equipment	Knapsack	Knapsack, pump sprayer machine, boom sprayer and dusting machine
Cleaning and calibration of sprayer	Cleaning done	Both done
Application time	Morning and evening	Morning and evening
PPE	Almost none	Used
Mixing	Inside containers, inside sprayer	Inside containers
Point of purchase	Pesticide dealers, small village shop, Cooperative Union	Pesticide dealers, Cooperative Union
Information on labels, MSDS	Few available	Available
Awareness of hazards	A number of them aware	A number of them aware
Disposal method for remaining chemicals	Reuse, burying	Reuse, disposal (unknown method)
Disposal method for containers	Burying, just throwing, in pit latrines, in holes, re-use	
Poisoning incidents (inhalation, skin, ingestion)	Some through inhalation and skin	Some through inhalation and skin
Consequences	Irritation, sneezing, skin rashes, headache	Irritation, sneezing, skin rashes, headache
Environmental pollution (wells and ground water)	No on wells but on groundwater	Pollution on groundwater
Environmental pollution (canals/rivers and vegetation)	Pollution	Pollution
Availability of extension services, frequency and relevancy to health and safety	- Available, - Not frequently - Not relevant	- Available - Frequently - Relevant
Use of organic farming	Used	Not used
Use of IPM	Used	Not used
Usage of empty containers	Some reuse	Some reuse
Type of containers	- Plastic - Paper bags - Nylon bags	- Plastic - Metal/ tin

### ***Bio and Organic Pesticides***

Bio and organic pesticides were only observed to be used by local farmers in their farming activities, none of the flower industry companies are using botanicals.

### ***PIC List***

The study did not reveal the use of any pesticide that is subject to the PIC procedure. However, this does not mean use of PIC listed pesticides does not exist in Arumeru District, more time and resources are needed to ascertain this.

### ***Major Chemical Industries***

Dow, Syngenta, Bayer, Du Pont and BASF dominate the pesticide market in the district.

### ***Crops and Pesticide Use***

Flowers consume a larger volume and types of pesticides (31 different types) than any other crop.

## **2. NEED FOR ALTERNATIVE POLICY**

The need for alternative regulatory system for management of chemicals is made on the following basis:

### **2.1 Complimenting the Government Regulatory System**

More often than not, the monitoring of pesticides and other hazardous chemicals is left in the hands of government regulatory bodies; very rarely are end users i.e. workers and farmers involved. As a consequence, more emphasis has been attached to ‘inspection’ rather than ‘monitoring’ due to the fact that these regulatory bodies are under staffed, ill-equipped and experience chronic financial difficulties.

For example, in Tanzania where agriculture is the main economic activity, in 2004 there were only 22 Factory / Workplace Inspectors in the Ministry of Labour, Employment and Youth Development and 2 Pesticide Inspectors in the Ministry of Agriculture, Food Security and Cooperatives, working with TPRI. It is obvious that the two institutions cannot effectively monitor pesticides and other chemicals in the country and that there is a need to involve other stakeholders such as workers, farmers and agricultural extension staff.

In addition, many stakeholders, particularly trade unions, have raised concerns about the poor quality of service or inspections due to the close relationship between government inspectors and the chemical industry. In order to overcome these weaknesses in the government monitoring system, there is a need for adopting and promoting an alternative system through community monitoring. Community monitoring provides a platform where farmers and workers can supplement government efforts in ensuring sound chemicals management.

### **2.2 Sound Chemicals Management**

In order for Tanzania to achieve sound chemicals management (as per the National Profile) and for the successful implementation of International Conventions, engagement of stakeholders particularly workers and local farmers is inevitable.

## **2.3 Information and Communication Problems**

Chemicals and Pesticides data in Tanzania is insufficient, unreliable and unavailable due to non-engagement of all stakeholders. Since workers and local farmers are not involved in data generation, most of the existing data does not reflect their health and environmental problems. There is a need to strengthen the multi-stakeholder approach in data generation, utilization and dissemination.

## **2.4 Need to Develop Capacity of Stakeholders**

Having recognized the importance of engaging stakeholders there is a need for national and international programmes to put in place concrete capacity building measures for workers, local farmers and communities. These stakeholders need skills on label interpretation, management of PPE and spraying equipment, field spraying, data recording and reporting, disposal of pesticides remains, containers and spraying equipment, and risk assessment.

## **3. POLICY PROPOSAL**

The following initiatives are proposed:

1. A review of the Occupational Health and Safety Act (2003) should be carried out for the purpose of:
  - i. strengthening the participation of workers and workers organizations in implementation, monitoring and evaluation of the Act.
  - ii. transforming ‘Workplace Inspections’ into ‘Workplace Monitoring’
  - iii. widening the scope of regulatory activities to include local communities and the general environment.
2. Establishment of Village Pesticide / Chemical Committees where all stakeholders (farmers, retailers, shop keepers, extension staff, CBOs, NGOs,) are represented and their roles are defined. Training on information interpretation from labels, proper application rate, time, mix ratio, target of application, and proper use of PPE.
3. Monitoring the borders for any porous importation that will make sure that only the registered pesticides are used.
4. Link pesticides uses to poverty reduction strategies i.e. research and promotion of non - chemicals methods, IPM – preventive rather than curative measures.
5. Establishment of capacity building programmes for communities, workers, farmers and other stakeholders particularly in monitoring, reporting, pesticide classification and labelling, risk assessment, use of PPE, and empty container management.

## 4. CONSEQUENCES UNDER CURRENT AND ALTERNATIVE POLICIES

The existing regulatory and policy framework provides for possibilities of illegal importation of POPs, PIC listed and other extremely hazardous pesticides through porous borders. Since Tanzania is one of the countries that requested permission to use DDT for disease vector control (under the Stockholm Convention provision for restriction to health care), it is likely that products containing DDT are also used in agriculture. The likelihood stems from the fact that Tanzania borders 8 countries (Kenya, Uganda, Democratic Republic of Congo, Rwanda, Burundi, Zambia, Malawi and Mozambique), that, as many other developing countries; lack proper regulatory mechanism needed to ensure the use of DDT is strictly restricted within the health sector. In addition, illegal pesticide trade has been reported in recent years and this may be another source of POPs use in agriculture.

Arumeru is one of the districts with intensive use of pesticides due to coffee, cut-flower, maize and vegetable farming. Arumeru is located in Arusha; which lies on the border between Tanzania and Kenya where it is claimed that illegal pesticide trade is a common practice. The community and work-place monitoring programme will assist in ascertaining whether DDT (and other POPs) are used in agriculture. Community monitoring can also assist in the identification of PIC listed and other hazardous pesticides that are still in use in the country.

For the alternative policies, there are intrinsic benefits of involving workers and farmers that can be derived from inclusion of these stakeholders in monitoring activities:

**First**, they are victims of pesticides! Pesticide and other chemicals have a direct impact on their (and families') health, environment and incomes. Their involvement will ensure that they take necessary steps to avoid these consequences.

**Second**, their numerical advantage ensures a wider geographical coverage within a short period of time. This generates reliable data, saves time and money.

**Third**, their all-time presence in areas where chemicals are used ensures *continuous* monitoring.

**Fourth**, since they purchase or handle chemicals in their daily activities; they are reliable sources of accurate data on volumes and types of chemicals used in the country.

**Fifth**, since the chemical industry and government regulatory agencies are the main actors in the implementation of the chemical conventions and the International Code of Conduct on the Distribution and Use of Pesticides (adopted by FAO Council, sometimes referred to as FAO Code), there is a need of involving a 'neutral' party i.e. workers and farmers in monitoring compliancy with international chemical conventions and the FAO Code.

## **5. EXPERIENCE WITH PROPOSED POLICY IN OTHER COUNTRIES**

The use of Community Monitoring is common in the Asia and the Pacific (AP) region. For the past 5 to 10 years, The Pesticide Action Network (PAN) AP has involved local communities in monitoring pesticides and chemical industries in the region. As a result, the Asia and the Pacific region is more advanced in terms of public awareness and data availability as compared to other developing regions.

Some communities in the AP region have managed to institute legal proceedings against chemical companies while others have adopted IPM particularly in the production of rice and vegetables. IPM has assisted these farmers to cut down costs of production and reduce health and environmental risks. The banning of Paraquat by the Malaysian government was a result of community monitoring initiatives by communities and workers in Palm Oil farms through assistance provided by local NGOs.

## **6. CONCLUSIONS**

In developing countries where financial resources are limited, chemicals management infrastructure is poor or non-existing, regulatory systems are weak or lack enforcement, and corruption is still flourishing, workplace and community monitoring is one of the best options for the sound chemicals management.

Community and Workplace Monitoring offers several advantages, it is cost effective and time saving, delivers reliable and accurate data. The study revealed a variety of pesticides used in different crops in the study area. Given that the area is suitable for a variety of crops, both cash and food crops, Community and Workplace Monitoring is important to ensure that only non-hazardous and registered pesticides are used, workers and farmers as well as consumers are well protected and consequently health and environmental impacts are eliminated.

However, in order for Community and Workplace Monitoring to be effective, there is a need of attaching legal powers through review of existing government regulatory systems. This includes policy and legislation review and institute effective enforcement mechanism. There is also a need for International Conventions and Agreements to include capacity building programmes for workers, farmers and local communities especially for the developing countries and countries with economies in transition.

## REFERENCES

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5. WHO, (2004). The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification.



## ANNEXES

### ANNEX I: Photos



Photo 1: Training of workplace monitors

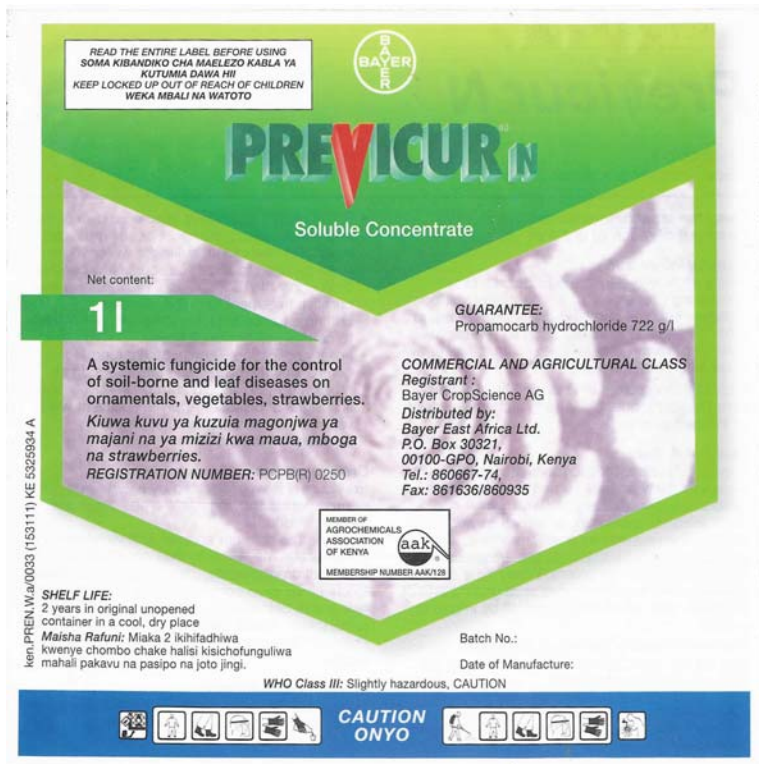


Photo 2A: One of the pesticide labels collected in one of the flower farms

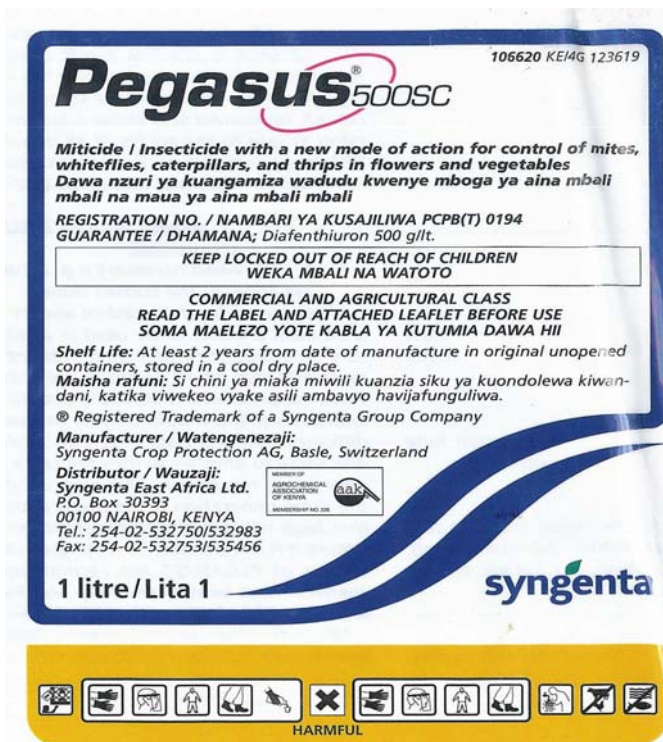


Photo 2B: Pesticide label collected in one of the flower farms



Photo 3: A worker spraying a fungicide during the monitoring exercise

**ANNEX II COMMUNITY MONITORING FORM**

**FORM NUMBER**

**Note: use one form for *only one* product**

**PROTOCOL FOR POPs MONITORING**

**INTERNATIONAL POPs ELIMINATION PROJECT (IPEP)**

Name of Farmer / Flower Farm-----

Name of Farm / Village -----

District -----Region-----Country-----

Type (s) of crop-----

Date-----

Name of Recorder-----

Product / Trade Name-----

Active Ingredient (AI)-----

Usage:

Purpose-----

Crop -----

Animal-----

House insects-----

Other-----

Quantity purchased: Kgs-----Litres-----

Quantity remaining: Kgs-----Litres-----

Spray equipment:

Type-----

Physical Condition-----

Calibration-----

Cleaning-----

Other use-----

Application:

rate-----

PPE used-----

time-----

mixing-----

personnel-----

storage-----

Effectiveness

    Effective-----

    Not effective-----

    Any alternative -----

Price per litre / kilogram-----

Point of purchase

    Extension staff-----

    Salesman-----

    Coop Union-----

    Small village shop-----

    Pesticide dealer in town-----

Information

    Availability of labels & MSDS-----

    Awareness of hazards-----

    Ability to interpret labels-----

Disposal methods

    Chemical remains-----

    Containers-----

Poisoning incidents

    Inhalation-----

    Skin contact-----

    Ingestion-----

    Consequences-----

Environmental Pollution

    Wells-----

    Rivers-----

    Ground water-----

    Vegetation-----

Extension services

    Availability-----

    Frequency-----

    Relevancy to health and safety-----

    Does it cover IPM, Organic Farming?-----

Use of empty containers

    Activities-----

Type of container-----