CAPACITY STRENGTHENING FOR SOUND MANAGEMENT OF PESTICIDES

REPORT OF A WORKSHOP

25–29 January 2010
Nairobi, Kenya

Public Health and Environment Intercountry Support Team,
Eastern and Southern Africa WHO Regional Office for Africa, Harare, Zimbabwe
&
WHO Pesticide Evaluation Scheme
World Health Organization Geneva, Switzerland

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1. INTRODUCTION

The WHO Pesticide Evaluation Scheme (WHOPES) and the WHO Regional Office for Africa (AFRO) jointly organized a workshop on capacity strengthening for sound management of pesticides held at the Laico Regency Hotel in Nairobi, Kenya, on 25–29 January 2010. The workshop was part of activities undertaken by the WHOPES Project on reducing health risks through sound management of pesticides, funded by the Bill and Melinda Gates Foundation. Of the 12 countries participating in the project, 6 were represented at the workshop (Cambodia, Kenya, Mozambique, Sudan, Thailand and United Republic of Tanzania). The meeting was also represented by the Food and Agriculture Organization of the United Nations (FAO), UNEP Chemicals and CropLife International as well as WHO consultants and the Secretariat from WHO headquarters, regional offices and country offices (as listed in Annex I).

Dr Birkinesh Ameneshewa, Vector Control Operations Officer (AFRO) and Dr Morteza Zaim, Team Leader, Vector Ecology and Management (WHO/HQ Geneva) welcomed the participants and thanked the WHO Country Office in Kenya for facilitating the Workshop and making logistic arrangements. They reiterated the WHO strategy to promote a multisectoral and multi-stakeholder approach to sound management of pesticides and thanked the participation of FAO, UNEP Chemicals and CropLife International in the workshop. The workshop was the continuation of the needs assessment carried out in the participating countries in order to further identify gaps and challenges, opportunities and actions for sound management of public health pesticides. WHO wished to work with the participating countries in developing national proposals and mobilizing resources to address the priority areas and actions identified.

Mr John Kariuki, Deputy Chief Public Health Officer, Ministry of Public Health and Sanitation also welcomed the participants on behalf of the Ministry of Public Health and Sanitation, Kenya. He referred to the needs assessment carried out in Kenya as part of the Project and the appropriate timing of the Workshop, and highlighted the need to develop clear policies and actions to improve pesticide management in Kenya.

Dr Alex Mpazanje, Acting WHO Representative (WR) to Kenya, welcomed the participants on behalf of the WR (Dr David Okello). Referring to the need for judicious use of pesticides and reduction of the burden of vector-borne diseases to achieve the Millennium Development Goals in Kenya, he requested the Workshop to suggest practical solutions and actions adapted to the health and development settings. He wished the participants a successful meeting and declared the workshop open.

Mr Harold van der Valk, WHO consultant, was appointed as the workshop's facilitator.

2. OBJECTIVES OF THE WORKSHOP

The general objective of the workshop was to strengthen the capacity of Member States in sound management of public health pesticides within a broader context of pesticide management. The specific objectives were:

1. To identify strategies and key actions needed to further streamline and harmonize registration of public health pesticides and to promote information exchange and work-sharing among the registration authorities;

2. To identify key actions to be undertaken for sound management of public health pesticides during their life-cycle, including implementing the principles of integrated vector management and monitoring and evaluation of vector control interventions;

3. To identify actions required to prevent trade in substandard and counterfeit public health pesticides in the market.

3. PROCEEDINGS

The workshop was held in plenary and working group sessions (see Agenda, Annex II) and focused on the following four areas.

3.1 PESTICIDE REGISTRATION

3.1.1 Presentations and plenary discussions

Mr Kevin Helps (FAO Senior Officer, Pesticide Management Group) presented the scope and objectives of the Code of Conduct on the Distribution and Use of Pesticides [1] and briefly described the role of governments, industry and other stakeholders in implementing its articles.

Participants were asked how many were aware of or had read the Code of Conduct: very few were aware of the Code or had read its contents. The current code was published in 2002 following a lengthy consultation process among international organizations, civil society and the pesticide industry. The Code of Conduct is a framework for the sound management of all pesticides.

The various articles of the Code and the concept of the pesticide life-cycle were introduced and the need highlighted to define the role of each stakeholder at various stages in the life-cycle along and to promote cooperation among stakeholders at national and international levels.

Guidelines had been published and other tools produced for sound management of pesticides; FAO provided training activities on sound management of pesticides. There was need for a more long-term programme for capacity building at country and regional levels. A distance learning postgraduate diploma and masters degree courses on pesticide management were being developed in collaboration with the University of Cape Town (UCT); a forum was available – via a secure web chat room (UCT Vula site) – for exchange of information on pesticide issues.

Dr Zaim presented the work of WHOPES and briefly described its mandate and the process and procedures for testing and evaluating public health pesticides under the Scheme. The objectives of WHOPES were two-fold: (1) to facilitate the search for alternative pesticides and application methods that are safe and cost-effective; and (2) to develop and promote policies, strategies and guidelines for the selective and judicious application of pesticides for public health use, and to assist and monitor their implementation by Member States. The vision, strategies and priority activities of the Scheme were presented and participants were informed of the availability of guidance documents to support sound management of pesticides by Member States and other

[1] The International Code of Conduct on the Distribution and Use of Pesticides (revised version) was adopted by the 123rd Session of the FAO Council in November 2002 and is available on the FAO web site at http://www.fao.org/DOCREP/005/Y4544E/y4544e00.htm.

stakeholders. [1] The meeting was informed about the scope of the WHOPES recommendations on the use of public health pesticides; and of the FAO/WHO joint programme on sound management of pesticides, which was established in March 2007 to ensure complementary, harmonized and coordinated response and guidance to responsible bodies at the national level and to all stakeholders on sound management of pesticides.

Mr van der Valk presented the principles, organization and process for registering pesticides with national registration authorities, emphasizing the key principles promoted by guidelines due to be published by FAO/WHO for the registration of pesticides. Participants were reminded of the responsibilities of governments and industry in registering pesticides, as outlined in the Code of Conduct and briefly summarized below.

Governments should:

- establish a legal system for the registration of pesticides;
- create the technical and administrative infrastructure necessary to manage applications received for registration;
- maintain a dialogue with applicants on all matters relating to registration of pesticide products;
- grant or refuse registration in a timely and transparent manner;
- set up systems that allow for appropriate checks and balances to be made in decision-making, including appeal procedures;
- conduct risk evaluations and make risk management decisions;
- establish and maintain a system for monitoring the use of pesticides under actual conditions (“post-registration surveillance”);
- establish a re-registration procedure to ensure the periodic review of pesticides and conduct of unscheduled reviews of registered pesticides;
- cooperate with other governments in the establishment of harmonized pesticide registration requirements, procedures and evaluation criteria; and
- comply with the requirements of relevant multilateral agreements.

Pesticide industry should:

- supply all information as specified by the responsible national authorities while applying for registration;
- provide an objective assessment of pesticide data, together with all the necessary supporting data on the product;
- provide the responsible authorities with any new or updated information on a pesticide that may have a bearing on its registration;

[1] http://www.who.int/whopes/recommendations/who_fao_guidelines/en/index.html and http://www.who.int/whopes/recommendations/en/.

- refrain from putting any product, subject to registration, on the market prior to approval of the competent national authority;

- strictly comply with conditions, as specified in the registration requirements;

- provide draft labels and other forms of information, such as material safety data sheets, which are fully consistent with all registration requirements and legislation; and

- take voluntary corrective action when problems occur and, when requested by governments, help find solutions to such problems.

The three presentations were followed by a plenary discussion during which the following issues were highlighted:

- the feasibility of making the Code of Conduct a legally-binding instrument;

- the significance of establishing an efficiently-run poison centre for pesticide registration and re-registration;

- the lack of any provision in the Code of Conduct for location of pesticide manufacturing plants;

- the need for the support of an international body, such as WHO, to facilitate harmonization of public health pesticide registration among Member States, noting its urgency;

- the need for greater collaboration among international organizations at country and regional levels for sound management of pesticides;

- the need to develop a formal platform to institutionalize regular dialogue between industry and pesticide registration authorities within the regulatory framework for exchange of information;

- the need for periodic review and re-registration of pesticides; and

- the importance of raising awareness on the use of information regarding the reasons for non-registration of a pesticide product in the country of its origin as this could be due to reasons other than safety.

3.1.2 Working group discussions and recommendations

A group discussion on public health pesticide registration practices in the participating Member States followed. Participants of each country established a separate working group to identify challenges and obstacles in registration of public health pesticides and to propose actions to further streamline and harmonize registration procedures and requirements of such products. The outcome of the group discussions on this topic is presented in Annex III. Based on the common challenges and obstacles, the following recommendations were made:

RECOMMENDATIONS – PESTICIDE REGISTRATION

Participating countries, through the leadership and support of the National Steering Committee established under the WHOPES/Gates project:

- and in collaboration with WHO and FAO, to review and revise pesticide legislation to support regulation of public health pesticides;

- and in collaboration with WHO, FAO and UNEP, to strengthen national capacity for assessment of the registration dossier of public health pesticides including risk assessment and risk–benefit analysis; and

- and in collaboration with WHO, FAO and UNEP, to strengthen capacity for post-registration monitoring and evaluation of public health pesticides as well as operational research on their use and impact on human health and the environment.

WHO:

- to facilitate and support regional collaboration on management of public health pesticides, including harmonization of registration requirements and procedures, information exchange and work-sharing;

- to support development of regional "geographical zoning" to facilitate data sharing and assessment; and

- to support Member States in review and adoption of FAO/WHO guidelines relating to life-cycle management of public health pesticides.

3.2 PROCUREMENT, STORAGE, TRANSPORTATION, DISTRIBUTION AND DISPOSAL OF PESTICIDE WASTE AND CONTAINERS

3.2.1 Presentations and plenary discussions

3.2.1.1 Procurement of pesticides

Mr Soo Hian Tan, WHO consultant, presented the policy, principles and guidelines for procurement of pesticides, including forecasting and planning tender documentation, criteria of selection and bid evaluation, pre-shipment and on-arrival inspection and quality control.

He highlighted that pesticide procurement is a highly specialized and complex subject that requires national policy and guidelines with clear and transparent procedures supported by appropriate legal provisions and controls. He emphasized the need to include in the tender invitations information relating to the packaging and labelling as well as any protective equipment and antidotes that might be required.

The importance of quality control of products to be procured was emphasized. The organizational and procedural requirements for processing tender documents were presented and discussed and the meeting's attention was brought to the existing FAO provisional guidelines on tender procedures for procurement of pesticides.[1] Emphasis

[1] www.bvsde.paho.org/bvstox/i/fulltext/fao16/fao16.pdf.

was given to the importance of using WHO specifications, as internationally agreed quality standards, for the quality control of public health pesticides.

In the plenary session that followed, several issues were discussed and highlighted:

- As far as possible, the generic name of a pesticide should be included in tender documentation to ensure greater competition;
- Quality control of pesticide products should be performed pre- and post-shipment for compliance with ALL physical and chemical requirements of a product specification;
- Tender documents should include provisions under the conditions of the tender that bind the supplier to collect back the rejected substandard product at its own cost;
- Pesticide products should be properly packaged to meet relevant international and national transportation requirements as well as product specifications; and
- National authorities should consider inclusion of after-sales services, such as training and collection and disposal of empty pesticide containers in tender documentation.

3.2.1.2 Storage, transportation and distribution of pesticides

Ms Susan Njoroge, representing CropLife International, made a presentation on storage, transportation and distribution of pesticides. Discussion included the basic principles of selecting the location, design and structure of storage facilities, store safety and stock management, the general considerations in transportation of pesticides, including packaging, marking and labelling, and climatic considerations, as well as handling methods, equipment, carrier selection and route planning. Considerations in loading and dispatch of pesticides were explained and the relevant emergency principles and procedures were highlighted.

In the plenary session that followed, actual practices and realities on the ground as they relate to the storage and transportation of pesticides were discussed.

3.2.1.3 Disposal of pesticide waste and containers

Mr Helps made a presentation focusing on the issues relating to the safeguarding and disposal of pesticides and associated wastes. The presentation dwelt primarily on the experience of FAO on the safeguarding and disposal of pesticides and associated wastes in Africa (including ministry of health stocks). The practical application of a series of technical guidelines was also presented along with the use of systems relating to risk assessment, stock management, store and transport management, monitoring and evaluation (M&E) and workers' or environmental safety. The need to adopt international best practices and demonstrate compliance with international instruments such as the Basel and Stockholm Conventions was also emphasized.

The presentation began by introducing the concept of scoping the inventory and defining the likely “waste matrix” (pesticides, containers, soils, etc.). The inventory was more than a simple list of chemicals. The process for accurate inventory was

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The direct FAO link is: http://www.fao.org/agriculture/crops/core-themes/theme/pests/pm/code/frame/implement/distribution/en/

discussed along with the presentation of guidelines on how to complete the inventory process. The use of inventory data as a tool to evaluate environmental risk and the use of tools to estimate the risk of stores via the application of the Environmental Management Tool Kit (EMTK) and Pesticide Stock Management System was elaborated.

Mr Helps presented strategies relating to the safeguarding and disposal strategies. The development of workable strategies for safeguarding and disposal based on the inventory and environmental assessment results formed the basis of this section. The need to define the *Who, What, Where, When and How* of implementation as part of the planning process was emphasized. The consolidation of strategies into environmental management plans and workplans was presented as the most effective mechanism to effectively plan the implementation phase of any project. The concept of planning as an investment for success was introduced using the phrase, "*If we fail to plan, we are planning to fail*". The need to adopt international best practices for disposal of wastes and adherence to disposal limits of persistent organic pollutants (POPs) was highlighted. Opportunities for local treatment of wastes were discussed, provided compliance with international standards could be confirmed. The options for disposal of pesticide waste, used containers and contaminated soil waste were outlined and the absence of suitable pesticide disposal facilities in developing countries was highlighted.

The need to adopt the highest levels of health, safety and environmental compliance during project implementation was stressed. Implementation based on utilization of national capacity from within the government, pesticide industry and waste management industrial sectors was presented. The idea of maximizing national efforts in project implementation yet maintaining high standards of operation was highlighted as the most effective mechanism for implementation. The importance of procurement processes in the implementation phase was emphasized and the need to ensure quality standards for equipment and operations was again presented as a critical component in the implementation phase.

The concept of M&E as a multi-tier/multi-stakeholder responsibility was also presented. The need to combine workplan implementation with worker/health surveillance and environmental monitoring was addressed. Additional requirements for independent monitoring and evaluation and the possible role of different agencies, nongovernmental organizations (NGOs) and consultants were highlighted.

The high unit cost of implementation of a safeguarding and disposal project (US$ 3500–5500 per tonne disposal of waste) depending on type of waste, location of the disposal facility and quantity of waste (lower unit rate for more waste) was presented. The need to factor disposal costs in the initial cost estimate for use of a pesticide was emphasized as this can have a significant impact on the choice to use pesticides compared with other alternatives. The need to avoid over-supply against the actual need of the pesticide in the country was stressed as the best mechanism to avoid accumulation of obsolete products and the need for costly disposal. The opportunities for linkages with existing initiatives for container recycling were addressed. Similarly, the need to treat contaminated soils using a risk-based strategy aimed at preventing a worsening of the extent of contamination and minimizing contamination of ground water was emphasized.

3.2.2 Working group discussions and recommendations

A group discussion was held to review national practices relating to procurement, storage, transportation and disposal of pesticide waste and containers. Participants of each country once again established a separate working group to identify gaps and challenges on these subjects and to propose actions for capacity strengthening. The outcome of the group discussions on these topics is presented in Annex III (Working Group, Session 2). Based on the common challenges and obstacles identified, the following recommendations were made:

RECOMMENDATIONS – PROCUREMENT, STORAGE, TRANSPORTATION AND DISPOSAL OF WASTE

Participating countries, through the leadership and support of the National Steering Committee established under the WHOPES/Gates project:

- and in collaboration with WHO, to enhance awareness of policy-makers and programme managers on the importance and requirements of management of public health pesticides, including procurement, storage, transport and disposal of pesticide waste;

- to develop, in line with WHO and FAO guidelines, transparent procedures and requirements for procurement of public health pesticides and ensure quality control as an integral part of that process. In selecting pesticide products for vector control, due attention should be given to the cost of their application as well as that of their transportation, storage and disposal;

- and in collaboration with WHO, to strengthen the capacity for transportation and storage of public health pesticides with urgency, noting the general shortage of appropriate facilities, equipment and trained human resources;

- and in collaboration with WHO and FAO, to develop sustainable solutions for management and disposal of pesticide waste (including empty containers). Intersectoral collaboration is required for sustainable management of such wastes;

- to strengthen their legal framework to ensure that procurement and management of public health pesticides by different stakeholders in the country (e.g. municipalities and NGOs) follow national policy and guidelines; and

- in collaboration with WHO, to strengthen their legal framework to ensure safe and effective distribution, use and disposal of household pesticides.

WHO

- in collaboration with FAO, to engage the pesticide industry in mobilizing resources to support countries in management and disposal of public health pesticide waste;

3.3 QUALITY CONTROL OF PESTICIDES AND COMPLIANCE WITH AND ENFORCEMENT OF PESTICIDE REGULATIONS

3.3.1 Presentations and plenary discussions

3.3.1.1 Quality control

Mr Tan discussed the legislative, administrative and infrastructure (facilities and trained human resource) requirements as well as the key practical considerations for quality control of pesticides. He emphasized that for the successful control of pests and vectors it is essential that pesticide products are of acceptable quality and do not cause any unacceptable effects when used as recommended. The responsibilities of governments are stated in the Code of Conduct. Legislation on quality control of pesticides should make provisions for, among others:

- taking enforcement actions relating to poor quality and unregistered pesticides as well as counterfeit pesticide products;

- specifying the procedure for taking samples for quality control analysis, including the manner of sampling, the number of samples to be taken, who should draw the samples, who is qualified to carry out the analysis and actions in the event that the results of the analysis are challenged;

- imposing adequate penalties to act as a deterrent for non-compliance;

- regulating licensing for the manufacture/ formulation, distribution and sale of pesticides;

- appointing officers to take enforcement samples of pesticides as well as prosecute offenders; and

- appointing official chemical analysts.

Mr Tan deliberated on various actions that may be taken by the regulatory or responsible national authority with or without access to local pesticide analytical laboratory facilities. Pesticide manufacturers/formulators should establish an in-house quality control facility and provide a copy of the test report for every batch of pesticide produced, when requested by the responsible regulatory authority. Detailed, practical considerations for quality control of pesticide products that are either submitted for registration or collected as "enforcement samples" or randomly drawn market samples were provided.

3.3.1.2 Compliance and enforcement

Mr van der Valk presented the core principles of compliance and enforcement of pesticide regulations. The responsibilities of governments are stated in the Code of Conduct, one of which requires governments to introduce the necessary legislation for the regulation of pesticides and make provisions for their effective enforcement. FAO

Guidelines on compliance and enforcement of a pesticide regulatory system[1] contain the 10 core principles of compliance monitoring and enforcement. These are:

- The goal of immediate, full and continuous compliance.
- An overall culture of compliance, which is critical to achieving compliance goals.
- Compliance goals are most achievable if requirements are clear, widely known and understood.
- Regulated entities should consider self-correcting activities as preferable to government detection.
- There should be a reasonable likelihood that violations will be detected by or brought to the attention of government.
- Governmental response to violations should be fair, predictable and proportional.
- There should be a "level playing field" (that is, no comparative economic advantage to non-compliance).
- Governments must send messages that will encourage deterrence, including publicity on violations.
- Public and private regulated entities should have to play by the same rules with similar consequences for non-compliance.
- Government should be transparent (consistent with law enforcement needs or confidentiality and with rights of private parties) and accountable.

In the plenary session that followed, various legislative, administrative and infrastructure requirements as well as issues related to the enforcement of pesticide legislation and pesticide quality control were discussed. The following main issues were noted:

- Participation in inter-laboratory testing (ring test) is important for capacity strengthening of quality control laboratories. National/reference quality control laboratories are encouraged to liaise with the Collaborative International Pesticide Analytical Council (CIPAC) and to participate in the collaborative studies organized by CIPAC;

- Only internationally agreed analytical methods and physical test methods that support FAO and WHO specifications should be used in quality control of pesticides, when available;

- Guidelines for national laboratories on quality control of pesticide products, jointly developed by CIPAC, FAO and WHO, provide guidance for quality control of pesticides (i.e. on organization and management; staff qualifications and training; facilities; equipment; chemicals; and operational procedures. A reference quality control laboratory should be specified in the national law;

- Samples of pesticide products that have been analysed in a quality control laboratory should be kept for a reasonable period in case of an appeal. The period should be determined based on national rules and guidelines and be communicated with industry and other stakeholders. The samples should be stored in secure and temperature-controlled areas and in accordance with prescribed storage conditions;

[1] http://www.fao.org/agriculture/crops/core-themes/theme/pests/pm/code/frame/implement/compliance/en/

- Self-checking of pesticide retailers and vendors by the association of pesticide industry, as reportedly practiced in some participating countries, is a useful practice and should be promoted;

- Intercountry collaboration for quality control of pesticides is important, especially where resources for establishing and sustaining such facilities are not feasible;

- WHO, in collaboration with CIPAC, should support countries, depending on availability of resources, in proficiency testing of quality control laboratories; and

- According to Article 4.1.5 of the Code of Conduct, industry should develop and provide, at the request of a country, the necessary analytical standards for quality control of pesticides.

3.3.2 Working group discussions and recommendations

A group discussion followed to review current practices relating to the control of pesticides and in particular addressing issues on substandard and counterfeit products in participating countries. Participants of each country identified gaps and challenges on these subjects and proposed actions for capacity strengthening. The outcome of the group discussions on this topic is presented in Annex III (Working Group, Session 3). Based on the common challenges and obstacles, the following recommendations were made:

RECOMMENDATIONS – QUALITY CONTROL AND ENFORCEMENT OF PESTICIDE REGULATIONS

Participating countries, through the leadership and support of the National Steering Committee established under the WHOPES/Gates project:

- to collaborate with WHO and FAO to strengthen the capacity of their pesticide quality control laboratory in line with their national action plan developed as part of the WHOPES/Gates project;

- to collaborate with WHO, FAO and industry to forge intercountry collaboration to prevent trade in substandard, counterfeit and illegal pesticide products and develop a warning system on such trade;

- to raise awareness of end-users and other stakeholders and sensitize policy-makers about the risks and negative impacts of substandard pesticide products; and

- to collaborate with WHO and FAO to enhance national coordination and build human capacity for compliance monitoring and enforcement of pesticide regulation.

3.4 SAFE AND JUDICIOUS USE OF PUBLIC HEALTH PESTICIDES AND MONITORING AND EVALUATION OF VECTOR CONTROL INTERVENTIONS

3.4.1 Presentations and plenary discussions

3.4.1.1 Judicious use of pesticides

Dr Zaim presented the rationale for, and urgent consideration that should be given by national programmes to, judicious use of pesticides in vector-borne disease control as well as in nuisance pest control operations. The arsenal of less hazardous and cost-effective products for this purpose is depleting. A rational decision-making process for the judicious use of pesticides for vector control interventions was introduced, emphasizing the urgent need to develop strategies and approaches to minimize the use of insecticides. Where use of insecticides is essential, guidance is available on how their application can be better targeted in time and space.

Dr Zaim urged the participating countries to develop a national policy on public health pesticide management to ensure safe and judicious use of pesticides and their sound

management. These were required for sustainable control of vector-borne diseases and control of nuisance pests in public health as well as for strengthening regulatory control over distribution and use of public health pesticides to minimize risks to human health and the environment. The driving forces for the formulation of such a policy in Member States were discussed. The policy should define the objectives, targets and means to achieve them and should provide indicators to measure progress. It should allow assessment of whether existing legislation and tools for sound management of public health pesticides are adequate. The policy would enable creation of a platform for engagement and seeking consensus of all stakeholders and could serve as a framework for resource allocation.

Dr Zaim also presented the principles of integrated vector management (IVM) as a key strategy for the sound management of public health pesticides. The IVM strategy:

- employs sustainable approaches compatible with local health systems, resources and infrastructure;
- deploys cost-effective strategies and interventions;
- uses control strategies or interventions adapted to vector ecology and behaviour;
- ensures judicious use of pesticides and their sound management;
- fosters intersectoral and intra-sectoral collaboration; and
- integrates all available and effective measures and resources.

IVM requires institutional arrangements, regulatory frameworks, decision-making criteria and procedures that can be applied at the lowest administrative level. It should be supported by operational research and thorough routine monitoring and evaluation.

3.4.1.2 Monitoring and evaluation

Dr Rajpal Yadav, Scientist, WHOPES, presented the role of M&E in vector control interventions and noted that M&E is an essential component for effective management of vector control programmes. M&E measures the accountability of public health professionals for activities and assists in reporting accurate and comparative assessment of performance as well as in rational decision-making processes, keeping in view the objectives of the intervention activity or programme.

Monitoring is an ongoing activity that measures the implementation of a range of strategic activities, while evaluation is a periodic activity according to the changes expected that measures the extent to which programme objectives are being reached. Process, outcome and impact indicators were defined and the major indicators used for monitoring and evaluation of main vector control interventions were presented, including indoor residual spraying and use of long-lasting insecticidal mosquito nets for malaria prevention and control. The indicators to be used in M&E should be relevant, reliable, measurable and adaptable. Various M&E tools including entomological methods are used in monitoring the process of implementation and evaluation of the outcomes and impact of interventions.

In the plenary session that followed the presentations on the two above-mentioned subjects, the following issues were noted:

- In Africa, there is a general lack of up-to-date data/information on vector distribution and the burden of vector-borne disease; lack of clear understanding of IVM and its principles; and grossly inadequate human resources for undertaking vector control interventions, including operational research and M&E;

- In some externally-funded projects, the baseline information needed for planning and proper execution of vector control activities has been lacking. Resources should be allocated to ensure availability of such information for rational decision-making;

- The lack of alternative public health pesticide compounds, especially those for treatment of mosquito nets for malaria prevention and control, is cause for grave concern;

- The need to harmonize vector control interventions across all national vector control programmes for optimization of resources and tools;

- The importance of developing a monitoring and evaluation system as well as capacity for efficient management of vector control programmes across all vector-borne diseases, i.e. an integrated M&E system;

- The general lack of capacity in entomological services and vector control in national programmes and inadequate coordination and communication with academia and research institutions for better utilization of available resources, where such resources are available;

- The experience of the WHO Regional Office for the Eastern Mediterranean (EMRO) in obtaining support from the Regional Committee for resource allocation and implementation of IVM in Member States, which can be emulated as a model by other WHO regional offices;

- Establishment of a Master's course in medical entomology in Sudan and a regional IVM training course in India to support capacity building for implementation of vector control based on the IVM approaches; and

- General lack of capacity for cost-effectiveness assessment of vector control interventions as a basic requirement for implementing IVM.

3.4.2 Working group discussions and recommendations

In the group discussion that followed, national practices relating to the judicious use of public health pesticides and M&E were reviewed, main challenges were identified and ways forward were proposed. The review took into consideration the organization, intersectoral and intra-sectoral collaboration, capacity and resources of participating countries, as well as the following issues:

- national policy on IVM (existence, extent of use and lessons learnt);

- national policy on public health pesticide management; and
- operational research and routine M&E of vector control interventions.

The outcome of the working group discussions of each participating country is detailed in Annex III (Session 4). The following are the general recommendations derived from the discussions:

RECOMMENDATIONS – SAFE AND JUDICIOUS USE OF PUBLIC HEALTH PESTICIDES AND MONITORING AND EVALUATION OF VECTOR CONTROL INTERVENTIONS

Participating countries, through the leadership and support of the National Steering Committee established under the WHOPES/Gates project:

- and in collaboration with WHO, and with the aim of ensuring safe and judicious use of pesticides in public health, to build capacity for operational research and routine monitoring and evaluation of vector control interventions;

- and in collaboration with WHO, to establish a national policy for public health pesticides, for sustainable vector-borne disease control and nuisance pest control; and

- and in collaboration with WHO, to establish a national policy for Integrated Vector Management, and to ensure its use as a key strategy in the sound management of pesticides.

4. CONCLUSIONS AND GENERAL RECOMMENDATIONS

In addition to the specific recommendations made by the participants of the workshop for sound management of pesticides through different stages of their life-cycle, the following general recommendations were given:

GENERAL RECOMMENDATIONS TO PROJECT-PARTICIPATING COUNTRIES

Participating countries, through the leadership and support of the National Steering Committee established under the WHOPES/Gates project:

- to seek support from the respective WHO Regional Committee for the establishment of a national policy on public health pesticide management and Integrated Vector Management; and

- in close collaboration with WHO, to mobilize resources, build capacity for and expedite implementation of the National Action Plan developed for public health pesticide management.

WHO:

- to finalize the report in consultation with the participants of the workshop; share the final report with the National Steering Committee, and follow up the progress made in implementing the workshop's recommendations after one year.

Based on the lessons learnt through the implementation of the WHOPES/Gates Project in the participating countries and through the discussions in the workshop, the following recommendations were addressed to Member States and WHO.

GENERAL RECOMMENDATIONS TO MEMBER STATES AND WHO

Member States

- to streamline sound public health pesticide management into national health policy and relevant development programmes;

- to establish and/or strengthen multi-stakeholder platform for sound management of public health pesticides to optimize the use of resources and coordinate actions;

- to establish intercountry coordination and collaboration for management of public health pesticides and develop mechanisms for information exchange;

- to ensure that all actions relating to sound management of public health pesticides are an integral part of all donor-supported programmes and projects (e.g. the Global Funds to Fight HIV/AIDS, Tuberculosis and Malaria and the United States President's Malaria Initiative).

- to draw to the attention of policy-makers, national vector control programme managers and other national stakeholders, including end-users, the risks of substandard pesticide products.

WHO

- to raise awareness among Member States, regional and international organizations and the donor community of the importance of sustainable and sound management of public health pesticides.

- to support Member States in developing legislation and national policy for management of public health pesticides;

- to support Member States in developing and implementing national action plans for Integrated Vector Management and for judicious use of pesticides;

- to mobilize resources and support capacity strengthening of Member States for life-cycle management of public health pesticides, in collaboration with FAO and UNEP;

- to facilitate and support regional collaboration on management of public health pesticides, including harmonization of registration requirements and procedures, information exchange and work-sharing. Also, to support development of regional geographical zoning to facilitate data-sharing and assessment; and

- to support Member States in review and adoption of FAO/WHO guidelines on life-cycle management of public health pesticides.

5. CLOSURE OF THE MEETING

The following professionals addressed the workshop in its closing session: Professor Ahmed Mahagoub Elhindi and Mr Joseph A. Onuonga, on behalf of the participants, and Dr Wilfred Ndegwa (WHO Country Office, Kenya) and Dr Morteza Zaim (WHO/HQ, Geneva).

Professor Elhindi expressed his great satisfaction at the workshop's outcome and of the way forward suggested for sound management of pesticides. The proceedings had been interesting and useful. Participating countries faced several challenges, which required capacity strengthening and mobilization of resources for regulation and management of pesticides to minimize the risks to human health and the environment. WHO/HQ and the WHO Regional Office for Africa (AFRO) were thanked for organizing the workshop and for their efforts to strengthen the capacity of Member States for effective management of pesticides.

Mr Onuonga, recalling the lively discussions that had ensued during the workshop and the usefulness of its deliberations in paving the way forward to meet the challenges faced by most participating countries in management of pesticides, acknowledged the work of WHO, its partner organizations and consultants; as well as the contributions of participants in reviewing the challenges and gaps and in deliberating on possible national actions and collaborative efforts in making effective use of pesticides through capacity-building in Member States.

Dr Ndegwa thanked all the participants, including the WHO staff, for making the workshop a success and appreciated that the WHO Country Office in Kenya had been chosen to host the workshop.

Dr Zaim thanked the Government of Kenya on behalf of WHO/HQ and AFRO for agreeing to hold the workshop in Nairobi and for providing generous hospitality. The WHO Country Office and the WHO Representative to Kenya had facilitated excellent conduct of the workshop. Technical support had been provided by Mr Harold van der Valk, who was always highly supportive of the work of WHO. Special thanks were extended to WHO regional advisers, representatives of FAO, UNEP Chemicals and CropLife International and resource personnel for their immense support in successful completion of the Workshop; fruitful collaboration was looked forward to in the future.

Dr Zaim gratefully acknowledged country representatives for sharing their vast and practical experiences during the workshop and called upon them to be ambassadors for sound management of pesticides in their own countries. The draft resolution adopted by the 126th WHO Executive Board on prevention and management of obsolete pesticides would be considered by the 63rd World Health Assembly in May 2010. This move reflected the commitment of WHO and its Member States at the highest level of policy in working together to ensure the effective use of pesticides while minimizing their risks to public health and the environment. The Bill and Melinda Gates Foundation had been highly supportive of WHO's efforts in strengthening capacity for management of pesticides and had provided timely support.

In the end, he briefed the participants on the modality of finalizing the report of the Workshop and its follow up actions, wished all of them a safe journey back home. The meeting was closed by Dr Zaim.

ANNEX I

LIST OF PARTICIPANTS

Participating countries

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ANNEX II

AGENDA

Day 1

08:30–0900	Opening – **WHO Representative, Kenya** Introduction of participants Objectives of the workshop – **Harold van der Valk**
09:00–09:30	Introduction to the Code of Conduct on the Distribution and Use of Pesticides – **Kevin Helps**
09:30–10:15	Pesticide registration and enforcement of a pesticide regulatory programme – **Harold van der Valk**
10:15–10:45	Tea/Coffee break
10:45–11:15	WHO Pesticide Evaluation Scheme; guiding tools/resources and recommendations – **Morteza Zaim**
11:15–12:15	Discussion
12:15–12:30	Introduction to Working Group discussions
12:30–14:00	Lunch break
14:00–15:30	Working Groups – Review present public health pesticide registration practices in the country and to identify actions to further streamline and harmonize their registration
15:30–16:00	Tea/Coffee break
16:00–17:30	Working Groups (continued)

Day 2

0:8.30–10:00	Working Group presentations – registration of public health pesticides
10:00–10:30	Tea/Coffee break
10:30–12:30	Discussion and recommendations
12:30–14:00	Lunch break
14:00–14:30	Procurement of pesticides – **Tan Soo Hian**
14:30–15:30	Discussion
15:30–16:00	Tea/Coffee break

16:00–16:30	Storage, transportation and distribution of pesticides – **Susan Njoroge**
16:30–17:30	Discussion

Day 3

08:30–09:00	Disposal of pesticide waste and containers – **Kevin Helps**
09:00–10:00	Discussion
10:00–10:30	Tea/Coffee break
10:30–12:30	Working Groups - Review current national practices relating to procurement, storage, transportation and disposal of pesticide waste and containers and to propose actions for capacity strengthening
12:30–14:00	Lunch break
14:00–15:30	Working Groups (continued)
15.30 - 16.00	Tea/Coffee break
16:00–17:30	Working Group presentations

Day 4

08:30–09:30	Discussion on working group presentations and recommendations
09:30–10:00	Quality control of pesticides – **Tan Soo Hian**
10:00–10:30	Tea/Coffee break
10:30–11:00	Discussion
11:00–12:30	Working Groups - Actions to address substandard and counterfeit public health pesticides in market
12:30–14:00	Lunch break
14:00–15:30	Working Group presentations
15:30–16:00	Coffee break
16:00–17:30	Discussions and recommendations

Day 5

08:30–09:00	Safe and judicious use of public health pesticides – **Morteza Zaim**
09:00–10:00	Discussion
10:00–10:30	Tea/Coffee break
10:30–11:00	Monitoring and evaluation of vector control interventions – tools and process – **Rajpal Yadav**
11:00–12:00	Discussion
12:00–13:30	Lunch break
13:30–15:30	Working Group - Actions to support decision making for judicious use of public health pesticides
15:30–16:00	Tea/Coffee break
16:00–17:15	Working Group presentation and recommendations
17.15–17:30	Closing

ANNEX III

WORKING GROUP SUMMARIES

CAMBODIA

WORKING GROUP SESSION 1. PESTICIDE REGISTRATION

1. Current situation

The scope of the current legislation is limited to only agricultural insecticides that are covered under sub-decree 69, which does not apply for public health insecticides (PHPs).

Regulation of pesticides is available but not covered by the law. The law on Environmental Protection and Natural Resources Management contains some broad protective legislation, certain administrative management and provision for punitive action. There is no systematic safety monitoring procedures on safe use of pesticides and the exposure scenarios for a range of public health applications are urgently required, as this information is needed to write labels informing the operators and the community. There is a rather limited capacity and knowledge on registration of public health insecticides, Code of Conduct, post-registration monitoring and evaluation, risk assessment, re-registration procedures and pesticide life-cycle management.

2. Challenges

Even though there is no legislation in place for registration of public health pesticides, the Ministry of Health (MoH) can register such products during the bidding process. There is at present no system of quality control of these pesticides, but the MoH have done monitoring to assess efficacy once a product is in place.

There is a lack of skilled manpower and resources to conduct risk assessment of these products under local situation. Condition(s) are imposed by donors/some agencies to buy a particular product for vector control. Bureaucrats are not fully aware of the importance of these issues.

Product labels written in foreign language than in local language are more appreciated by the community due to limited awareness of these issues.

3. Priority actions

3.1 Short-term actions

- Use WHOPES recommendations to select the appropriate pesticide products for public health;

- MoH and other ministries to jointly develop Simplified National Guidelines such as for selection process, registration, quality control, risk assessment, post-registration procedures, storage, safe use and disposal, monitoring and evaluation;

- Training of private sectors personnel, farmers, sellers, and users on risk or risk-benefit assessment and also for MoH and Ministry of Agriculture, Forestry and Fisheries (MAFF) staff in the pesticide registration and other procedures described in the National Guidelines;

- There is already an on-going initiative by MAFF supported by FAO to strengthen the legal framework. However, the MoH needs to work closely with FAO and WHO to finalize the drafting of the umbrella law by mid-2010;

- There is currently no quality control check of public health pesticides. One way to overcome this problem is to send samples of procured pesticides to one of WHO Collaborating Laboratories (to be paid by the supplier according to the terms of the tender);

- The data submitted for registration of agricultural pesticides are mainly evaluated by General Directorate of Agriculture due to lack of man power, especially in the field of toxicology, residue and formulation of chemistry, environmental science, entomology, and plant pathology. Action should be taken place to improve human resource capacity by short- and long-term training.

3.2 Long-term actions

- The umbrella law on pesticides including public health pesticides is going to be drafted soon. MAFF should take a lead role in drafting the law while MOH should take lead role in incorporating safety issues involving WHOPES, FAO and related agencies.

- Strengthening of the quality control laboratory of MAFF/MOH is required although the challenge is how to sustain such a facility?

- The Poison Center at Calmette hospital is interested to support and strengthen monitoring and evaluation of pesticide poisoning, including data management of these events and provide a national resource for mitigation and public education for the safe use of public health pesticides. It is proposed that a clinical poisoning survey should be conducted by MoH, and there is a need to strengthen inter-ministerial coordination by establishing a national pesticide board comprising various government sectors, civil society and technical agencies.

WORKING GROUP SESSION 2. PROCUREMENT, STORAGE, TRANSPORTATION AND DISPOSAL OF PESTICIDE WASTE

Procurement of public health pesticides

1. Current situation

Ministry of Agriculture Fishery and Forestry procures pesticides based on the procurement guideline of Ministry of Economic and Finance but this does not cover PHPs. Sub-decree 69 on Standards and Management of Agricultural Materials as well as the Law on the Management of Quality and Safety of Products and Services (LMQSPS) does not cover procurement of pesticides. There exists National Specific guidelines for procurement of PHPs supported by specific donor grants or pool procurement by selected agency and based on WHOPES specifications using

GFATM procurement and tendering guideline. In procurement, open tender procedure is followed. The PHP products are selected from the list of WHOPES recommended ones. There no decentralized procurement for PHPs but this is done for agricultural pesticides.

2. Gaps and challenges

Pesticides quality control is not carried out in the country. Procurement guidelines are changed based on the agencies. Quality control standard for checking quality pesticides from recommended authority are not sufficient and delay in delivery time schedule affect the vector control intervention and people's health.

3. Way forward

Legal provision for procurement of PHPs is required. The cost of quality control of PHPs should be included in the terms of tender documents. It is important to strengthen and upgrade the National quality control laboratory under the Ministry of Agriculture and the National Drug quality control laboratory of Ministry of Health to WHO standards. There is a need to have to plan (B) in the procurement plan as we cannot always rely on the shipping agent and to prepare for unexpected delays.

Storage and transportation

1. Current situation

Article 22 of sub-decree 69, which covers only agriculture pesticides, states that the location of warehouses for pesticides shall be permitted by the Ministry of Agriculture, Fishery and Forestry (MAFF) with the agreement of the Ministry of the Environment (MOE).

No national guideline specific for PHPs are there but instructions have been developed by National Program for Malaria Control (CNM) and trainings are provided to sub-national level including village health support groups (VHSG).

Sub-Decree has been drafted by MOE on Global Harmonization System on the classification and labelling of chemicals.

There is presently no provision for the control of transportation of pesticides under Sub-decree No. 69 as well as other laws although the transportation of wastes of hazardous substances (including pesticides) is regulated under the Law on Environmental Protection and Natural Resources.

There is no collaboration between public health and agriculture in pesticides storage. All PHPs are stored in the Central Medical Drug Store or Operational District stores and Health Centers under the management of managers of the store and Health Center Chief. Village level storage is under the control of VHSG and products are stored for not more than 1 week.

There is only internal licensing process. There is Environmental Impact Assessment managed by an inter-ministerial working group lead by Ministry of Environment. Limited training has been provided to store keepers and drivers. There is no capability to deal with emergencies during storage and transportation of pesticides.

A system of stock management for PHPs is in place, which ensures that pesticide stock can be tracked and that their use is limited to authorized public health uses. The

National Centre for Parasitology, Entomology and Malaria Control Program (CNM) has routine monitoring system for stock-in and stock-out, including insecticide usage.

2. Gaps and challenges

- Absence of national guidelines for PHPs storage and transport;
- Limited human resources and skills;
- No capability to deal with emergencies during storage and transportation of pesticides.
- No standardized licensing process is in place.

3. Way forward

- Amendment of Sub-Decree 69 to cover storage and transport for PHPs.
- Provide training on storage and transport procedures including emergency situations.
- Periodically conduct risks assessment of storage facilities and take appropriate actions.

Disposal of pesticide waste

1. Current situation

Only legal instructions on agricultural pesticides alone (article 23) exist. There is also law on the Environmental Protection and Natural Resources (1996). Sub-decree No. 36 is for Solid Waste Management but not specifically for pesticides. Sub-decree No. 72 regulates Environmental Impact Assessment Process. Chemical waste disposal guidelines are not compliant with international standards but there is an existing medical waste disposal system. A limited training on empty pesticides packaging is provided by CNM. Usually no obsolete PHPs exist because planning is made for only specific needs, so there is no over-purchase of pesticides. There are no companies nationally licensed for chemical waste management. Triple rinsing of used containers followed by burial in the ground (instructions are available for container destruction and proper burial) is followed. Limited technical capacity exists in the country to carry out pesticide disposal operations from inventory planning to disposal and monitoring and evaluation.

2. Gaps and challenges

The Sub Decree 69 does not cover disposal regulation for PHPs. Chemical waste disposal do not comply with international standards. There is limited training on empty pesticides packaging provided by CNM. There is no company nationally licensed for chemical waste management. Inadequate facilities and guidelines exist for waste disposal, container destruction, including emergency situation during storage and transport. Limited technical capacity is there to carry out pesticide disposal operations from inventory planning disposal and monitoring and evaluation.

3. Way forward

- Amendment of Sub Decree 69 to include disposal of PHPs waste;
- Standardize chemical waste disposal to comply with WHO standard;
- Provide training on pesticides waste management;
- Raise public awareness on pesticides waste disposal;
- Establish standard facilities for waste disposal and container destruction;
- Develop national guidelines for PHPs waste disposal management including emergency situations.

WORKING GROUP SESSION 3. QUALITY CONTROL OF PESTICIDES AND ENFORCEMENT OF PESTICIDE REGULATIONS

A. Quality control of public health pesticides

1. Current situation

There is no specific law for quality control of pesticides but there is a general law to ensure the quality and safety of all products. There is no officially designated reference laboratory for quality control of pesticides. Through the support of Japanese International Cooperation Agency (JICA) and the World Bank, a laboratory has been set up in Ministry of Agriculture, Forestry and Fishery (MAFF) but it is partially functioning to perform quality control of pesticides and fertilizers**.** The MAFF is officially appointed for licensing of pesticides retailers under the Sub Decree 69.

Licensing of professional pest control operators: a number of companies in the country provide pest control services particularly for the control of termites and other household pests. There is presently no control over their activities.

Currently, there is no manufacturer or formulator of pesticides in Cambodia.

The Industrial Laboratory Centre Cambodia (ILCC) under the Ministry of Industry, Mines and Energy (MIME) was set up recently as a result of the merger of four smaller laboratories under the Ministry. They have in the past and are still receiving aid from international organizations and foreign funds such as UNIDO, USAID and GTZ. The Centre is in the process of procuring equipment and personnel capacity building and is presently involved in the microbiology and chemical analysis of water and food. It is presently not in a position to analyse pesticide residues and formulations.

There is a legal provision as Sub Decree to issue administrative penalties for trading of substandard and counterfeit pesticides. A recent survey done by JICA found 800 shops in the whole country dealing with agricultural material and pesticides. Of these, there are about 450 with business permits from MAFF. There are 164 trade names of pesticides registered while there are 420 pesticides available in the market (most are illegally imported from Thailand Vietnam and China). According to WHO classification, there were 136 pesticide trade names which were available in the market belonging to the Highly Hazardous class (WHO Class 1) and of these 89 pesticides trade names have been banned in Cambodia and their countries of origin.

There is no quality pesticides control in Cambodia. The existing laboratory only checks the formulation of agricultural product during registration and for PHPs. The efficacy monitoring of the product is done when the product is in place. There is a systematic plan for control of quality of pesticides but it is yet not fully implemented. The JICA Project cooperates with MAFF and has a 5-10-year plan for improving quality of agricultural materials in the domestic market. Circular number 345 implementing Sub Decree 69 on standards and management of agricultural materials (MAFF) concerns the taking of samples for enforcement purpose and of suspending and cancelling the business license.

2. Challenges and way forward

- Noting the magnitude of the problem, it is important for the MOH and regulatory agencies to collaborate with each other and exchange experiences in tackling counterfeit and substandard pesticides;

- Strengthening collaboration between Ministry of Health and regulatory agencies to exchange experiences and effort to tackling counterfeit and substandard product;

- Noting that there are various action plans developed by the different ministries with elements of pesticide management incorporated in the plans, there is a need to ensure that implementation of these activities would be complementary to each other to avoid wastage and optimize use of resources;

- Strengthening Intersectoral coordination and collaboration;

- Noting the importance of pesticide analytical laboratory services to check for the quality of pesticides and the present efforts to rehabilitate the chemical laboratories in MAFF, action should be taken to expedite the operation of these laboratories including training of analysts in pesticide formulation analysis to carry out quality control monitoring as well as to support enforcement actions.

- Strengthening the capacity of designated laboratories in quality control of pesticides including PHPs (MAFF);

- The appropriate laboratory control will identified and make assessment during the consultancy of WHO expert in April 2010;

- Noting that the MOH presently do not monitor the quality of the pesticides procured due to non-availability of local analytical facilities, action should be taken by MOH to include in its tender document a condition that the supplier bears the cost to take and send samples of every consignment to one of the WHO Collaborating Laboratories for analysis;

- Strengthening the capacity of designated laboratories in quality control of pesticides including PHPs (MoH) and technical training of laboratory staff on pesticides quality control;

- Noting that pesticide laboratories established in the past were not sustainable after the completion of the foreign-aid projects, and also the present efforts to reestablish these laboratories, there is a need to develop

a mechanism to ensure the sustainability of these laboratories. The mechanism used by the National Laboratory of Drug and Quality Control to sustain its operation could serve as a model for the future operation of the pesticide quality control laboratory on completion of foreign aided projects;

B. Compliance and enforcement

1. Current situation

There is a justice inspection body under the Department of Agricultural Legislation for inspecting all agricultural materials including pesticides fertilizers. This body has to closely cooperate with the court and the Ministry of Interior. There are justice polices under Ministry of Health which only deal with drugs. There is Directorate-General of Import Export Inspection and Fraud (CAMCONTROL) body under Ministry of Commerce to inspect the quality (expiry date) of products including agricultural materials.

2. Challenges and way forward

- Noting that the penalties as provided for under present pesticide legislations are rather inadequate, there is a need to review and impose penalties that would be sufficiently punitive to discourage any contravention of the law. The way forward is to enforce licensing and penalizing

- Noting that there is a lack of information exchange among the stakeholders in pesticide management, action should be taken to address this shortcoming so that information exchange on pesticide management could be further enhanced. The way forward is to enhance Intersectoral and intercountry information exchange.

- Noting that enforcement of the regulations related to pesticides is rather weak resulting in many cases of non-compliance, there is an urgent need to strengthen enforcement among the enforcement agencies such as CAMCONTROL, MAFF and Customs. There is a need to develop a training programme to educate the enforcement officers on the provisions of legislations related to pesticides. In addition transparent procedures and guidelines on enforcement should be developed and made known to all enforcement officers.

- Raising awareness of public on use of quality pesticides, safe handling, storage and disposal and minimizing health hazards and risks.

- Regulate pest control operators.

WORKING GROUP SESSION 4. JUDICIOUS USE OF PUBLIC HEALTH INSECTICIDES AND MONITORING AND EVALUATION OF VECTOR CONTROL INTERVENTIONS

1. Current situation

No national policy on PHP Management exists, but there are instructions on the PHP management based on WHO specifications.

No National policy on integrated vector management (IVM) has been formulated but the 5-year action plan (2006–2010) for vector control refers to integration of malaria and other vector-borne diseases such as filariasis, dengue, and Japanese encephalitis.

For operational implementation of IVM, we use insecticide treated nets (ITNs), long-lasting insecticidal mosquito nets (LNs) and indoor residual spraying (IRS) for malaria control; use space spraying, use of Guppy fish and abate sand granules for dengue control, and use LNs for both malaria and filariasis. Environmental modification such as improved construction of roads from forest to farm areas, water supply and sanitation are currently used in dengue control.

An IVM assessment workshop held in Cambodia in 2008 attended by 12 Western Pacific Region countries found that there was a need to establish and strengthen the system for continually updating and upgrading the human resource capability and sharing information on activities within an IVM context.

CNM has conducted some operational research projects such as Phase III evaluation of LNs, and the evaluation of Guppy fish and pyrethroid-treated jar covers to reduce dengue vector breeding. The outcomes of these research projects provided good scientific evidence to formulate vector control strategies at the national level.

Monitoring is required for insecticide resistance against vector species. Studies are required on bionomics of malaria, dengue fever vector, residual affect of ITNs, acceptability of LN use, monitoring of bednet distribution and coverage, efficacy or resistance of larvicide temephos against larvae of DF vector, community basis of the use of seven color fish (Guppy).

2. Gaps and way forward

- Convince the policy-makers to set up the national IVM policy with a strong emphasis on PHP management.

- Noting that the national policy on IVM needs to be set up by taking into account the recommendations of the IVM regional workshop in 2008 and this workshop in Nairobi, including social mobilization, it is timely to start the process of dialogue with policy-makers and high government officials.

- As there is a lack of an integrated M&E system, we do not have comprehensive picture of geographical distribution, ecology and insecticide resistance of the vectors. We need to develop an integrated M&E plan and system such as joint data base, integrated tools for monitoring and evaluation and joint entomological activities.

- The results of the operational research will provide CNM to guide the IVM management in our country situation, in particular context of the forest, deforest stations, gem mining areas etc.

- Need to establish an advance technology laboratory for PCR to analyse vector species complexes and study insecticide resistance mechanisms in the future.

- There are opportunities for joint monitoring of insecticide resistance of major disease vectors as this can save resources.

KENYA

WORKING GROUP SESSION 1. PESTICIDE REGISTRATION

1. Current situation

There is a system currently in place for the registration of pesticides (including public health pesticides) under the Pest Control Products Act, 1982 (PCP Act). Other Acts that control certain aspects of pesticides include Occupational Safety and Health Act (OSHA) and Environmental Management and Coordination Act, 1999 (EMCA).

Requirements and general procedures on pesticide registration, list of registered/banned/restricted pesticides are available on the web site of the PCPB (www.pcpb.or.ke). The same information is also available to the public from the office of Pest Control Products Board (PCPB). Registration requirements are harmonized under the Southern and Eastern African Regional Committee on Harmonization (SEARCH). The PCPB is responsible for the enforcement of the PCP Act. Members of the Board represent various relevant ministries (including Ministry of Public Health and Sanitation) and other relevant stakeholders. The Technical Committee (TC) of the PCPB comprises members from various relevant ministries and stakeholders. It supports the PCPB on technical matters including technical evaluations of applications for registration. Risk evaluations are made before making risk management decisions; however, technical capacity is limited.

There is constant dialogue between staff of the PCPB and applicants. Companies can hold pre-registration consultations with staff of the PCPB as well as make enquiries through the internet. The PCPB meets quarterly to consider applications for registration based on the evaluations and recommendations of the TC. Applicants are provided with reasons for any refusal for registration.

A procedure is in place for appeals if an applicant/company is not satisfied with the decisions of the Board. The company could appeal to the Board and if not satisfied, it could then appeal to the Minister of Agriculture whose decision is final.

Hazard evaluation is one of the principles used in the registration of pesticides. Limited work is done based on risk assessment and mitigation based on local situations, for example, risk assessments for long-term use of LNs on various vulnerable groups.

Limited post-registration surveillance is carried out due to lack of resources (manpower, financial and infrastructure). Currently, renewal of registration is automatic, although review of the registration of a product is carried out when the PCPB receives new information. The product may have shown, for example, to have caused adverse effects to humans and or the environment.

Registration requirements for pesticides (including public health pesticides) have been harmonized under Southern and Eastern African Regulatory Committee on Harmonization (SEARCH). There is also an initiative to harmonize registration requirements among the East African Community countries. Data from other countries

are accepted except for efficacy data. Public health pesticides are exempted from residue data requirements.

Kenya participates in International Conferences of Parties for various conventions and agreements related to pesticide management. These include the Rotterdam Convention, the Stockholm Convention on Persistent Organic Pollutants, the Basel Convention on Trans-boundary Movements of Hazardous Wastes and their Disposal and the Montreal Protocol on substances that deplete the ozone layer. PCPB is the Designated National Authority on matters of pesticides for the Stockholm and Rotterdam conventions.

Generics are only allowed to be registered after the expiry of patent. Data submitted by an applicant is kept confidential and not disclosed to any third party.

2. Gaps and challenges

- Provisions on enforcement particularly those related to penalties are inadequate.

- There is a shortage of manpower and expertise in evaluation of registration dossier.

- There is shortage of available expertise to conduct risk evaluations and make risk management decisions as well as carry out risk-benefit analysis.

- There is a lack of systematic post-registration surveillance programme in monitoring of resistance, quality of products, poisoning incidences, transport, storage, proper usage and disposal of pesticides and empty containers.

- There are limited resources to carry out the periodic review of registered pesticides.

- The application of the principle of mutual acceptance of data to reduce work load is not there.

3. Way forward

- PCP Act is being amended to enhance clauses related to enforcement as well as to cater for multi-lateral and bilateral agreements, etc;

- PCPB should enhance greater co-operation with other government departments, research organizations and institutions of higher learning to assist in evaluation of dossier. Officers/scientists from the above organizations should be provided with appropriate training on their appointment;

- PCPB with the assistance of WHO train the staff and members of the Technical Committee, through on-job training abroad, in risk evaluations and management and risk-benefit analysis;

- PCPB with the assistance of WHO train the staff in the use of WHOPES generic risk assessment models for indoor residual spraying, indoor and

out-door space applications of insecticides for public health, and mosquito larviciding;

- WHO to develop risk assessment models for mosquito coils, vaporizing mats and insecticidal aerosols;

- WHO in collaboration with other international organizations to develop a simplified and easy to apply guidance for conducting risk assessment including exposure assessment in different environmental settings;

- PCPB should address challenges in the implementation of the PCP Act through sharing of resources, e.g. health inspectors could be trained in issues related to PCP Act to assist in the enforcement activities of the PCPB;

- PCPB should, with the assistance of WHO, take steps to build and strengthen the capacity (equipment and training of technical staff) of its pesticide quality control laboratory;

- PCPB in collaboration with MOPHS and other relevant agencies should develop a systematic post-registration surveillance system to ensure sound management of pesticides;

- PCPB should discuss with other members of SEARCH and Eastern African Community countries on how collaboration and cooperation could be enhanced to address the mutual acceptance of data.

WORKING GROUP SESSION 2. PROCUREMENT, STORAGE, TRANSPORTATION AND DISPOSAL OF PESTICIDE WASTE

Procurement of public health pesticides

1. Current situation

Kenya has legal provisions for the procurement of goods and services under a general procurement law but there are no regulations specifically for pesticides. General guidelines on procurement for bidders and procuring agencies are available.

Pesticides, including public health pesticides (PHPs), are procured through both open and closed tender systems. It is a requirement that pesticide products procured through tenders must be registered by the Pest Control Products Board (PCPB).

Procurement of PHPs by the Ministry of Public Health and Sanitation (MOPHS) is centralized. Requirements at the district and provincial levels are collated at the MOPHS headquarters. National requirements include conditions such the types and quantities of pesticides, the required specifications of the products and their packaging and labelling, and they are then submitted to the Procurement Department.

Municipalities under the Ministry of Local Government procure PHP independently. MOPHS has no control over these purchases, but can advise health departments in Municipalities on appropriate products for use. Presently, pesticide label claims are checked to see if they comply with the tender requirements.

2. Gaps and main challenges

Presently guidelines are general in nature and not specific to pesticides. There is inadequate quality control for products submitted for bidding and those eventually supplied. There is also no system for validation that the product complies with WHO specifications. There is no collaboration between the Municipalities and MOPHS which is crucial for ensuring the procurement of quality PHP as well as effective control of vectors. The time taken for tendering process sometimes is too long.

3. Way forward

- MOPHS with the assistance of WHO should develop specific guidelines for procurement of PHP based on WHO/FAO guidelines.

- MOPHS develop quality control systems for procurement of PHP including a system of validation to ensure products comply with WHO specifications.

- MOPHS take action to enhance coordination between MOPHS and Ministry of Local Government to ensure procurement of appropriate and quality PHPs.

- MOPHS review present procedures of procurement and develop systems to ensure timely delivery of PHPs.

Storage and transport

1. Current status

There is a legal provision under the PCP Act for control of storage of pesticides for use in Kenya (warehouses and other stores). However, pesticide stores under the MOPHS are under their responsibilities.

There is also a legal provision for the control of transport of pesticides. Guidelines based on FAO recommendations have been prepared.

National Environmental Management Authority (NEMA) also are drafting regulations on transportation of toxic and hazardous substances and a requirement for drivers of vehicles carrying such substances to be accompanied by a certified person who has been trained on chemical safety and emergencies.

The Directorate of Occupational Health and Safety trains and certifies trainers to offer emergency training. Other departments are involved but capacity is inadequate to handle emergencies during storage and transport of toxic and hazardous substances.

System for stock management and tracking of use is in place but is generally weak.

Licensing process for commercial stores is in place. Prior to issuance of license, the premises are inspected for suitability of sites, safety measures in place, construction-materials, ventilation etc.

Training is given to the store keepers of MOPHS but does not include issues related to proper storage and management of pesticides.

At the ministry level there is no collaboration between the Ministry of Agriculture and MOPHS regarding storage of pesticides. However, in the commercial sector, PHPs and other pesticides are often kept in the same stores.

2. Gaps

There is a lack of training of store-keepers in the MOPHS in matters related to pesticide store management.

Regulations on transport of toxic and hazardous wastes under NEMA are in the final stages of preparation.

3. Way forward

PCPB and NEMA should ensure that there is no conflict regarding the guidelines and regulations on transport of pesticides, and toxic and hazardous substances and that they are complementary

PCPB should monitor and review the effectiveness of guidelines for transport of pesticides to address challenges in their transportation.

PCPB and other stakeholders including MOPHS should develop programmes to create awareness regarding transport requirements for pesticides.

Disposal of pesticide waste

1. Current situation

The Regulation on Disposal of Pesticides, 2006 under the PCP Act is in place. There is also legislation on disposal of toxic and hazardous waste under the Waste Management Regulations, 2006 of the EMCA, 1999, and Public Health Act, Cap 242.

n incinerator capable of handling chemical waste is available in the country but does not meet international standards. This is partly due to human settlements coming up in the vicinity of the incinerator since its establishment. There are no obsolete stocks of public health pesticides under the MOPHS. Control of disposal of empty containers under MOPHS is a challenge among others.

PHPs sold in the market that have expired are seized by the PCPB and health inspectors of MOPHS for disposal. Presently seized products are being stored and awaiting disposal. The industry has been encouraged to voluntarily remove expired products from the market. There is presently a nationally licensed chemical waste management company in the country. There is no scheme for collection and recycling of pesticide containers in the country, although there are companies for recycling plastic containers including pesticide containers to convert them into fencing posts. Metal containers collected as scrap metal, are sometimes smelted down in steel mills for re-cycling. There is lack of technical expertise in pesticide disposal operations in the country.

2. Main challenges

Enforcement of regulations is weak and there is also lack of coordination among the implementing agencies. There is lack of incentives and inadequate direction for

investment in setting up disposal facilities. There is lack of resources (transport) and disposal facilities.

3. Way forward

PCPB in collaboration with other related agencies should strengthen coordination among regulators to enhance enforcement of disposal of pesticides and other hazardous substances. There is need to review penalties for contraventions of the regulations.

MOPHS, PCPB, Ministry of Local Government and other related agencies should through the appropriate channel in the government request the government to provide incentives as well as formulating policies to encourage the setting up of such hazardous waste disposal facilities. Such policy on physical plans should consider setting up dedicated zones for the location of such facilities which would not cause environmental issues in future.

WORKING GROUP SESSION 3. QUALITY CONTROL OF PESTICIDES AND ENFORCEMENT OF PESTICIDE REGULATIONS

1. Current situation

Kenya has legal provisions for quality control of pesticides, including appointment of enforcement officers and analysts, but there is no designated official laboratory for checking the quality of pesticides for enforcement purpose under the PCP Act. The PCPB currently uses the analytical services of the Government Chemist Department, Kenya, Industrial Research and Development Institute (KIRDI), University of Nairobi and Kenya Plant Health Inspectorate Services (KEPHIS). PCPB is in the process of making operational its own quality control laboratory.

Pesticide retailers and formulators/manufacturers are licensed under the PCP Act. There is no accurate information regarding the quantities of substandard pesticides in the market as there is presently no comprehensive programme for the monitoring of quality of pesticides due to the limitation of resources, in particular analytical facilities.

Counterfeit pesticides are a major problem in the country. Inadequate punitive penalties have often resulted in offenders repeating the same offences.

Although there are a number of laboratories that have capability to test for certain active ingredient content and certain physical and chemical properties, none of them is in the position to analyse for the range of chemical and physical properties required under the WHO and FAO specifications.

There is in place an official procedure for sampling for enforcement purposes under PCP Act. Pesticides are mainly imported into the country although there are a few pesticide formulators in the country who have their own in-house quality control facilities. Inspectors working under the PCPB are trained on legal provisions as well as on prosecution.

PCPB collaborates with among others the Customs Department and Kenya Bureau of Standards in the control of pesticides particularly at the ports of entry. There is a system of self regulation by the industry whereby the industry through their association, the Agrochemical Association of Kenya (AAK), accredits retailers,

distributors and formulators. The association, in collaboration with PCPB, carries out training programmes for their members on various aspects of pesticide management.

Consumers have been advised to purchase pesticides only from PCPB licensed and AAK accredited retailers. PCPB is in the process of developing a system to be electronically linked to the Customs Department to facilitate the importation of pesticides.

2. Gaps

There is no laboratory in the country that can analyse pesticides for the full range of chemical and physical properties as required under WHO and FAO specifications for pesticides. There is inadequate expertise in the analysis of pesticide formulations. There is no comprehensive plan to effectively monitor the quality of pesticides in the market. Counterfeit pesticides have been detected in the market but due to constraints in resources such as analytical facilities and manpower, the PCPB has not been able to effectively address this issue. Another challenge is that the penalty for contravention under the Act is not sufficiently punitive to act as a deterrent to offenders. There is inadequate enforcement on the control of quality of pesticides sold in the market due to the shortage of manpower. There is also inadequate inter-agency collaboration to address this constraint.

3. Way forward

PCPB should expedite operationalizing the quality control laboratory to address the problem of counterfeit and substandard pesticides. Analysts should also be trained in pesticide formulation analysis, preferably in well established pesticide formulation laboratories with the assistance of WHO.

PCPB should in collaboration with MOPHS and other agencies put in place and implement a system for quality control of pesticides including reporting of poor quality pesticides by users so that appropriate follow-up actions could be taken. Assistance from WHO/FAO on best practices would be required.

PCPB should in collaboration with other agencies including MOPHS and the pesticide industry raise awareness among stakeholders using all available means including the mass media on the importance of the life-cycle management of pesticides as well as risks, adverse effects and implications of using poor quality pesticides.

To address the trade of substandard and counterfeit pesticides, steps should be taken by the PCPB to enhance collaboration with industry and regulatory authorities in neighboring countries.

There is a need to enhance collaboration among various agencies in the country in sharing of resources to overcome the shortage of manpower to carry out enforcement activities. For example, health inspectors of MOPHS could be given training and the authority to assist the PCPB in the enforcement of the PCP Act. There is a need to review the system of penalties for malpractices including the need to penalize the sellers of counterfeit and substandard pesticides.

WORKING GROUP SESSION 4. JUDICIOUS USE OF PUBLIC HEALTH INSECTICIDES AND MONITORING AND EVALUATION OF VECTOR CONTROL INTERVENTIONS

1. Current situation

MOPHS decided in 2009 to develop a national policy on IVM. The draft IVM policy is currently in its final stages of development through a multi-sectoral committee headed by MOPHS with the assistance of WHO that has provided a consultant to assist in its formulation. The committee is composed of representatives from development partners, NGOs, private sector and relevant government departments/ministries.

There has been a reduction in morbidity and mortality due to malaria in recent years because of the increased use of ITNs and IRS (Kenya Demographic Health Survey, 2008). This is in line with Abuja Declaration on roll back malaria. At the same time, there has also been a reduction in other vector-borne diseases such as filariasis, leishmaniasis, yellow fever, etc. due to the increased use of IRS.

The success has motivated the country to develop a strategy for malaria elimination by 2017. A manual on IRS for malaria vector control has been developed and currently being used for training spray operators in the proper use of public health pesticides. The manual covers topics on use of personal protective equipment, spray equipment including operation and maintenance, practical skill development and preparation for field operations.

The manual also provides guidelines on the choice of appropriate pesticides based on consideration of efficacy, safety, cost effectiveness, persistence, availability and acceptability. Spray operators are selected from the community and provided with spray equipment, training and supplies. MOPHS supervises such spray operations.

Control of other vectors has taken a low profile and not much work and funding has been allocated. A system is in place for monitoring the resistance and effectiveness of spray applications; however, this activity needs to be enhanced. There is presently no national policy on pubic health pesticide management.

2. Gaps and challenges

- There is a delay in the development of the IVM policy due to the heavy work load of the lead division (Division of Malaria Control).

- There is inadequate and uncoordinated operational research in vector control interventions.

- There is inadequate number of medical entomologist in the MOPHS to carry out operational research and monitoring and evaluation of vector control interventions.

- There is lack of national policy on public health pesticide management.

- There is lack of a system for information exchange on matters related to vector control and management of public health pesticides.

3. Way forward

- MOPHS should prioritize and expedite the finalization and implementation of the national IVM policy.

- MOPHS should review current public health pesticide management practices with a view to formulate a national policy on public health pesticide management.

- MOPHS should prioritize operational research to allocate adequate resources for vector control interventions, which would enhance judicious use of public health pesticides.

- MOPHS should allocate resources for engagement of medical entomologists to carry out operational research and monitoring and evaluation for vector control interventions.

- MOPHS should identify and establish an appropriate system for information exchange among stakeholders including scientists for the enhancement of vector control interventions.

MOZAMBIQUE

WORKING GROUP SESSION 1. PESTICIDE REGISTRATION

1. Current situation

The registration of public health pesticide in Mozambique is made together with all other pesticides by Ministry of Agriculture following the Pesticide Regulation that was approved by the Government of Mozambique in 2009. Pesticides are evaluated by the Technical Assessment for Registration of Pesticide Committee (CATERP) composed of the Ministry of Agriculture (National Directorate of Agrarian Services and Mozambique Agricultural Research Institute), Ministry for Coordination of Environmental Affairs and Ministry of Health.

The Mozambique Pesticide Regulation gives a legal basis for the registration and management of pesticide on their life-cycle. This stipulates to create technical guidelines for registration, production, importation, transport, storage, trade, use, disposal and inspection of pesticides.

In Mozambique, the administrative infrastructure to manage applications for registration exists which is adequate according to current situation but the technicians need to be trained on risk assessment and control of pesticides (we need to establish an inspection system with an inspection manual).

With the establishment of the CATERP, the transparency of registration of pesticides was improved due to involvement of other two relevant Ministries (Environment and Health) in making the final decisions.

The risk evaluations of the pesticides for the environment are being made according to the international agreements such us Stockholm, Basel and Rotterdam Conventions and following the Montreal Protocol. In Mozambique, the risk for public health is not assessed due to lack of technical capacity for that, so, training on assessing the risk for public health is needed. We recommend an urgent training on using the WHO guidelines to support and improve assessment and evaluation of pesticides during the registration. This training should be carried out before writing the guidelines mentioned above. In the same training, issues regarding the control of quality of pesticides should be included.

There is no system in place for monitoring of pesticides after their registration. Those pesticides used for public health are registered by private companies and the Ministry of Health imports those that are used for vector control. However, after their importation and application for indoor residual spraying by Ministry of Health technicians, no records are maintained of environment and health risks (for the applicants and for the households) and there is no feedback to the Pesticide Committee of the quantities applied and stocks, as well as of the incidents because of lack of records.

The quality of imported pesticides is not checked because there are insufficient laboratories to carry out analysis of such products. Consequently, and given the cost of establishing a quality control laboratory, a certificate of analysis is requested under

the pesticide regulation for importation of more than 200 kg/litre of class I pesticide, 500 kg/litre of class II pesticides and 750 kg/litre of class III pesticides. The Ministry of Health has built a new water and food laboratory and the Government wishes to use this facility for quality control of pesticides and analyses of residues. The issue is under discussion and, given the lack of financial resources, will take some time to resolve. In principle (and to be confirmed), the equipment used for testing pesticides exists and is in place, but training and reagents are needed.

The registration of pesticide in Mozambique remains valid for 5 years after which the applicant can request renewal of the registration. This is an administrative exercise that does not require a deeper assessment of the dossier.

Cooperation within the country is good but requires development with neighbouring countries. Most of the hinterland countries in the African region use Mozambique as a transit country and many a times do not notify Mozambique Authority of such transit of pesticides.

Regarding harmonization of pesticide registration many different initiatives are in place. These are SEARCH, led by CropLife International, WHO and FAO which try to harmonize the registration of all pesticides; and SADC, which try to harmonize the registration of the plant protection product and veterinary drugs.

In Mozambique, the registration of all pesticides (agricultural, veterinary, public health) is regulated by the same committee. So it will be difficult to get on board all this initiatives if all of them reach to harmonize activities. The suggestion is that SADC, FAO, WHO and CropLife International should develop some consensus in order to avoid the duplication of efforts and resources and after that proceed together with registration harmonization effort.

2. Way forward

- Development of Guidelines to support the pesticide regulation;
- Training on risk assessment and control of pesticides;
- Training on use of WHO Guidelines including quality control training;
- Coordination between SADC, WHO and FAO regarding the pesticide registration harmonization;
- Training to record data on public health pesticide incidents.

WORKING GROUP SESSION 2. PROCUREMENT, STORAGE, TRANSPORTATION AND DISPOSAL OF PESTICIDE WASTE

A. Vector control pesticide products

Procurement

1. Current situation

An obligatory procurement system for the purchase of all government goods is in place but there are no specific requirements or guidelines for procurement of

pesticides. Each sector has to create the necessary requirement according to the good that it wants to buy, and create an assessment committee. There is lack of coordination between the Mozambique Ministry of Health (MISAU) and Pesticide competent authority so the latter is not involved on the assessment of the purchase.

Procurement of public health pesticides is centralized and in principle open, but only companies registered with the Ministry of Agriculture as importer of pesticides can participate in the tender and only registered pesticides can be bided.

The lack of a laboratory implies no quality control. However, with the establishment of the new laboratory at MISAU and with some support for capacity building, this activity can start soon.

2. Challenges

Implementation of pesticide regulation by the competent authority and control of the procurement process for purchase of pesticides by the government are important challenges. Resources needed for capacity building programs are lacking.

3. Way forward

Create specific requirements for procurement of pesticides purchases including the request of quality control of the product pre- and post-shipment that will be paid by the bidder (in the meantime, use the WHO and FAO guidelines for pesticide procurement and tendering).

Improve coordination on the procurement and management of public health pesticides between MISAU and pesticide competent authority. Improve the local capacity for testing the quality of pesticides.

Storage

1. Current situation

The pesticide regulation gives the basic standards for building and management of pesticide stores with very little technical aspects. The full technical standards of building and upgrading the pesticides stores as well as the storage management will be included under the guidelines that will be updated.

In accordance with the pesticide regulation and environmental impact assessment regulation, all stores of pesticides have to have an environmental license.

In general, at the central level the stores are well managed but problems starts at provincial and district levels. In all stores (at all levels), pesticides are stored with other materials. For malaria control program, the government has established shipping containers that are being used for storage of pesticides. At the community level, pesticides are stored (on few times and in small quantities) at community leader’s houses, police stations, schools and in rural hospitals. All stores do not meet the FAO standards.

There is no coordination between MISAU and Ministry of Agriculture (MINAG). Although MINAG has stores refurbished during the disposal of obsolete pesticide with free space while MISAU have no space to store the products.

At the central level, there are storekeepers. At provincial and district levels, the storekeepers are technicians who are overburdened with work and they are not trained as storekeepers. Their management is weak and because of this many products are leaked to the informal market and then are being used in agriculture.

The monitoring of the stocks and the program is weak and needs to be improved. The storekeepers do not follow the first in first out rules and this cause accumulation of obsolete pesticides. The security of the stores is not good as it should be and emergency responses are absent in many places and where they do exist it is slow. The fire fighters are not well equipped. The storekeepers do not have any training on safety management of pesticides and emergency procedures, so often they work without any personal protective equipment.

2. Challenges

There is a need to conduct an environmental audit in all stores that are established to follow the amended pesticide regulation and should ensure compliance with regulatory requirements. There is a need to engage trained storekeepers.

3. Way forward

- Train the storekeepers on management and control of stocks;
- Raise awareness at all levels, especially at decisions maker levels, in order to avoid mixed storage of products with pesticides;
- Expand the experience on using shipping containers to store pesticides to all districts;
- Improve monitoring and control of pesticide storage practices by engaging trained inspectors.

Transportation

1. Current situation

No standards for pesticide transportation are in place in the country. Pesticides are being transported mixed with other products. The pesticide regulation mentions that pesticides cannot be transported together with food and feed and the people are made aware of this. It should not happen at least for transportation of large quantities of pesticides (and for government public health pesticides as well). Small quantities are transported in buses, mini-buses, small cars, etc. and mixed with people and all other goods, foods, etc). Various ministries/agencies (MT, INNOQ, MINAG, MICOA and MISAU) have to elaborate and implement the guidelines and standards for safe transportation of pesticides.

2. Main challenge

Development of guidelines and standards for safe transportation of pesticides is needed looking at the real situation in the country.

Disposal

1. Current situation

In Mozambique, a regulation for hazardous waste exists since 2006 but the problem is the dissemination and its implementation.

A land fill is established and licensed that meets the international standards, but this was not made to receive pesticides waste. This land-fill is managed by a South African company which collects DDT sachets used by MISAU for IRS.

Disposal of other empty sachet is made by burning or disposal as a normal waste. The aluminum sachet of the pesticide has inside a water soluble sachet that contains the product. So the level of contamination of the empty sachets is marginal (except when there are some brockets on the internal sachets). There is a big problem for disposal of plastic containers that are being stored waiting for some solution.

During the IRS, the water that is used to clean the sprayer (the rinsed wash) is buried at the district level.

Obsolete stocks are being kept in stores waiting for a disposal. At least four plastic recycling companies are established in Mozambique but none of those are licensed for recycling pesticide empty containers, although some of them are recycling these.

The Government of Mozambique has technicians with skills for all pesticide disposal operation following internationals standards, at central and provincial level. This capacity was built during the Disposal of Obsolete Pesticide Project in Mozambique where the technical assistance was fully given by FAO specialists.

2. Challenges

- Lack of recycling companies for disposal of empty containers of pesticides;
- Inadequate number of land-fills in order to have at least one in each region (south, central and north) with capacity and standards for receiving empty containers of pesticides, and facility to treat contaminated soils.

3. Way forward

- Develop a tracking system to identify the empty sachets, pesticides residues and identify the local options for disposal that can be used at our level in a sound way;
- Analyse quality of obsolete pesticide stocks in order to check if the product can be re-validated and in affirmative case use it quickly;
- Issue license to recycling companies for disposal of pesticide waste containers;
- Improve the standards of the recycling companies to recycle the empty plastic containers for making other plastic materials or tools that will not be used by people on food channels, such as electrical pipes, fence posts, flowers vases, seedling plastic bags, etc.;

- Open two more land-fills in order to have at least one in each region (south, central and north) with capacity and standards for receiving empty containers of pesticides, and facility to treat contaminated soils.

B. Household and professional pest control products

1. Current situation

Procurement

Public health pesticides are purchased in accordance with business.

Registered companies do not make any procurement as they represent the manufacturer and are required to purchase pesticides from them and to follow their pesticide regulations. However, large amounts of public health pesticides (especially household pesticides) are imported illegally by informal trade ladies called “mamanas”. Many of these pesticides are not registered.

Transportation

Large quantities of pesticides are transported separately. Their illegal importation involves small quantities being carried on buses and other vehicles with other products including food and is a major challenge to reckon with.

Storage

Pesticides are stored in small stores and, in some cases (especially in shops and canteens), with other materials and goods. There is lack of knowledge about the risks of storing pesticides with other goods and, in general, no training of storekeepers in safe management of pesticides. All shops sell public health pesticides (aerosols and repellents) and often there are no real stores for these. According to the new pesticide regulation, all stores of pesticides and shops needs to be registered with MINAG.

Disposal

There is no control of pesticide waste. Empty pesticide containers and mosquito nets are treated as normal waste.

2. Challenges

Challenges include registering all shops and stores of pesticides, stopping illegal importation, improving storage at all levels and creating local capacity for disposal of empty containers.

3. Way forward

There is a need to develop guidelines for storage and disposal of household insecticide products. The MINAG are working with the customs authorities in order to stop the illegal importation of household pesticides.

WORKING GROUP SESSION 3. QUALITY CONTROL OF PESTICIDES AND ENFORCEMENT OF PESTICIDE REGULATIONS

1. Current situation

The pesticide regulation requires that for certain amounts of pesticide (already mentioned), a certificate of analyses must accompany the consignment. On certain occasions, pesticide samples are sent to South Africa for analysis. However, the regulation does not ensure the existence of analysts, and there is no plan for quality control of pesticides. All pesticides that are used in Mozambique are imported due to absence of manufacturers or formulators in the country.

There is no designated official laboratory, but the Ministry of Health Laboratory may be designated for this purpose in the future. According to Ministry of Health, and subject to confirmation, laboratory facilities are in place and chemists are available, but training is needed on quality control of pesticides and supply of reagents.

The regulation requires that license of all pesticide distributers and retailers issued by the Ministry of Trade should be moved under the control of the Ministry of Agriculture.

There are provisions to penalize the companies for trade in counterfeit and substandard pesticides and this penalty is very high and includes fine, seizure and destruction (in this case paid by the company) and in certain cases 2 to 8 year prison. However, because of lack of facilities (laboratories), it is difficult to identify such products and there are no data and reports on low quality of the products.

The control of all pesticides in Mozambique is under the Ministry of Agriculture authority and is vested with the Plant Protection Department which uses the plant protection officers to inspect the stores, distributors and retailers of pesticides. The technicians do many other activities and because of this the inspection is weak. Sometimes a team is created comprising persons from other Ministries (Min. Environment, Min. Health, Min. Labor, Min. Interior – Police and customs officers) to make inspections.

There is a pesticide distributors' association but because of lack of coordination, the association is not working well. They don't have procedures and self-regulation is not carried out.

2. Challenges

- Create a system to finance sampling and sending for analyses in South Africa.
- Upgrade the laboratory of Ministry of Health to carry out pesticide quality control at international standards.
- Reorganize the inspectors’ services in order to have full time inspectors and create the inspector position for the plant protection inspectors.
- For pesticide distributors: organize themselves in order to take the advantage in talking like a group and not individually.

3. Way forward

Make a survey in the country to check the quality of the pesticides that are being used. If a problem of low quality and counterfeit pesticides exists, convince the decision makers to provide funds for regular quality control either locally or by help of South Africa.

Assess proficiency of the Ministry of Health pesticide quality control laboratory, identify the needs and then write a project to mobilize resources to upgrade and build capacity of this facility.

Approach the decision makers at the Ministry of Agriculture in order to create an inspector position for the plant protection inspectors and train them.

WORKING GROUP SESSION 4. JUDICIOUS USE OF PUBLIC HEALTH INSECTICIDES AND MONITORING AND EVALUATION OF VECTOR CONTROL INTERVENTIONS

1. Current situation

There is no Policy on IVM and public health pesticide management. The Government agreed with implementation of IVM in principle but no action has been taken to implement it.

Full and comprehensive research, and monitoring and evaluation are being done in Maputo province by the Libombo Special Developed Initiative (a three country program to reduce malaria by Mozambique, Swaziland and South Africa).

A project funded by Gates Foundation is under implementation to build capacity for research, monitoring and evaluation in Mozambique that includes improvement of laboratory, research and human capacity building support.

2. Challenges

Elaboration of the pesticide policy that includes public health pesticide use within the context of IVM in order to define clear objectives, priorities, sustainability and to allow all stakeholders to refer it and contribute for its implementation.

3. Way forward

Raise awareness of the decision makers to implement the policy of IVM in the country. Ask WHO and FAO to support convincing the decision makers to elaborate the policy and if meetings could be organized with stakeholders and discuss the drafts as well as test the implementation of the guidelines. In this meeting, FAO/RSA authorities could be invited to exchange experiences once they have the pesticide policy approved.

SUDAN

WORKING GROUP SESSION 1. PESTICIDE REGISTRATION

1. Current situation

- All pesticides including those used in the public health, agriculture and veterinary sectors are regulated under the Pesticides and Products for Control of Pests Act 1994;
- The National Pesticide Council (NPC), an inter-ministerial body, is responsible for implementing and enforcing the provisions of the Act;
- Sudan Agro-chemical society (SAGA) is represented in the pesticide council;
- Registration is accepted or refused on a timely basis, but transparency needs to be improved;
- Appeal procedures are spelt out in the law and commonly practiced;
- Risk evaluation and risk management are practiced at the early stages of registration;
- Post-registration surveillance is partially performed;
- No re-registration procedure is practiced though it is in place for every 10 years;
- Sudan co-operates only with the bordering Arab countries (Egypt & Libya);
- Country comply with the requirements of relevant multilateral agreement; and
- A technical committee (sub-committee from NPC) follows science-based assessment.

2. Gaps and obstacles

- Pesticide and pest control ACT 1994 to be revised and updated to incorporate the revised version of the international code of conduct and to overcome some impracticality;
- Lack of published guidelines for registration of pesticides;
- Lack of risk assessment based on local situation;
- Lack of post-registration monitoring and evaluation except for efficacy and insecticide resistance of vectors;
- Regarding the public health pesticide registration, there is a need for a validation committee similar to the pest and disease committee in the agricultural sector;

- Need of capacity building for all aspect of pesticide management.

3. Lessons learnt

- Coordination between sectoral stakeholders fosters the process of pesticide management in the country and helps exchange information;

- Introduction of IVM in vector control to reduce reliance on pesticides (using LNs);

- Khartoum and Gezira malaria free initiative for reducing malaria burden.

4. Challenges

- Border sharing with nine African countries cause logistic problems;

- Misuse of pesticides; and

- Lack of national guidelines on pesticide management.

5. Recommendations

- The NPC should prepare and publish a set of guidelines on registration of pesticides to enhance efficiency and transparency of the registration.

- The NPC should consider carrying out risk-benefit analysis when evaluating applications for registration of pesticides.

- The NPC should make official requests/reminders for assistance from international organizations to provide assistance in the disposal of obsolete pesticides.

- Chemists from the National Chemical Laboratory, Customs, Agricultural Research Corporation and Sudanese Standards Metrology Organization should be sent for specialized training in pesticide formulation and residue analysis.

- The NPC in collaboration with SSMO, PPD and the Ministry of Health should develop/adopt standards for pesticide spray equipment commonly used in the country.

- The Federal Ministry of Health should address financial constraints in the purchase of test kits for cholinesterase testing and should include the condition for the supply of the test kits when purchasing pesticides through tender.

- The NPC in collaboration with the Federal Ministry of Health (Food Quality Control Department) should set up maximum residue limits for pesticides to strengthen food standards and improve food safety.

- Scientists involved in the evaluation of data for registration should be sent for attachment training with regulatory authorities to update their knowledge and ensure that the evaluation is carried out based on internationally accepted standards.

- NPC establish a web site for pesticide management including pesticide registration procedure, guidelines and list of registered pesticides.

WORKING GROUP SESSION 2. PROCUREMENT, STORAGE, TRANSPORTATION AND DISPOSAL OF PESTICIDE WASTE

A. Procurement

1. Current situation

The main route of pesticide purchasing is through the government agencies (national, state, district). Procurement of pesticides for irrigation schemes, PPD and the Ministry of Health is done through national public tenders. Only a very small share of pesticides is availed in the market and used by vegetable farmers and by the public for public health purposes (mainly aerosols).

There are no specific legal provisions for procurement; however, the tender condition as stipulated by general by-law of the ministry of finance for all government purchase including pesticides. Generally we use open tenders and rarely close tenders are applied under specific condition such as in emergency. Upon submission of the application for tender, quality control check is conducted through provision of taking samples.

In some cases, accepted commercial consignments are subjected to national analysis and quality control; a certificate of analysis from independent ISO International laboratories is accepted by the authorities of Sudanese Standards and Metrology Organization (SSMO).

The tender requirement of quality control of the pesticide within 6 months is not always applied due to the lack of follow up. In procurement, negative outcomes resulting from decentralization are minimal; however, decentralization results in other problems of using pesticides not recommended or intended for public health use.

2. Gaps and obstacles

- Lack of coordination between relevant sectoral authorities;
- Financial constraints;
- Lack of laboratory capacity for pesticide quality control; and
- Time constraints due to shortage of resources.

3. Recommendations:

- Strengthen the legislative aspects of pesticide procurement;
- Update the tender book to serve as the guidelines.

B. Storage and transportation

1. Current situation

- Storage and transportation are covered by the law but it needs to be enforced.
- There are no national guidelines for pesticide storage and transportation.
- Storage of pesticides is not done according to the international specifications.
- There is no collaboration among relevant sectors regarding the storage and transportation similar to the other aspects related to pesticide management.

2. Gaps and obstacles

The skills of the relevant personnel including store keepers, drivers and transporters are very weak, therefore they cannot respond appropriately in emergency.

3. Challenges

Establishment of a proper storage and transportation system.

4. Recommendations

Enforce the implementation of the by-law on transportation and storage.

The NPC should introduce guidelines for the company/party sending their pesticide products by trucks as well as guidelines for the truck companies.

It is important that truck drivers among others should carry information on the pesticides they are carrying, material safety data sheets and actions that need to be taken in case of spillage.

NPC to negotiate with Sudanese Agrochemical Association (SAGA) and the legal authorities to find means of licensing transport vehicles (trucks and railways).

Strengthening of collaboration among different sectors and define their roles and responsibilities.

C. Disposal of waste

1. Current situation

There is no legislation, no capacity, no chemical waste disposal facilities and no recycling of containers in the country.

2. Challenge

Huge quantities of obsolete pesticides, waste, empty containers, contaminated soil and contaminated seeds amounting to more than 10,000 tons are lying in the country under adverse conditions and awaiting proper disposal.

3. Recommendations

Donors, including international organizations, should help develop a system to transfer surplus pesticides to countries in need and assist in disposal of the existing obsolete stockpile.

A system should be developed to prevent further accumulation of stockpiles, waste and empty containers.

WORKING GROUP SESSION 3. QUALITY CONTROL OF PESTICIDES AND ENFORCEMENT OF PESTICIDE REGULATIONS

Quality control

1. Current situation

- There is a legal provision for enforcement of quality control but not for analysis.

- There is a legal provision for designation of a national pesticide quality control laboratory.

- Licensing of pesticide retails and formulations is legally controlled.

- Sellers of substandard and counterfeit products are penalized but the penalties are inadequate.

- Substandard and counterfeit pesticides generate problems, and steps are being taken by the NPC to address this problem, but the penalties are inadequate and need to be increased.

- There are laboratories capable of analysing pesticide products to comply with WHO specifications including chemical and physical properties.

- Laboratories are officially designated to carry out quality control testing under the pesticide law of the country. The national laboratory is not yet ISO accredited.

- There is no systemic plan for quality control of pesticides, which is only done on an ad hoc basis (that is, at the time of purchase and during discovery checks by the inspectorate or upon receipt of complaints).

- An official written procedure is in place for taking samples for enforcement purposes.

- Pesticide manufactures are only limited to pesticide formulations having in house quality control.

2. Gaps

- The officially designated laboratories are highly loaded resulting in delay of analysis especially during tender periods, some of the laboratories are not

adequately staffed to carry the full analysis (chemical and physical) according to WHO specifications;
- There is no official designated laboratory at the main port of entry during importation of the pesticides;
- Inadequate staff training, equipment and other logistics

3. Challenges

- Accreditation of laboratories by ISO or proficiency by CIPAC.
- Disposal of laboratories waste including the samples

4. Recommendations

To do full quality control of pesticides according to FAO/WHO specifications, an important investment is needed in Infrastructures, equipment, human resources and training, documentation, quality assurance system and collaboration with other laboratories.

The NPC should make the submission of certified analytical pesticide standards by pesticide importers at the time of submission of application of registration or re-registration as a requirement under the Registration of Pesticides By-law.

Compliance monitoring and enforcement

1. Current situation

Under the pesticides Act 1994, there is a bye law for inspection. Inspection bodies at the central and state level are established with duties to enforce the pesticides Act and it is regulations.

The inspection bodies comprise staff from the ministries of Health, Agriculture and Interior (police), all these ministries are in one and the same committee.

The pesticides industry, as represented by the Sudanese Agrochemical Association (SAGA), has a system of self-regulation but certification of retailers is not among its responsibilities.

2. Gaps and challenges

These include financial constraints, lack of coordination and job description among the government bodies involved in pesticides inspection activities (NPC and SSMO), inadequate penalties of illegal activities and lack of coordination between the central government and states leading to poor results.

3. Recommendations

Enhance coordination between relevant bodies, and update the law and bye law to improve inspection. The government and the NGOs must support inspection activities.

WORKING GROUP SESSION 4. JUDICIOUS USE OF PUBLIC HEALTH INSECTICIDES AND MONITORING AND EVALUATION OF VECTOR CONTROL INTERVENTIONS

1. Current situation

Sudan has undertaken vector control needs assessment (VCNA). It has been identified that Sudan adopts IVM as an approach for vector control. Based on that:

- a national IVM strategy has been developed;

- vector control units have been established in the ministry of health at all levels (federal and states).

- an Intersectoral committee comprising of all stakeholders has been established for endorsement of policies and strategies and further follow up of the IVM policy implementation progress.

Pesticides management activities

- Two international consultants recruited by WHO under the Gates project have worked with national consultant and vector control multi-sectoral team to assess the current situation, provide training and develop a sound action plan for pesticides management;

- A report has been developed with the plan included, which has been endorsed by National Steering Committee; an inception workshop was organized and plan endorsed by higher authority in the MOH.

- Under the Global Environment Facility project for DDT sustainable alternatives and Gates Foundation project for insecticide resistance management, operational research has been started in collaboration with LSH&TM and LSTM: (a) To determine the impact of IRS, LNs and LNs plus IRS based control strategies on the malaria, leishmaniasis and lymphatic filariasis disease burden, using confirmed clinical and parasitological markers, in relation to the presence of insecticide resistant vectors; (b) To determine the insecticide resistance status, and the underlying genetic mechanisms, in the primary malaria vector *An. arabiensis* from four endemic areas of Sudan; (c) to compare changes in frequencies of markers of resistance between study arms that have been allocated to IRS, LNs and LNs plus IRS vector control interventions stratified by ecology and agricultural use of pesticides; and (d) To monitor and compare changes in malaria vector behavior between study arms that have been allocated to IRS, LNs and LNs plus IRS vector control interventions and between resistant /susceptible mosquitoes.

- Routine monitoring of insecticides resistance is carried out regularly.

2. Gaps

The IVM policy has only recently been endorsed and is not fully implemented. There are gaps in the legislation. Staff training, and strengthening operational research capacity and laboratory quality control are required.

3. Challenges

- Rely and enforce policies down to state and district levels;
- Raise public awareness about the importance of sound public health pesticide management and vector control approaches.

4. Recommendations

- To strengthen capacity for quality control, operational research and monitoring and evaluation;
- To strengthen the organizational capacity for IVM at all levels (federal and states);
- Create leadership for IVM at the state and locality level;
- Continual training on safe and judicious use of pesticides;
- Create expertise in cost-benefit analysis related to vector control; and
- Raise awareness of vector control personnel on judicious use of pesticides.

THAILAND

WORKING GROUP SESSION 1. PESTICIDE REGISTRATION

1. Current situation

The Hazardous Substance Act B.E. 2535 (1992) is the major Act for chemical management in Thailand. The Food and Drug Administration (FDA) is authorized to regulate hazardous and chemical products used in public health and households. FDA regulates vector control pesticides, household insecticides and professional pest management pesticides. Regulation of public health pesticides and agricultural pesticides are carried out by different authorities, but under the same Act. The Department of Agriculture regulates agricultural pesticides. The FDA also regulates public health pesticides in the following stages, i.e. production, import, export and having in possession (for Pest Control Operators only).

The control framework of FDA can be identified in two major phases, i.e. pre-marketing and post-marketing. The pre-marketing control includes registration of products, licensing of business entity, formulation and packaging and labelling control. The post-marketing control consists of inspection of manufacturing sites and storage premises, monitoring of product quality/ product surveillance, consumer protection, adverse product reaction monitoring and pesticide advertisement.

In the registration process, the authority and the experts review and assess the documents submitted by pesticide companies, including (i) intrinsic properties of pesticide substance, i.e. identity, physico-chemical properties, toxicological data, impact on environment, analytical methods; (ii) formulated product , i.e., identity, physico-chemical properties, formulation; (iii) data on efficacy; (iv) manufacturing process; (v) packaging and (vi) labelling.

2. Gaps

The registration control of public health pesticide follows the International Code of Conduct. The legal system and technical and administrative structure for managing registration are currently in place. The grant and refusal of registration is done in a timely and transparent manner.

Lesson learnt in the participation of WHO pesticide project include participation of multi-sectoral experts in evaluation process of registration, re-registration process of public health products and household pesticide products. The following gaps have been identified in the current registration process of public health pesticides:

- Exemption of government agencies to follow registration process, e.g. local administrative organizations, especially in case of emergency;

- Risk evaluation and management does not fully operate;

- Risk–benefit analysis is partially carried out;

- Problem on protection of intellectual property right due to existing me-too registration process.

3. Proposed action to address the gaps

- Capacity building of registration staff to follow WHO guidelines on registration, risk evaluation and management and risk–benefit analysis, use of principle of equivalence in the registration of me-too products;

- Developing the national guidelines in Thai language that comply with international guidelines;

- Amendment of the Ministry of Public Health Notification regarding the exemption of registration; not covering local administrations

- Raising awareness of local administration staff about correct process of procurement of public health pesticides.

WORKING GROUP SESSION 2. PROCUREMENT, STORAGE, TRANSPORTATION AND DISPOSAL OF PESTICIDE WASTE

A. Procurement

1. Current situation

Thailand has a legal provision for the government procurement. The procurement of public health pesticides has to comply with this general rule. In the government procurement procedure, a committee on specification of public health pesticides has been established. Most of the public health pesticide specifications are in accordance with the WHO specifications.

For every bid, a tender committee is set up, which is composed of competent officers for financial procedure, technical aspects (entomology, pesticides, vector control). The bidding process is operated in open tender if the amount of bidding exceeds 2,500 US Dollars.

Tender documentation has to include a certificate of analysis as quality control for pre-shipment samples. Upon arrival of the imported product, a post-shipment inspection committee has to take samples of pesticides and send these to a certified laboratory (ISO 17025) for chemical analysis.

2. Challenges and way forward

- The procurement of public health pesticides can be done by local administration. Most of local administration units purchase only small amounts of public health pesticides, and they do not have qualified personnel for quality control and public pesticide management.

- Measures to promote local administration units to use Department of Disease Control's specifications of public health pesticides for their procurement process.

- Regional Disease Prevention and Control offices should provide training on public health pesticide management to local administration personnel.

- Inadequate capacity of regional laboratory to do analysis of public health pesticide.

- Strengthening the capacity of regional laboratories (under Department of Medical Sciences) on public health pesticides.

B. Storage and transport of public health pesticide

1. Current situation

A legal instrument to regulate storage of pesticides in the form of a Ministry of Public Health's Notification is there. Ministry of Transport has a provision on transport of dangerous goods, including pesticides, which comply with the UN Regulation on Transportation of Dangerous Goods.

2. Challenges

- Current Ministry of Public Health's notification on storage of pesticides does not apply to suppliers and retailers, with an exemption for government agencies;
- No licensing is required for public health pesticide store retailers;
- Limited knowledge of transport and logistic business to comply with the transport provision;
- Limited capacity of government agencies concerned to monitor and evaluate the actual transportation of hazardous substances.

3. Way forward

- Review and update Ministry of Public Health's Notification on storage of pesticides to cover suppliers and retailers;
- Guidelines for government agencies on storage of pesticides should be developed;
- Capacity building for local administration staff on safe storage of public health pesticides;
- Legal instrument on licensing for public health pesticide store retailers should be developed by FDA;
- Even though there is a system of issuing driving license for transport of hazardous substances, there should be regular refreshment courses for the licensed drivers;
- Strengthening monitoring and evaluation by concerned regulators, e.g. transport officers and police, and providing capacity building programs; and
- Safety practice of storing public health pesticide should be promoted among related government agencies at all levels including central and decentralized units.

D. Disposal of public health pesticide waste

1. Current situation

- Legislation of Ministry of Natural Resources and the Environment regarding waste management is already in place. Waste treatment facilities are available, and are nationally licensed and complying with international standards;

- No problem of accumulation of obsolete public health pesticides, due to good stock planning.

2. Challenges

- High standard waste treatment facilities are currently inadequate, and too costly;

- Current practice of disposal of empty containers is by burying, which is not considered a safe practice;

- Current practice of container collection and recycling is done by informal business;

- Limited technical capacity and qualified personnel to carry out pesticide disposal operation, ranging from inventory making, planning, disposal, and monitoring and evaluation.

3. Way forward

- Setting priority of pesticide waste treatment, according to health and environmental risk;

- Ministry of Public Health, in consultation with Ministry of Agriculture and Cooperatives, should establish guidelines on safe disposal of pesticide empty containers. later, training of concerned officers should be conducted;

- Labelling scheme of household and public health pesticides should include how to dispose them safely;

- Local administrations establish a system for safe collection and secure storage of pesticide containers for further safe recycling or waste treatment; and

- WHO technical guidelines on safe disposal of household and public health pesticides should be translated in Thai.

WORKING GROUP SESSION 3. QUALITY CONTROL OF PESTICIDES AND ENFORCEMENT OF PESTICIDE REGULATIONS

1. Current situation

Thailand has a legal provision for pesticide quality control (Hazardous Substance Act 1992), which covers agricultural, household and public health pesticides. Laboratories under Department of Medical Sciences and Department of Agriculture are designated

as official laboratories for pesticide quality control. There is a compulsory licensing system for pesticide manufacturers.

In 2009, FDA post-marketing surveillance system revealed that 11% of the household and public health products sampled from the market were substandard, while only 2 counterfeit products were found. The maximum penalty for selling substandard pesticides is 15,000 USD plus 5 years imprisonment. The maximum penalty for selling counterfeit pesticides is 20,000 USD plus 7 years imprisonment.

Thailand has government-designated laboratories (ISO 17025 accreditation) capable of checking pesticide quality but not in compliance with WHO specification and not covering all public health pesticide active ingredients, and physical & chemical properties.

Systemic plan for FDA has just been developed after the establishment of standard operating procedure (SOP) for active surveillance system, as mentioned above. Moreover, FDA has just established a close collaboration with the Royal Thai Police to carry out enforcement activities in case of counterfeit and unregistered household & public health pesticide products. FDA has established an official inspection unit for all consumer health products for more than 20 years. The central FDA inspection unit has to collaborate with provincial health offices to strengthen inspection throughout the country. However, these inspectors are not specially trained for pesticide inspection.

2. Gaps and challenges

- Retailer licensing is only required for agricultural pesticides, but not required for retailers selling household and public health pesticide products;

- Low awareness and weak capacity of local inspectors;

- The current plan for post-marketing surveillance of household and public health pesticides is not intensive;

- Currently, there are 73 registered pesticide manufacturers / formulators in Thailand. Few of them have in-house quality control facilities, and self-regulation system.

3. Way forward

- Legal instrument on licensing for public health pesticide store retailers should be developed by FDA.

- Local public health staff should be trained to raise their awareness and capacity for inspecting household and public health pesticides.

- FDA has just established standard operating procedure for active surveillance system - every registered product has to be sampled twice in one round of pesticide registration renewal. The implementation has just started.

- Strengthening the technical capacity and facility of designated laboratories according to WHO specifications.

- Raising awareness about the importance of in-house quality control among manufacturers through related business associations.

- A training course for the inspection and control of household and public health pesticides should be developed and provided for central and local inspectors.

WORKING GROUP SESSION 4. JUDICIOUS USE OF PUBLIC HEALTH INSECTICIDES AND MONITORING AND EVALUATION OF VECTOR CONTROL INTERVENTIONS

1. National policy on IVM

Current situation and strengths

- Thailand has formulated the national policy on integrated vector management (IVM) and a national action plan on IVM (2009 - 2012) has been established as the road map for all concerned agencies.

- In 2009, Department of Disease Control, in collaboration with all stakeholders, completed situation analysis on IVM and personnel capacity, and developed a training course on IVM for regional vector control staff.

- Ministry of Public Health has developed an IVM guideline for local administration offices (under Ministry of Interior).

Gaps and challenges

- Weakness of Intersectoral collaboration, particularly between public health office and local administration at all levels.

- At present there is insufficient number of entomologists, equipment, and supply for IVM practice. Dissemination of information to local administration is still a problem.

Way forward

- Training course on IVM should be extensively provided to vector control staffs at 12 regional disease prevention and control offices.

- Afterwards, 12 regional disease prevention and control offices will start a pilot project to implement IVM with local administration offices. Each pilot project will start the implementation of IVM at “sub-district level”.

2. National policy on public health pesticide management

Current situation and strengths

- Thailand’s National Coordinating Committee on Chemical Management (NCCCM) has formulated the National Strategic Plan on Chemical Management, which covers the sound management of public health pesticides. Recently, Department of Disease Control has closely collaborated with the NCCM to strengthen the national integrated work for public health pesticide management;

- Department of Disease Control (DDC) has established the Committee on Chemical Policy Guidelines, to make recommendations on pesticides use for vector control, and the committee on setting minimum standards for vector control. Working network of DDC has been conducted through 12 regional disease prevention and control offices.

Gaps and challenges

- The use of these recommendations/ guidelines on pesticide use for vector control is rather limited due to the fact that it is not widely disseminated. These guidelines are technical recommendation for using vector control pesticides, and are not compulsory for local administrations.

Way forward

- The national policy on chemical management should be a starting point for building inter-ministerial commitment to follow the guideline on pesticide use for vector control, developed by DDC.

3. Operational research and monitoring and evaluation of vector control interventions

Current situation

- DDC has formulated a standard operating procedure (SOP) for monitoring and evaluation of vector control interventions;

- Operational research conducted by agencies in Ministry of Public Health, universities and AFRIMS include study on efficacy of new insecticide/agent and formulation for mosquito control, monitoring of insecticide resistance of larvae and adult mosquitoes (*Aedes* and *Anopheles*); and

- FDA has conducted a surveillance study on quality of temephos at district levels.

Gaps and challenges

- There are a limited number of sentinel sites to do regular monitoring and evaluation of vector control interventions. Therefore, the information required for decision making is inadequate at regional level.

- Operational research on the efficacy of insecticide(s) for vector control in the country is still limited – not adequately supporting the policy and planning of vector control.

Way forward

- Systemic planning and monitoring the implementation of sentinel sites to carry out the evaluation of vector control intervention at regional level.

- Review the gap of operational research needed for planning effective vector control.

UNITED REPUBLIC OF TANZANIA

WORKING GROUP SESSION 1. PESTICIDE REGISTRATION

1. Current situation

- Legislation: the Plant Protection Act of 1997 (PP Act 997) came into force in the United Republic of Tanzania in July 2001. This largely covers plant protection substances.

- A government chemistry laboratory agency (GCLA) operates under the Act of Industrial and consumer chemicals Act no. 3 of 2003 for management and control of industrial and consumer chemicals. The two Acts do not address issues pertaining to public health pesticides, which are handled by the Tropical Pesticides Research Institute (TPRI) but not reflected in either of the two Acts.

2. Gaps

- Inadequate capacity – human and financial resources, and lack of adequate laboratory equipment;

- Lack of proper legislation on public health pesticide products; and

- TPRI currently traditionally dealing with all pesticides is under the Ministry of Agriculture while public health is under the Ministry of Health.

3. Opportunities (strengths)

- Existence of TPRI and GCLA can do quality control and enforcement;

- Existing capacity of TPRI to handle registration and management of all pesticides;

- Long experience of TPRI on legislation; and

- Availability of international guidelines e.g. Code of Conduct, FAO/WHO guidelines.

4. Main challenges

- How to set up unified registration of all pesticides by a single authority;

- Ensure the adequate allocation of funds in pesticide management;

- Optimization of the capacity existing at TPRI;

- The large geographical area of the country with so many neighbouring countries causing operational difficulties;

- DDT selected by MOH for use in indoor residual spraying is not registered in the Republic of Tanzania (not included in the list); and

- Inadequate availability of experts for risk-analysis.

5. Way forward (priority actions)

- Need to have MOA between TPRI and the Ministry of Health on registration of public health pesticide products;
- Need to have registration of all pesticide products under one umbrella;
- Ministry of Health to call for collaborative meetings on utilization of the available capacity locally;
- To solicit high level commitment of MOH to take proactive action to communicate with Ministry of Agriculture and Ministry of Environment (organize meetings);
- To expand capacity of Kilimo web site in order to supply relevant information to the public;
- Capacity building by staff training (MOH, TPRI) on pesticides management, risk-analysis, and registration, in collaboration with potential partners like WHO;
- Procurement of scientific equipment;
- Possibility of utilizing expertise and facilities existing at GCLA on pesticide registration (public health- DDT)
- Training of end users on safe handling and use of pesticides.

WORKING GROUP SESSION 2. PROCUREMENT, STORAGE, TRANSPORTATION AND DISPOSAL OF PESTICIDE WASTE

A. Procurement

1. Current situation

Procurement of public health pesticides in the United Republic of Tanzania is somewhat complicated and involves many stakeholders. Based on section 42 of the PP Act, the Ministry of Agriculture, Food Security and Cooperatives (MOAFS) have developed guidelines for procurement of plant protection substances. The guidelines are also applicable to public health pesticides. There is no legal provision in this Act that specifically touches issues for procurement of public health pesticides.

In the country, there are four agencies that procure pesticides. These are the MOAFS under the Plant protection Act (PP Act 1997); the Ministry of Health and Social Welfare through Medical Stores Department; the District Councils under the Ministry of Local Government; and NGOs under guidance of Vector Control Officers or Environmental Health officers at different levels.

2. Gaps

- No legal provision for procurement of public health pesticides;

- Lack of guidelines for procurement of public health pesticides;
- Lack of involvement of technical staff during the tendering process;
- Lack of transparency during the tendering process.

3. Strengths

- Quality control is done during and after procurement;
- Availability of the Plant Protection Act;
- Availability of Environmental Health Officer at district and regional level for technical consultation by NGOs;
- Availability of the Public Health Legislation; and
- Availability of WHO/FAO guidelines.

4. Challenges

- How to harmonize the existing different procurement systems?
- How to ensure practical involvement of technical personnel and improve transparency?

5. Way forward

- To harmonize the existing systems;
- To include in the existing Plant Protection Act/Public Health Act the issues related to the procurement of public health pesticides;
- To adopt the WHO /FAO guidelines and ensure their implementation; and
- To conduct training on procurement of public health pesticides.

B. Storage and transportation

1. Current situation

- There is a provision on transportation and storage of pesticides in the Plant Protection Act;
- No stipulated guidelines on transportation and storage;
- Inadequate proper storage facilities for the public health pesticides; and
- No collaboration at the decentralized level between health and agriculture sectors for pesticides storage.

2. Gaps

- Lack of guidelines for storage and transportation;
- Lack of knowledge among storekeepers and transporters on stock management and pesticides handling; and
- Weak stock management systems for pesticides at district level.

3. Strength

A Plant Protection Act (PP Act) exists that has provision for safe pesticide transportation and storage.

4. Challenge

How to ensure smooth collaboration between health and agriculture sectors?

5. Way forward

- Development of guidelines on storage and transportation;
- Conduct training on pesticides management;
- Create awareness at all levels; and
- Strengthen collaboration between the health department and agriculture regarding pesticide storage at district and regional levels.

C. Disposal of pesticide waste

1. Current situation

- Waste management legislation is covered under the Environmental Management Act and Plant Protection Act;
- No chemical waste disposal facility that comply with international standards exists in the country;
- Wastes are disposed off in municipal dumping sites and some are burnt and buried. For example, for vector control programmes such as malaria vector control operations, containers are crushed and disposed of, sachets are burnt either in the incinerator (municipal incinerator) or in the selected suitable sites;
- Pesticide products are normally analysed for quality verification during the tendering and importation;
- There are no licensed private companies for recycling of used containers;
- There is no special scheme for collection and recycling of containers. However, private companies are available for recycling of other plastic bottles but not for pesticides; and

- No technical capacity to carry out disposal of obsoletes or expired pesticides, but some individuals involved in Africa Stock Pile program (ASP)

2. Gaps

- No licensed private companies for recycling of used containers;
- No special scheme for container collection and recycling;
- Inadequate technical capacity to carry out disposal operations.

3. Strengths

- The existence of the capacity to carry out quality control;
- The existence of legislation for waste management under Environmental Management Act and Plant Protection Act.

4. Challenges

- How to ensure the availability of qualified technical personnel in the area of pesticide disposal;
- How to ensure proper disposal of pesticide waste and containers,
- How to ensure availability of facilities for waste disposal at local level.

5. Way forward

- Training of staff on pesticide waste disposal;
- To develop simple small-scale disposal facilities;
- To prepare collection schemes for empty containers assuming that we have small scale disposal facilities; and
- To incorporate cost for disposal during tendering process.

WORKING GROUP SESSION 3. QUALITY CONTROL OF PESTICIDES AND ENFORCEMENT OF PESTICIDE REGULATIONS

A. Quality control

1. Current situation

Legal provision for quality control of pesticides is stipulated in the PP Act (1997) and in PP regulations (1999). In implementing this important function, the Ministry of Agriculture is responsible for appointing enforcement personnel including pesticide inspectors. Quality control issues are designated to the Tropical Pesticides Research Institute (TPRI).

Pesticide retailers, including sellers, manufacturers and importers, are licensed according to the PP Act (1997) and their database is available.

According to the Act, sellers of substandard and counterfeit pesticide products can be prosecuted and penalized. These penalties are quite adequate. For some reasons enforcement of this law has been a problem and this is due to inadequate staff, low commitment from the Government, lack of transparency, and poor competency on legal processing. Substandard and counterfeit products are a serious problem. General monitoring is conducted and limited legal action is taken but the problem is severe.

The chemical laboratories equipped to conduct quality control of pesticides are: TPRI, Government chemist Laboratory Agency (GCLA), University of Dar es Salaam and TBS. These laboratories are capable of carrying out tests at different levels with regards to quality control of pesticides according to WHO specifications.

According to the Act, the laboratory is designated to deal with quality control of pesticides. Unfortunately, the laboratory is not yet accredited but is in the process of accreditation by SANAS accreditation body of South Africa.

The country's systematic method of quality control of pesticides includes analysis during registration, award of tender, importation and on receipt of complaints. Sampling is conducted according to the written procedures and partly follows FAO/WHO specifications.

The United Republic of Tanzania has one pesticide manufacturer and 11 pesticide formulators. Less than half of them have quality control laboratories.

2. Gaps

- Inadequate staff in the analytical laboratory and law enforcement team;
- Weak enforcement;
- Lack of knowledge on prosecution on inspectors;
- Lack of transparency; and
- Lack of awareness among community members.

3. Challenges

- How to address substandard and counterfeit pesticides due to lack of transparency?
- How to acquire accreditation procedures?
- How to sensitize and raise community awareness?

4. Strengths

- Laboratory capacity;
- Availability of systematic quality control plan;
- Strong and adequate legislation; and

- Inspectors at the points of entry.

5. Way forward

The following are the action points to address the identified gaps:

- Recruitment of new staff and on job training;
- Amendment of the current law to include public health pesticides issues;
- Strengthening of enforcement activities;
- Speed up the accreditation process;
- To conduct community awareness programs; and
- Enforce quality control system for formulation plants.

B. Compliance and enforcement

1. Current situation

- Inspection is directly supervised by the MOAFS and is composed of trained inspectors from TPRI and Ministry.
- Collaboration regarding inspection and control exist among MOH, Customs officers, Police officers, security officers and the community.
- Pesticide industry assists in the area of training.

2. Gaps

- Country geographical size and neighborhood of many countries make the compliance operations logistically difficult;
- There is a lack of transparency.

3. Challenges

- Address issues of transparency; and
- How to monitor illegal traffic of goods.

4. Strengths

- Availability of law and regulations.

5. Way forward

- Increase the number of inspectors;
- Strengthen collaboration between MOH, MOAFS, Home affairs (Police department) and customs officers;

- Train law enforcers on legal aspects;

- Solve the issue of illegal movement of pesticides through collaboration on enforcement between the law enforcement agencies and neighboring countries; and

- Liaise with local councils on enforcement (through local By Laws)

WORKING GROUP SESSION 4. JUDICIOUS USE OF PUBLIC HEALTH INSECTICIDES AND MONITORING AND EVALUATION OF VECTOR CONTROL INTERVENTIONS

1. Current situation

The United Republic of Tanzania has no policy guideline for integrated vector management (IVM); however, there is a national policy on integrated malaria vector management (IMVM) and a draft of Multisectoral Policy Guidelines for the control of vector and vector borne diseases. Vertical programmes are in place for addressing diseases such as trypanosomiasis, onchocerciasis, schistosomiasis, plague and rabies. These programmes have programme managers and are coordinated by the national coordinator for neglected tropical diseases (NTDs). A policy is under development generally for NTDs but not specifically for vector management

Regarding national policy on public health pesticides management, there is no such policy in the United Republic of Tanzania; however, policy guidelines such as those for IMVC address issues related to public health pesticides.

Regarding the issues of operational research and routine monitoring and evaluation of vector control interventions, there are number of operational research activities and routine monitoring and evaluation of control interventions, but these are specifically for malaria and plague vectors and some time for tsetse control.

WHO/Gates Foundation supported project on capacity building for vector control as mentioned earlier encompasses comprehensive operational research in malaria vector control.

2. Gaps

- Lack of a national policy for public health pesticide management;

- Inadequate routine M&E of vector control interventions;

- Inadequate capacity for carrying out M&E operations;

- Limited support for research; and

- No information sharing on research findings.

3. Strengths

- Availability of guidelines like IMVC, multi-sectoral guidelines and WHO guidelines;
- WHO/Gates Foundation support in malaria vector control operational research;
- Existence of programmes addressing different vector-borne diseases.

4. Challenges

- How to formulate National Policy for Public Health Pesticides?
- How to integrate the existing different vector borne diseases control programmes and make optimal use of available resources? and
- How to delay insecticide resistance of vector mosquitoes?

5. Way forward

- Formulation of National Policy for public health pesticides;
- Integration of existing vertical vector-borne diseases control programmes;
- Advocacy for more resource investment on operational research and M&E;
- Diversification of vector control interventions (when and how to use the intervention);
- Establishment of mechanisms for information sharing related to operational research;
- Strengthening of inter- and intra-sectoral collaboration; and
- Training of available staff in areas of medical entomology.