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Organization**



Report

9th FAO/WHO JOINT MEETING ON PESTICIDE MANAGEMENT

**12-16 October 2015
Nanjing, China**



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1. Introduction

The 9th FAO/WHO Joint Meeting on Pesticide Management (JMPM) was hosted by the Institute for the Control of Agrochemicals, Ministry of Agriculture (ICAMA) of the People's Republic of China, at the Jiangsu Yishiyuan Hotel in Nanjing, China from 12 to 16 October 2015. This was the first JMPM meeting to be held outside the headquarters of the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), and the first to include a day-long field trip to allow the meeting participants to observe practices and share experiences with local experts.

The JMPM was established in 2007 following the signature of a Memorandum of Understanding between FAO and WHO on cooperation in a joint programme for the sound management of pesticides. Since its inception, the JMPM has consisted of members drawn from the FAO Panel of Experts on Pesticide Management and the WHO Panel of Experts on Vector Biology and Control. The JMPM held its first session in 2007. The JMPM advises FAO and WHO on the implementation of the FAO/WHO International Code of Conduct on Pesticide Management and on matters pertaining to pesticide regulation and management, alerting them to new developments, problems or issues that merit attention.

Panel members invited to the JMPM are selected for their personal expertise and experience in specific aspects of pesticide management in both agriculture and public health. They do not represent the position of the governments or institutions they may belong to, but are appointed to the respective Panels in their personal capacity by either FAO or WHO. All Panel members are asked to declare any interests that could affect their opinion or advice. In addition to Panel members, representatives from intergovernmental organizations, pesticide industry associations and nongovernmental organizations, which by their nature have interests, attend the open sessions of the meeting as observers. The latter may be invited to provide their views, but are excluded from decision taking.

2. Opening of the meeting

The opening session was chaired by Mr Harry van der Wulp, FAO Senior Policy Officer.

On behalf of FAO and as joint secretariat of the JMPM, Ms YongZhen Yang, team leader (OiC) of the Pesticide Risk Reduction Group, FAO Plant Production and Protection Division, welcomed the WHO and FAO JMPM Panel members, the WHO Secretariat, and other meeting participants and observers to the 9th Session of the FAO/WHO JMPM. Mr Rajpal Yadav, Scientist-in-Charge, WHO Pesticide Evaluation Scheme (WHOPES), WHO Department of Control of Neglected Tropical Diseases, welcomed the Panel members, other participants and observers to the meeting on behalf of WHO. The attendees were invited to introduce themselves (see List of participants provided in Annex 1). FAO staff member Mr Jan Breithaupt and Panel members Mr Tan Soo Hian and Mr Eric Liégeois were unable to attend the meeting. A number of experts from ICAMA attended certain portions of the meeting as observers and assisted with the field trip.

Mr Jian Yong Zhang, Deputy Director-General of the Agricultural Department of Jiang Su Province, opened the meeting and welcomed the JMPM specialists and representatives to Nanjing. Mr Zhang described how Jiangsu Province, which is located in the Yangtze River

delta, historically has had China's largest concentration of people and natural resources, and today has its second largest economy. Mr Zhang noted that Jiangsu is an agricultural province with modern, efficient and highly mechanized agriculture; total grain output today is at nearly 40 million tonnes. Jiangsu Province is also China's biggest agrochemical producer, home to 270 pesticide companies which together produce some 4900 registered pesticides. In 2014, Jiangsu produced 935 000 tonnes of pesticides, of which 663 000 tonnes valued at US\$ 3.86 billion were exported, representing 40% of China's pesticide exports. Mr Zhang noted that pesticide registration has been strengthened in recent years, notably for minor crops; that market supervision has been consolidated, resulting in good product acceptance; and that safety controls have been intensified, including for protection of the environment. Mr Zhang concluded that the JMPM has an active role in ensuring pesticide safety and protecting the environment, and that the results of the 9th JMPM meeting would be used to promote pesticide management work in Jiangsu Province.

Mr Yan Duan Xiang, Deputy Director-General of ICAMA, welcomed the participants and observers to the historic and cultural city of Nanjing, and congratulated them on their work with the JMPM. Mr Xiang explained that China, as a large agricultural country with a large population, is a big user of agrochemicals as well as a big producer and exporter. China values environmental protection and agricultural safety and has followed the example of advanced countries in steadily improving pesticide review and registration, and in restricting and controlling the use of highly hazardous pesticides [HHPs] (33 HHPs have been prohibited for most uses and production of HHPs is being phased out), in encouraging the development and use of biological and botanical pesticides, and in implementing good laboratory practice (GLP) in laboratories (24 laboratories accredited). China has also strengthened market supervision to take severe measures against fake products and to protect qualified products and intellectual property. Mr Xiang noted that ICAMA is now focusing on risk assessment methods for situations found in China and that it participates in the Codex Committee on Pesticide Residues and in the Rotterdam and Stockholm Conventions. Finally, Mr Xiang thanked FAO and WHO for accepting the offer of ICAMA and the Jiangsu ICA to host the joint meeting. He noted that it was a good opportunity for different countries to share their experiences and practices, and hoped that the participants would work together in the future to promote the sound management of pesticides worldwide.

Mr Harry van der Wulp and Ms YongZhen Yang thanked the two speakers for their opening remarks as well as for hosting the meeting. They also gave special thanks to Mr Gu Bao-Gen, Deputy Director-General of the Center for Agro-Food Quality & Safety (former DDG of ICAMA), who organized China's hosting of the JMPM meeting and planned the field trip. They commended China for its proactive approach and significant progress in pesticide management, and noted that the Chinese experience would be very helpful for the JMPM deliberations.

Mr Rajpal Yadav thanked the speakers and commended Jiangsu Province for its cooperation with WHO in the testing and evaluation of pesticides and its recent activities on public health pesticides for control of schistosomiasis. He noted that the collaboration between FAO and WHO has expanded year by year, and he highlighted the value to WHO of the JMPM, the Joint Meeting on Pesticide Residues, the Joint Meeting on Pesticide Specifications and the new Code of Conduct on Pesticide Management. Mr Yadav described recent examples of collaboration in specific areas and noted the importance of forthcoming JMPM contributions in the area of highly hazardous pesticides. Finally, Mr Yadav introduced a new WHO temporary advisor, Mr Michael Eddleston, Professor of Clinical Toxicology at the University

of Edinburgh, who has worked for many years with patients with pesticide poisoning in Sri Lanka.

3. Election of the chairperson and rapporteurs

Ms Kimberly Nesci was elected Chairperson and Ms Andrea Rother Vice Chairperson of the meeting. Mr Malverne Spencer and Ms Sandhya Kulshrestha were appointed Rapporteurs.

Ms Nesci began the meeting with a brief silence in honour of JMPM panel member Mr Adama Makoum Toe, who had passed away since the last meeting.

4. Administrative matters

4.1 Adoption of the agenda

A number of minor amendments were made to the agenda for the purpose of timekeeping. The final agenda as adopted is in Annex 2.

4.2 Declaration of interest

FAO and WHO had received Declarations of Interest from all the Panel members participating in the 9th Session of the JMPM. The secretariat of the JMPM had reviewed these and concluded that no circumstances were disclosed that could give rise to a potential or reasonably perceived conflict of interest related to the subjects discussed in the JMPM.

4.3 JMPM procedures and terms of reference

The meeting revisited the subject of the JMPM terms of reference in response to questions about the number of observers per organization or institution attending the meeting. Draft terms of reference for the JMPM have been delayed in the FAO legal office for some time. The meeting recommended that the draft be resurrected by the secretariat and that:

- the secretariat clarify in writing the JMPM procedures, including the terms of reference for the panel members and observers as well as the number of observers per organization or institution eligible for participation in such meetings;
- the final document be made available well in advance of the next JMPM meeting.

5. Developments since the previous session of the JMPM

5.1 WHO

Mr Rajpal Yadav briefed the meeting on the recent activities of the WHO Department of Control of Neglected Tropical Diseases (Vector Ecology and Management unit; WHOPES), and also the WHO Global Malaria Programme. Mr Richard Brown, WHO Chemical Safety, then briefed the meeting on the activities of the Department of Public Health, Environmental

and Social Determinants of Health (Chemical Safety Team). WHO regional activities are summarized in Annex 3.

Vector Ecology and Management

The Vector Ecology and Management unit develops guidelines, standards and standard operating procedures, and offers training and technical support to WHO Member States in vector control and sound management of pesticides. Activities since the JMPPM meeting in 2014 include:

Development of guidelines and technical reports

- Toolkit for integrated vector management (IVM) in sub-Saharan Africa
- Toolkit for IVM in Latin America
- Guidelines for testing new long-lasting insecticidal net products to substantiate efficacy claims in areas of high insecticide resistance
- Guidelines for laboratory and field-testing of molluscicides
- Determination of fabric strength of long-lasting insecticidal nets (LLINs) – report of a WHO consultation (Geneva, 2015).

Training

- Workshop on dengue vector management including IVM for participants from China, Lao People's Democratic Republic and Myanmar
- Pan American Health Organization entomology and IVM meeting (Washington, DC)
- Participation in a training workshop on GLP accreditation of research institutions for evaluation of pesticide products (Cotonou, Benin).

Technical support

- Workshop for technical support on dengue and IVM (Havana)
- Strategic planning workshop on pesticide management of the South African Pesticide Regulators' Forum (Harare, Zimbabwe)
- Development of IVM strategy for the Eastern Mediterranean Region (2015–2020)
- Support for revision of a module on pesticide management for a diploma course.

Meetings

- 14th FAO/WHO Joint Meeting on Pesticide Specifications (Athens)
- 3rd meeting of the Vector Control Advisory Group on new vector control paradigms (Geneva)
- 18th WHOPES Working Group meeting (Geneva)
- LLIN suppliers' meeting and collaboration for development of new LLIN products (Dubai).

Global Malaria Control Programme

The WHO Global Technical Strategy for Malaria (2016–2030) was adopted by the World Health Assembly in May 2015. In addition, in the past year the programme has:

- revised and published guidelines on indoor residual spraying;

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- supported a five-country project to assess the impact of insecticide resistance on malaria transmission; helped 20 countries to strengthen their capacity to monitor and report data; and compiled data on insecticide resistance from all malaria-endemic countries in a global database;
- finalized policy documents on when it is unsafe to scale-back vector control, identifying conditions under which PBO LLINs, a pyrethroid synergist, can be deployed;
- provided technical support to countries on identifying key entomological surveillance indicators and frequency of monitoring;
- completed the WHO–United Nations Environment Programme (UNEP) project on establishment of efficient and effective data collection and reporting procedures for evaluating the continued need of DDT for disease vector control;
- contributed to the UNEP roadmap for development of alternatives to DDT and a toolkit for sound life-cycle management of DDT;
- contributed to the report by the DDT expert group on the assessment of scientific, technical, environmental and economic information on the production and use of DDT and its alternatives for disease vector control; and
- participated in the meeting of the Conference of the Parties to the Stockholm Convention in May 2015 (COP7) where WHO provided an introduction on DDT policy for vector control.

Chemical Safety

WHO Chemical Safety has undertaken the following activities relating to pesticide management since the JMPPM in 2014:

- attended the International Agency for Research on Cancer (IARC) meeting (June 2015) where the classification of DDT for carcinogenicity was reviewed and upgraded from *possibly* to *probably* carcinogenic to humans (from 2B to 2A);
- reported at the meeting of COP7 that the annual review of the scientific literature on the health effects of DDT indicated that the 2010 risk assessment for DDT for disease vector control was still considered to be valid. Since the 2010 risk assessment was based on the assumption that DDT could have carcinogenic effects, the risk assessment was not changed by the upgraded classification from IARC above;
- attended the meeting of the Conference of the Parties to the Rotterdam Convention (May 2015) at which several pesticides were discussed for potential inclusion in the Convention; the Strategic Approach to International Chemicals Management (SAICM) Open-Ended Working Group meeting (December 2014), where actions to address HHPs were considered; and the Fourth International Conference on Chemicals Management (ICCM4; September–October 2015), also organized by the SAICM Secretariat, where a resolution to address HHPs was adopted;
- given a presentation on the use of the JMPPM criteria to identify HHPs as part of the Science Fair during the Stockholm and Rotterdam Convention meetings;
- developed a proposal to update the WHO Recommended Classification of Pesticides by Hazard (latest edition published in 2010);

- continued to develop International Chemical Safety Cards (ICSCs), which summarize health and safety information on chemicals aimed at employees in the workplace. ICSCs are available in 10 languages via the Internet at [www.ilo.org/icsc], with translation into further languages in development. Cards are available for 1700 chemicals, of which 240 are pesticides (56 from Class Ia or Ib). Recent ICSCs carry globally harmonized system (GHS) information and 1/4 of the ICSCs for pesticides currently have GHS, a number that will increase with time;
- highlighted a study on the use of central storage facilities for pesticides in villages as a suicide prevention measure in India, in a photo story featured on the WHO web site (September 2015);
- convened a coordination group to address the “cocktail effect” from exposures to mixtures of chemicals. This was done in the context of the WHO Chemical Risk Assessment Network, and brings together leaders of different projects on risk assessment of chemical mixtures to facilitate information sharing and coordination of activities;
- published (in English, with French to follow) a report of a study examining the feasibility of setting up a poisons centre for the East Africa subregion. The study was undertaken in the context of work by WHO to promote the setting up and maintenance of poisons centres;
- established a sub-Network for institutions carrying out chemical risk assessment in developing countries to share information and training and develop risk assessment models and tools relevant to developing country situations. The sub-Network includes pesticide regulators and others with an interest in pesticide management. Outputs and tools from this group that are relevant to pesticides will be shared with international partners such as FAO.

Discussion

In the discussion that followed the presentations, WHO informed the JMPPM that it has a programme to assist eight laboratories to accredit them to GLP standards in 2016 and 2017. Another six laboratories will be similarly assisted by the Innovative Vector Control Consortium, UK. The JMPPM discussed the reclassification of DDT and was reminded that this does not change the WHO risk assessment and also that DDT has an exemption from the Stockholm Convention when used as recommended by WHO for malaria control. The JMPPM also discussed the difficulty of responding to questions from the general public about the so-called “cocktail effect” of exposure to multiple pesticides in food. The group was informed that WHO has a published framework for evaluating multiple chemical exposures that includes, but is not specific to, pesticides, and that the European Food Safety Agency (EFSA) is preparing guidelines for evaluating exposure to multiple pesticides in food.

5.2 FAO

Mr Harry van der Wulp gave an update on the development of the pesticide registration toolkit, and Ms YongZhen Yang briefed the meeting on FAO’s other activities related to pesticide management since the last JMPPM. FAO regional activities are summarized in Annex 3.

Registration toolkit

Technical work on the content of the toolkit has continued. A technical working group meeting on efficacy was held in March 2015 and new modules on registration by analogy, decision-making, risk mitigation, data requirements and information sources have been added. A module on registration of biological control agents is also to be added.

Plans are to roll out the toolkit in early 2016. The development version is still on an open web site where it can be viewed, and the secretariat is working on its migration to the FAO web site. As previously agreed, the toolkit is intended to be a living tool and will continue to evolve to take account of new information.

Two training workshops were held in June 2015 on how to use the toolkit, as a trial to see how well it would work. Each workshop involved five countries with four representatives from each. The results were positive: the trainees appreciated the toolkit, found it easy to use and found that it improved their skills in risk assessment. The toolkit proved to be well adapted to users of all levels, as trainees from more- and less-advanced countries valued it equally. Those with a lower level in risk assessment had no additional difficulty in using the toolkit and quickly caught up with the others, while those with a higher level also found that their skills improved. The secretariat has already received requests for national training courses in using the toolkit to strengthen national capacity in risk assessment.

Policy and normative work

In the area of policy and normative work, since the last JMPPM the FAO has:

- prepared, with WHO and UNEP, a proposal for concerted action in addressing HHPs, and presented the proposal to the Fourth International Conference on Chemicals Management (ICCM4; September–October 2015);
- continued to act as the lead organization on matters related to pesticide management in the Strategic Approach to International Chemicals Management (SAICM) process as well as among the United Nations organizations participating in the Inter-Organization Programme for the Sound Management of Chemicals (IOMC);
- continued its engagement with the Organisation for Economic Co-operation and Development (OECD) Expert Group on Pesticide Risk Reduction Indicators (EGPRI) and Expert Group on Integrated Pest Management (EGIPM);
- continued to support the University of Cape Town Postgraduate Diploma in Pesticide Risk Management¹;
- completed translations of the revised Code of Conduct on Pesticide Management into the six official United Nations languages and made these available;
- obtained JMPPM endorsement of new FAO/WHO guidelines on good labelling practice for pesticides, pesticide legislation and licensing of pest control operators;

¹http://www.publichealth.uct.ac.za/sites/default/files/image_tool/images/8/DPRM%20Brochure%202015%20Final.pdf

- contributed to the new FAO Environmental and Social Management Guidelines: Environment and Social Standard 5 on Pest and Pesticide Management, which applies to any FAO-supported activity involving pesticides. The Standard states that its objective is to promote integrated pest management (IPM), reduce reliance on pesticides, and avoid adverse impacts from pesticide use on the health and safety of farming communities, consumers and the environment. The Standard prohibits the FAO from procuring or supplying HHPs, and allows other highly toxic pesticides (WHO Hazard Class 2 or GHS Acute Toxicity Category 3) only if less hazardous alternatives are not available and precautionary measures are adhered to;
- continued work on the data set for the FAO Pesticide Management System and begun work to incorporate into it the database on Good Agricultural Practice as well as the Codex Maximum Residue Limits (MRLs).

Standard setting

The FAO/WHO Joint Meeting on Pesticide Residues (JMPR), at its annual meeting in September 2015:

- evaluated 31 pesticides, of which 8 were new compounds, 19 were evaluated for additional MRLs and 4 were re-evaluated;
- reviewed the IARC evaluation of glyphosate, which was based on different data sets than those considered by the JMPR in its review 10 years ago but whose outcome was not inconsistent with the JMPR review. The JMPR plans to re-evaluate glyphosate at a meeting in May 2016, and will likely discuss the Codex MRLs in 2017.

To date, the JMPR has established more than 300 maximum residue levels.

The FAO/WHO Joint Meeting on Pesticide Specifications (JMPS), which met in June 2015:

- evaluated 32 new FAO pesticide specifications and 21 WHO specifications on active ingredients;
- agreed to develop guidelines for five new formulations;
- agreed to revise and update the FAO/WHO Manual on Development and Implementation of Pesticide Specifications, with the addition of a chapter on microbial pesticides.

Field projects

The FAO is now operating pesticide management projects and activities in 60 countries with an overall budget in the order of US\$ 35 million. Recent field projects and activities include:

- three new Global Environment Facility (GEF) approvals in Africa and two in the Caribbean, covering obsolete pesticides, disposal, persistent organic pollutants (POPs) and removal of 100 tonnes of polychlorinated biphenyls (PCBs);
- seven regional workshops in Africa, Asia, the Caribbean and the near East on implementation of the Code of Conduct, the pesticide registration toolkit, the Pesticide Management System and the Rotterdam Convention;

- a survey on pesticide management in Asia, with a publication and an Asia and Pacific Plant Protection Commission database;
- continued operation of the FAO IPM Farmer Field Schools (FFS), with 10 FFS-based projects in Africa focusing on sustainable production intensification themes such as adapting to climate change, nutrition, value chains and gender;
- inclusion of the SHARP tool (self-evaluation and holistic assessment of climate resilience of farmers and pastoralists) in 11 FAO projects;
- removal of 636 tonnes of obsolete pesticide stocks from five countries, and continued work on obsolete pesticide elimination and container management;
- organization of a stakeholder workshop on procurement and supply of pesticides for locust control.

Discussion and recommendations

In the discussion that followed the presentations the JMPM was informed that the University of Cape Town Postgraduate Diploma on Pesticide Risk Management is to be upgraded with the addition of a 2-year master's level course in chemical risk management that can be taken after students have completed the first 2-year diploma programme on pesticide risk management. The second programme is expected to be in place by 2018.

The meeting was informed that IARC has classified glyphosate as a probable human carcinogen (Group 2A) and that the JMPR plans to re-evaluate glyphosate together with two other compounds that were reviewed by IARC – diazinon and malathion – at a meeting in May 2016. The JMPM was also informed that WHO has been asked to consider the need for an updated risk assessment for the vector control uses of malathion based on the updated JMPR evaluation.

Concerning recommendations for future action, the meeting participants agreed that JMPM guidelines should reference “cross-cutting issues” as well as relevant FAO and WHO guidelines and resources. The meeting also agreed that more activities should be undertaken to promote the Code of Conduct and that UNEP should be urged to adopt it. In keeping with these two items, the JMPM recommended:

- that JMPM guidelines provide, where relevant and appropriate, more reference to “cross-cutting” issues such as climate change, vulnerable populations, and the role of inter-departmental and regional cooperation;
- that FAO and WHO promote workshops and other activities in countries and/or regions to support implementation of the Code and its guidelines;
- that UNEP be encouraged to adopt the Code formally.

5.3 OECD

Ms Sylvie Poret briefed the JMPM on recent activities of the OECD Pesticide and Biocide Programme, noting that a large part of the programme's work focuses on biopesticides.

During the past year, the Pesticide Programme has held two seminars related to biopesticides: one, held with the Swedish Chemicals Agency KemI, focused on risk assessment of microbials; the other focused on hazard and risk assessment of secondary metabolites produced by microorganisms. The programme expects publication of guidance on risk assessment of secondary metabolites produced by microorganisms and on risk assessment of botanicals in the first half of 2016.

The Biocide Programme has done a significant amount of work on biocide efficacy, with the objective of facilitating the removal from the market of inefficient products that could cause a risk to human health or the environment (as well as removing the need to do a risk assessment for ineffective products). In this area, the programme has worked on the efficacy of disinfectants and has published guidance on quantitative methods for evaluating biocides used on surfaces as well as guidance on quantitative methods for evaluating the antibacterial activity of porous and non-porous treated articles. The programme is continuing to work on the efficacy of biocide-treated articles.

6. Report on JMPM-endorsed guidelines

6.1 Good labelling practice for pesticides

The JMPM was informed that the guidelines on good labelling practice for pesticides were published in September 2015, following JMPM review and endorsement of the label design examples and revised text during May–June. Translation into the six official United Nations languages is expected to be completed by the end of the year.

6.2 Pesticide legislation

The guidelines on pesticide legislation were revised during January–March, endorsed and internally cleared during May–September and published in October 2015. Translation into the six official United Nations languages is expected to be completed by the end of the year.

6.3 Licensing of pest control operators

The guidelines on licensing of pest control operators were completed in April 2015, reviewed and finalized in May, endorsed by the panel in June, and were undergoing clearance at the time of the JMPM meeting.

7. Review of guidelines under development

7.1 Microbials, botanicals and semio-chemicals

The JMPM was briefed on progress with the guidelines on microbials, botanicals and semio-chemicals, prepared by a consultant with expertise in biopesticide registration. The latest draft incorporated a new round of comments and questions from the panel, following the JMPM review in October 2014. The guidelines have been under development since October 2012.

The JMPM concurred with the approach taken by the consultant, discussed at length a number of outstanding issues, and agreed on how those issues should be addressed. In conclusion, the group recommended that:

- the draft guidelines be revised as per the comments of the 9th JMPM meeting and to clarify or add information on data requirements, the definition of terms, risk assessment, efficacy, labelling and other issues discussed (a final decision table is to be made available by the author);
- the data requirements be tiered, be specific for each of the three groups of pesticide, and take into account established data requirements, e.g. those of the OECD, and other related guidance documents where relevant;
- the JMPM secretariat and the consultant who is writing the guidelines develop a schedule for completing this work, to be provided to the JMPM by the end of December 2015.

7.2 Highly hazardous pesticides

Discussion of the HHP guidelines began with briefings on related work by the FAO and WHO secretariats, CropLife and Pesticide Action Network.

FAO–WHO–UNEP proposal for concerted action on HHPs

FAO informed the JMPM that in early October 2015 it had presented an FAO–WHO–UNEP proposal for concerted action on HHPs to ICCM4, which included representatives from 128 countries. Previous SAICM meetings had discussed HHPs as an issue of concern, and FAO, WHO and UNEP had been asked to prepare a proposal that outlined a way forward. The proposal prepared by the three organizations outlines a strategy that would engage the different stakeholders, build on existing activities and use the HHP criteria developed by the JMPM.

Participants at ICCM4 reacted positively to the proposal and adopted a resolution calling for concerted action to address HHPs and encouraging stakeholders to implement the strategy set out in the proposal. The resolution thus creates momentum to move forward on HHPs, broadening the stakeholder community and providing a basis for countries to bring together their ministries of agriculture, health and the environment to address HHP issues nationally. The resolution thereby makes it urgent for the JMPM to finish and publish the HHP guidelines, as they will guide national governments and other stakeholders in implementing the strategy.

CropLife portfolio review

CropLife presented the results of a portfolio review carried out by its companies to determine whether their products included any HHPs and to take action if they did. The companies were asked to identify active ingredients that met the HHP criteria, assess the risk of the formulations and carry out risk mitigation where needed. CropLife noted that the portfolio review was not a “one off” exercise but is to be continuous.

A total of 822 active ingredients were included in the review. Of these, 37 active ingredients were identified as meeting the HHP criteria and 46 formulations were identified as potentially influencing the HHP status. Subsequently, 173 products based on the 37 active ingredients, and 649 products as a consequence of the 46 formulations, were evaluated. At the time of the JMPPM not all of the companies had completed their review, but of those that had, the interim results were as follows:

- 325 products (with multiple use scenarios) were found not to be HHPs
- 469 products were still being evaluated
- 28 products required risk mitigation (influence of formulations)
- risk mitigation of 26 products was completed or under way
- the mitigation covered 16 countries with 128 use withdrawals or scenario changes
- five products were withdrawn and one active ingredient may be withdrawn.

In the question and answer session after the presentation CropLife said it was not informed about stakeholder involvement in the portfolio review, as its role was simply to provide the companies with a flow chart of steps to follow. CropLife also noted that the multiple use scenarios were done individually by the companies and were not shared with others, given confidentiality concerns and rules on anti-competitive practices. In addition, CropLife explained that the risk assessments provide a margin of error but assume correct working practice and not gross abuse of regulations, such as children applying pesticides. Finally, CropLife clarified that the example of risk mitigation that it had presented at ICCM4 – training and equipping a small group of farmers so they could provide spray services for others as well as on their own farms – was not intended to be an example of risk mitigation for HHPs but for pesticide use generally. FAO commended CropLife for the portfolio review and said the JMPPM would be interested in hearing the full results.

Pesticide Action Network proposal

The Pesticide Action Network (PAN) presented an argument for phasing out HHPs and replacing them with “agro-ecological” practices, and also for including a needs assessment in the pesticide evaluation process to determine whether individual pesticides are really needed. PAN asserted that the term “integrated pest management” is now often misinterpreted to mean “business as usual” (i.e. an assumption that chemical use will be included) and not to include organic practices, and that it should be replaced in the HHP guidelines with “agro-ecological practices” or “agro-ecologically-based alternatives”.

In its slide show, PAN:

- provided examples of the extent and cost of health problems in developing countries following exposure to HHPs;
- cited the Code of Conduct on Pesticide Management section 3.6, which reads, “Pesticides whose handling and application require the use of personal protective equipment that is uncomfortable, expensive or not readily available should be avoided, especially in the case of small scale users and farm workers in hot climates”;
- cited examples found in ad hoc monitoring of labelling that is too small to read, not in the local language or missing basic information;
- noted that even countries with a “robust national legislation to regulate pesticides” are not able to control the market;
- argued that the health problems resulting from the use of HHPs are very costly;

- noted that the problem is not limited to HHPs but that other pesticides also cause health problems in developing countries;
- showed pictures of developing country farmers who had higher yields, healthier diets and better food security using organic practices.

To support its argument for replacing HHPs, and pesticide dependence generally, with agro-ecological practices, PAN cited the ICCM4 resolution on HHPs which calls for an “emphasis on promoting agro-ecologically based alternatives”. PAN also cited the IOMC-proposed indicator for tracking future progress on HHPs, which is the number of countries actively promoting ecological and biological control options. Finally, PAN quoted the FAO Secretary General, who in February 2015 stated, “The model of agricultural production that predominates today is not suitable for the new food security challenges of the 21st century. ... Since food production is not a sufficient condition for food security, it means that the way we are producing is no longer acceptable”.

In the question and answer session after the presentation, China told the JMPM that it has introduced a new concept of “green plant protection” in order to promote healthy soil and diversity of rice, to protect natural enemies, to improve plant health and resistance, to produce safer food and to improve ecosystems. PAN noted that China is one of the world’s largest producers of biological pest control. In response to a question about how agroecology could be packaged as a money-making endeavour, PAN explained that the objective is not to be a money-making industry but to improve the lives and livelihoods of farmers.

Progress report on the HHP guidelines

The JMPM was informed of progress with the guidelines on HHPs, which had been redrafted since the October 2014 JMPM to address comments from the Panel and to better reflect the requirements of the secretariat. The new draft was then reviewed by the JMPM HHP working group, which resulted in the full draft submitted to JMPM for review, along with a list of substantive issues for discussion that had emerged from the working group review.

The JMPM Panel agreed that the document was significantly improved. The list of substantive issues from the working group review was discussed and decisions were taken on all points. The panel members and observers were then invited to identify further substantive issues that required consideration by the JMPM, and the resulting list of issues was also discussed and decisions were taken on each point. Panel members were also informed that there would be another opportunity to submit minor comments of an editorial nature that would not require discussion.

The substantive issues discussed included:

- selection of the definition of exposure;
- removal of the definition of unacceptable risk, to be described in the analysis section instead and noting that this is ultimately a national decision;
- maintaining the suggestion to use surveillance information from comparable countries as pointers for products that may fall under criterion 8;
- maintaining the inclusion of needs assessment;
- the order of mitigation options;
- the term IPM being based on agro-ecological approaches;
- reference to health costs resulting from use of HHPs.

The recommendations of the JMPM were inserted in the lists of substantive issues and these will be circulated with the revised draft of the guidelines.

In conclusion, the JMPM recommended that the guidelines be finalized in line with the revisions and the schedule agreed at the meeting, as follows:

- the FAO secretariat will produce a new draft incorporating the changes agreed at the 9th JMPM meeting, to be sent to the JMPM panel and observers by 1 December 2015;
- the panel and observers will provide comments by 15 January 2016, limiting comments to issues not previously addressed and not introducing new substantive issues;
- based on comments received, the FAO secretariat will develop a final draft and a table showing how comments were addressed, and will send this draft and table to the JMPM panel by 15 February 2016 with a request for review by 7 March 2016. If needed, the FAO will organize an inter-sessional meeting with panel members via teleconference to address unresolved issues;
- the JMPM panel will review and endorse the draft after all issues have been resolved.

7.3 Personal protective equipment

The JMPM was given an update on progress with the draft guidelines on personal protection when working with pesticides, which are being revised to incorporate the comments made at the October 2014 JMPM. The JMPM was reminded that the development of these guidelines presents an opportunity to improve on existing guidance on personal protective equipment (PPE), which only describes when and how to use it. FAO suggested that the JMPM guidelines should have a policy section that, for example, advises governments on what they can do to increase the quality and availability of PPE, and that might link use of PPE to certain pesticides. The JMPM recommended that work continue on these guidelines, and the FAO secretariat agreed to do this after the HHP guidelines are finished. Thereafter WHO will review and finalize the draft and will circulate it for JMPM endorsement.

7.4 Licensing of pesticide distributors and retailers

The FAO secretariat informed the JMPM that no further work had been done on these guidelines due to the extensive amount of work needed on the guidelines on legislation and HHPs. The licensing guidelines are now third in the secretariat's list of priorities for drafting of guidelines, after the HHP and PPE guidelines.

7.5 Household pesticides

The JMPM was informed that JMPM had debated the scope of the guidelines, i.e. what exactly is included in this category of pesticide. Due to other priorities more time will be needed to develop these. The joint secretariat will seek volunteers to prepare the first draft for the guidelines.

8. Making JMPM guidelines user-friendly and widely known

The JMPM revisited the issue raised at its last meeting of the need to make its guidelines more user-friendly and widely known. Following a discussion of ways to do this, the JMPM recommended that the FAO and WHO:

- adopt a more proactive strategy to promote the use of JMPM guidelines and make them more attractive, interesting and readable;
- provide hard copies of the guidelines for training sessions and workshops as well as links to electronic copies;
- publish attractive material, such as a flyer or brochure, which lists or summarizes the guidelines for distribution at events (training, workshops, conferences, etc.);
- produce translations of guidelines as much as possible;
- ensure a mechanism for users of the guidelines to provide feedback on their readability and usefulness; and
- edit the guidelines before publication.

To this end, the JMPM recommended that an internal WHO-FAO working group be created, coordinated by the WHO secretariat, to undertake steps to implement this recommendation.

9. Report from WHO on poison centres

WHO reported on a SAICM Quick Start Programme project on the feasibility of implementing poison centres in the eastern and southern African regions. The work is being led by the WHO Regional Office for Africa. WHO had good progress to report in several countries, including: the establishment of a new poison centre in the United Republic of Tanzania, with training in the centre organized by WHO; a workshop being held to set up a poison centre in Zambia; and plans for establishing poison centres in Ethiopia and Uganda.

The JMPM recommended that WHO continue to support the setting up and functioning of poison centres in low- and middle-income countries.

10. Emerging and important issues

The JMPM was reminded that the purpose of this agenda item was for the JMPM Panel members, based on their experience and their familiarity with national and regional issues, to alert the JMPM to emerging and important issues in pesticide management.

The JMPM reviewed a list of such issues developed at its last two meetings as well as new issues raised by the Panel members, and recommended that future JMPM meetings address the following three issues identified as high priority:

- the need for guidance on risk assessment and efficacy testing of pesticide-treated articles including clothing, paint, etc., taking into account WHO and OECD guidance

on certain types of these products. The JMPM urged WHO to expedite the development of this guidance;

- the unauthorized selling of pesticides on the informal market;
- treatment and recycling or disposal of empty pesticide containers and pesticide waste.

The JMPM further recommended that FAO and WHO, where relevant, engage with ongoing activities to prevent illegal international trade in pesticides. In line with this, the JMPM was informed that the OECD Pesticide Programme has published a best practice guidance on compliance and enforcement, has launched a website on pesticide compliance and enforcement where information on national laws, national compliance programmes, best practices, and other tools and resources can be downloaded, and has established a programme on fighting illegal international trade in agricultural pesticides. The JMPM was also reminded that FAO has guidance on management of empty pesticide containers and that unauthorized selling of pesticides will be addressed in the forthcoming guidelines on licensing and inspection.

11. Field Day

11.1 Nanjing Institute of Environmental Sciences

In the morning, the JMPM visited the Nanjing Institute of Environmental Sciences (NIES), Ministry of Environmental Protection (MEP), which is China's most important laboratory for pesticide environmental risk assessment and pollution control. The main function of the Institute is to provide technical support for pesticide environmental risk management. The visit began with a presentation on the work done at the Institute and its evolution over time, from hazard assessment to risk assessment and experimentation, and from a focus on organochlorines in the 1970s to the current focus on HHPs and experiments with alternatives (the latter sponsored by ICAMA). The presentation explained that since the 1980s more than 30 pesticides have been banned in China, and it cited several recent examples (e.g. fipronil and carbofuran for seed coating).

NIES uses laboratories (environmental chemistry and environmental toxicology) as well as field experiments to test pesticides' environmental behaviour and persistence and their effects on aquatic and soil organisms, birds and bees. In addition, the Institute has developed a series of microbial pesticide test guidelines and created a database of microbial pesticide biology information. NIES is currently: considering how to evaluate the environment impact of a number of new fungicides that are found to be long lasting in soil (DT50 > 400d) under laboratory conditions; identifying areas that are vulnerable to ground water pollution; establishing a GLP system for China and doing training to improve laboratory management; and promoting the mutual acceptance of pesticide registration data based on test methods in line with the OECD.

Two important problems for China today are the phytotoxicity of pesticides to rotation crops and the environmental pollution caused by pesticide packaging wastes. Annual production of pesticide packaging waste in China is about 3.2 billion units with a weight of about 100–150 thousand tonnes, and pollution from pesticide packaging waste has become a prominent environmental problem in rural areas. To deal with the latter problem, a pilot project supported by Germany and CropLife allows users to return empty pesticide containers to the

supplier in exchange for a small refund and a new container. A law on pesticide packaging waste management is also being prepared.

The presentation ended on the positive note that China has launched a campaign for zero increase in pesticide use. JMPM Panel members and observers then had an opportunity to visit the laboratory and see the tests in action.

11.2 Red Sun Group Ltd.

In the afternoon, the JMPM visited a new factory of China's largest agrochemical manufacturer, the Red Sun Group. The factory is located in Dangtu County, Anhui Province. Founded in 1989, the Red Sun Group had total sales in 2014 of US\$ 2.99 billion, of which US\$ 496 million were for exports. The company is now in the public domain. It has 6420 employees, six research centres, 12 laboratories (of which one is under GLP) and 366 technicians, and it works with universities to develop new molecules, formulations and mixtures. According to an introductory presentation given to the JMPM, the company's work on efficiency and quality in production has made it very competitive, by bringing energy savings and reduced emissions.

Following the presentation and a question-and-answer session focused on the company's products, the Red Sun Group gave the JMPM participants a bus tour of the factory.

12. Reflections on the field day

The JMPM concurred that the field day was very interesting and useful. The group especially appreciated the visit to NIES, where they were highly impressed by the sophistication of the laboratory and the quality and relevance of the work being done, such as the extensive investigation of environmental impact and the experiments on alternatives to HHPs.

The JMPM commended China's work on sharing information regionally, and recommended that FAO and WHO facilitate countries' sharing of information on pesticide risk assessment and data evaluation. This may involve facilitating translation of such information when needed on a case-by-case basis, e.g. for information regarding HHPs.

Based on the fruitful experience in China, the JMPM suggested that more JMPM meetings be held outside headquarters if possible, that such meetings include field trips for discussion with pesticide users and producers, and that they possibly be coordinated with regional meetings or training sessions. The secretariat explained that such benefits would need to be balanced against the higher administrative burden of organizing a JMPM outside headquarters and the limits it imposes on the participation of relevant FAO and WHO staff.

13. Ad hoc monitoring of the Code of Conduct on Pesticide Management

The FAO secretariat briefed the JMPM on the guidance in place for monitoring and observance of compliance with the Code of Conduct, which states that "NGOs and other interested entities are invited to monitor activities related to the implementation of the Code and report these to the Directors General of FAO and WHO and the Executive Director of

UNEP”. FAO explained that there are two tracks for monitoring compliance with the Code: regular monitoring and reporting, in which governments and stakeholders report to FAO every 3 to 10 years using a form provided; and ad hoc monitoring, in which governments and stakeholders report to FAO as considered useful. When ad hoc reports are submitted, FAO offers the target of the complaint an opportunity to respond. The FAO secretariat then prepares a report to present to the JMPM, and the Panel of Experts reviews the report and recommends any follow-up actions.

FAO explained that a new case had just been received concerning non-adherence by two pesticide manufacturers to the Code of Conduct provisions on labelling, personal protective equipment, training and monitoring. The complaint was submitted by several NGOs. Although the NGOs had published their report, sent it to the companies and received a response in advance of FAO action, the FAO secretariat proposed that it should follow the established procedure, with a letter to the companies and the national government concerned, in recognition that the case raises a broader issue that needs to be addressed by governments and stakeholders together. The issue is the gap between the PPE specified on pesticide labels and what is realistically possible in many low- and middle-income countries, where such PPE is often neither available nor appropriate. Depending on the response, FAO said the outcome might be a recommendation that not only addresses the specific case but also constructively addresses the broader problem, for example through a national meeting with all stakeholders. The JMPM concurred with this proposal, and more generally it recommended that:

- the process for monitoring implementation of the Code be more widely publicized to encourage more feedback from countries;
- the existing process be followed to address the recently received ad hoc monitoring report; this might include an inter-sessional meeting;
- after following this process, the JMPM panel and secretariat evaluate the process;
- ad hoc monitoring reports be used as a trigger to constructively address the broader issues as identified in the reports.

14. Venue of the next JMPM meeting

The October 2016 JMPM will be held at WHO headquarters in Geneva, Switzerland.

15. Recommendations

The recommendations of the JMPM referred to in the text above are summarized as follows:

Terms of reference

The JMPM recommended that the secretariat clarify in writing the JMPM procedures, including the terms of reference for the panel and observers as well as the number of observers per organization or institution eligible for participation in such meetings. It further recommended that the final document be made available well in time before the next meeting.

JMPM guidelines

The JMPM recommended that JMPM guidelines provide, where relevant and appropriate, more reference to “cross-cutting” issues such as climate change, gender, genetic susceptibility, and the role of inter-departmental and regional cooperation.

FAO/WHO Code of Conduct on Pesticide Management

The JMPM recommended that the FAO and WHO promote workshops and other activities in countries and/or regions to support implementation of the Code and its guidelines.

The JMPM encouraged UNEP to adopt the Code formally.

Guidelines on microbials, botanicals and semio-chemicals

The JMPM recommended that:

- the draft guidelines be revised as per the comments of the 9th JMPM meeting and to clarify or add information on data requirements, the definition of terms, risk assessment, efficacy, labelling and other issues discussed;
- the data requirements be tiered, be specific for each of these three groups of pesticide, and take into account established data requirements, e.g. those of the OECD, and other related guidance documents where relevant;
- the JMPM secretariat and the consultant who is writing the guidelines develop a schedule for completing this work for sharing with the JMPM by the end of December 2015.

Guidelines on highly hazardous pesticides

The JMPM recommended that the guidelines be finalized as per the comments of the 9th JMPM and according to the schedule agreed at the meeting:

- (i) the FAO secretariat will produce a new draft incorporating the changes agreed at the 9th JMPM meeting, to be sent to the JMPM panel and observers by 1 December 2015;
- (ii) the panel and observers will provide comments by 15 January 2016, limiting comments to issues not previously addressed and not introducing new substantive issues;
- (iii) based on comments received, the FAO secretariat will develop a final draft and a table showing how comments were addressed, and send this draft and table to the JMPM panel by 15 February 2016 with a request for review by 7 March 2016. If needed, the FAO will organize an inter-sessional meeting with Panel members via teleconference to address unresolved issues;
- (iv) the JMPM panel will review and endorse the draft after all issues have been resolved.

Guidelines on personal protective equipment

The JMPM recommended that work continue on these guidelines.

Making JMPM guidelines user-friendly and widely known

The JMPM recommended that the FAO and WHO:

- adopt a more proactive strategy to promote the use of JMPM guidelines and make them more attractive, interesting and readable;
- provide hard copies of the guidelines for training sessions and workshops as well as links to electronic copies;
- publish attractive material, such as a flyer or brochure, which lists or summarizes the guidelines for distribution at events (training, workshops, conferences, etc.);
- produce translations of guidelines as much as possible;
- ensure a mechanism for users of the guidelines to provide feedback on their readability and usefulness; and
- edit the guidelines before publication.

To this end, the JMPM recommended that an internal WHO–FAO working group be created, coordinated by the WHO secretariat, to undertake steps to implement this recommendation.

Poison centres

The JMPM recommended that WHO continue to support the setting up and functioning of poison centres in low- and middle-income countries.

Emerging and important issues

The JMPM recommended that consideration be given at future JMPM meetings to several emerging issues identified by the panel as high priority, including:

- the need for guidance on risk assessment and efficacy testing of pesticide-treated articles including clothing, paint, etc., taking into account WHO and OECD guidance on certain types of these products. The JMPM urged WHO to expedite the development of this guidance;
- the unauthorized selling of pesticides on the informal market;
- treatment and recycling or disposal of empty pesticide containers and pesticide waste.

The JMPM further recommended that FAO and WHO, where relevant, engage with ongoing activities to prevent illegal international trade in pesticides.

Information-sharing

The JMPM commended China's work on sharing information regionally, and recommended that FAO and WHO facilitate countries' sharing of information on pesticide risk assessment and data evaluation. The JMPM recommended that FAO and WHO facilitate the translation of the information when needed on a case-by-case basis, e.g. for highly hazardous pesticides.

JMPM meeting locations

The JMPM suggested that more JMPM meetings be held outside headquarters if possible, that such meetings include field trips for discussion with pesticide users and producers, and that they possibly be coordinated with regional meetings or training sessions.

Ad hoc monitoring of the Code

The JMPM recommended that:

- the process for monitoring implementation of the Code be more widely publicized to encourage more feedback from countries;
- the existing process be followed to address the recently received ad hoc monitoring report; this might include an inter-sessional meeting;
- after following this process, the JMPM panel and secretariat evaluate the process;
- ad hoc monitoring reports be used as a trigger to constructively address the broader issues as identified in the reports.

16. Closure of the meeting

The JMPM Panel members commended the chair and co-chair and the FAO and WHO secretariats for their effective preparation and running of the meeting. The chair and vice-chair thanked the group for their contributions to the work of the JMPM and expressed their sincere thanks to Mr Gu and ICAMA for the excellent hosting of the meeting, which was highly appreciated. The WHO and FAO secretariats also thanked Mr Gu and ICAMA for their hosting of the meeting, thanked the chair and co-chair for running a very productive meeting, thanked the Panel members and observers for their important contributions, and wished everyone a safe journey home.

Annexes

Annex 1 – List of participants

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9th FAO/WHO Joint Meeting on Pesticide Management (JMPPM)
Nanjing, China – 12–16 October 2015

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8th FAO/WHO Joint Meeting on Pesticide Management (JMPM)
FAO HQ, Rome, Italy* 13 to 17 October 2014 * India Room

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Annex 2 – Final agenda as adopted by the JMPM

Ninth FAO/WHO Joint Meeting on Pesticide Management

12–16 October 2015

Monday 12 October

Meeting of the FAO and WHO secretariats

Tuesday 13 October

Closed session (09:00–10:00)

1. Declaration of interest
2. Panel working procedures and programme of work
3. Any other matters

Open session (starting 10:00)

1. Opening and welcome address
2. Appointment of Chairperson and Rapporteurs
3. Adoption of the agenda
4. Meeting procedure, working arrangements and housekeeping matters
5. Summary of developments and actions since the eighth JMPM in October 2014
 - Reports by FAO, WHO, OECD
6. JMPM-endorsed guidelines
 - Guideline on good labelling practice for pesticides
 - Guideline on pesticide legislation
 - Guideline on licensing of pest control operators
7. Review of guidelines under development
 - Guideline on microbials, botanicals and semio-chemicals

Welcome reception hosted by ICAMA

Wednesday 14 October (starting 09:00)

7. Review of guidelines under development (continued)
 - Guideline on highly hazardous pesticides
 - Guideline on personal protective equipment (PPE)
 - Guideline on licensing of pesticide retailers and distributors
 - Guideline on household pesticides
8. Making JMPM guidelines user-friendly and widely known
9. Report on WHO poison centres
10. Emerging and important issues

Closed Session (17:00–19:00)

11. Development of recommendations

Thursday 15 October (starting 08:20)

12. Field day
 - Nanjing Institute of Environmental Sciences (followed by lunch hosted by NIES)
 - Red Sun Group Ltd (followed by dinner hosted by Red Sun Ltd)
 - Confucius temple in Nanjing

Friday 16 October (starting 09:00)

13. Reflections on the field day
14. Ad hoc monitoring of the Code of Conduct
15. Any other matters
16. Presentation and finalization of the recommendations
17. Closure of the meeting

Annex 3 – Regional activities

3.1 Activities of WHO regional offices since the 8th JMPM

African Region

Vector control is a major strategy in the Region for control of malaria and important NTD diseases such as yellow fever, dengue and chikungunya. The work on malaria vector control in the past few years has focused mainly on provision of multifaceted support on a country-by-country basis, with special attention on macro and micro-planning for effective delivery of the two major interventions, i.e. indoor residual spraying (IRS) and long-lasting insecticidal nets (LLINs), towards universal coverage; capacity building; insecticide resistance monitoring and management; development of regional standards and tools; promoting safe pesticide management; operational research; and monitoring of progress in implementation of interventions.

Country support and capacity building

- South Africa developed strategy for urban malaria vector control;
- Eritrea, Kenya and Mozambique developed national strategic plans for insecticide resistance monitoring and management;
- Eritrea revised its integrated vector management (IVM) strategy with full consideration of the current epidemiological situation;
- Mozambique revised its IVM strategic plan for 2015–2020;

Insecticide resistance monitoring and management

- More than 10 countries were provided with insecticide resistance test kits, conducted resistance tests and documented the status of resistance of their malaria vectors in 2013–2014.

Promoting safe pesticide management

- Seychelles revised and updated pesticides act (legislation) in 2014 with the Regional Office's technical and financial support.

Piloting IVM and operational research

- Supported Sierra Leone to conduct a two-year pilot IRS to assess feasibility, acceptability and impact of the method under local circumstances, with a view to scaling it up for impact.
- A GEF–UNEP project on *Demonstrating cost-effectiveness and sustainability of environmentally sound and locally appropriate alternatives to DDT for malaria vector control in Africa* is ongoing in Ethiopia and Madagascar to create an evidence-base to diversify the vector control strategy, in order to better respond to the ever-changing vector behaviour, including insecticide resistance, to environmental concerns and to increased costs.

Monitoring IVM interventions

- A report on progress in implementing vector control interventions, mainly IRS and LLINs in the region during 2008–2013, was finalized for publication.
- The 3rd regional atlas on insecticide resistance is under development and aims at sharing information with Member States and partners on the status of appropriate actions to support countries in the management of resistance.
- A handbook on vector control for malaria elimination is in preparation.

Control of other vector-borne diseases (mainly response to epidemics)

- Technical support was provided to Ethiopia in response to a reported dengue fever epidemic in the eastern part of the country. A survey has also confirmed the presence of the vector *Aedes aegypti* at a much higher level of the risk index, indicating active circulation of the yellow fever virus. A recommendation was provided to conduct fogging and IRS to reduce the vector population density, and thereby transmission. Community education and awareness on yellow fever transmission and its control methods were strongly recommended, as most breeding sites were found to be in contact with household water containers. Recommendations on long-term actions, such as application of IVM and continuous monitoring of the vector, were stated.

Americas Region

As part of the efforts made by the Pan American Health Organization/World Health Organization (PAHO/WHO) together with Member States to strengthen prevention and control of vector-borne diseases in the Americas, the following activities were carried out during 2014–2015 by the PAHO/WHO Regional Public Health Entomology Program (RPHEP):

- **IVM in Argentina:** The Ministry of Health of Argentina, with technical support from the RPHEP, conducted the IV International Conference on Vector-Borne Diseases (20–24 October 2014, Santiago del Estero). Along with the RPHEP, this event included the participation of the managers and heads of the national strategies for integrated prevention and control of dengue (IMS-Dengue) from 19 countries across the continent, and those responsible for national programmes for the control of Chagas disease and its vectors. The participants discussed the main lines of programmatic work being implemented in the biennium 2015–2016, which involves the management of insecticide resistance, strengthening of entomology in the public health sector in the region, and support for the implementation of IVM by countries.
- **Insecticide management:** Collaborating with the PAHO/WHO Regional Malaria Programme, the RPHEP requested information about insecticide susceptibility studies and results of regular monitoring from all 21 malaria-endemic countries of the Region in April–May 2015 as part of the annual exercise for data collection for the World Malaria Report (WMR). Information about consumption of insecticides, malaria-related vector control interventions, IRS and LLINs and policy questions related to vector control were also requested for each year. This additional information was gathered and sent along with the official request for data for WMR, and is being analysed by the RPHEP.
- **Regional Consultation Meeting:** The first PAHO/WHO regional meeting on “Management, control and elimination of vector-borne diseases: strengthening of Entomology” was held on 19–21 May 2015 at PAHO/WHO regional office in

Washington, DC. The main purpose of the meeting was to review, update and adapt the concepts and activities that determine the entomological theories and practices, as applied to public health in the Americas. The directors (or responsible officers) of the national Vector Control Programs from participating countries, the WHO Collaborating Centres for entomology in the Region, researchers and experts on entomology participated in this meeting.

- IVM and dengue in the English-speaking Caribbean: The RPHEP evaluated the Integrated Vector Management component of the Integrated Management Strategy for Dengue Prevention and Control (IMS-Dengue) of Anguilla, Antigua, Barbados, British Virgin Islands, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines during 16–19 June 2015.
- Technical cooperation to Jamaica and Puerto Rico: At the request of the countries, the RPHEP organized and conducted a technical visit to Jamaica (20–24 July 2015) in order to review Jamaica’s Vector Control Programme and identify gaps and make recommendations to strengthen the country’s preparedness and response capabilities against vector-borne diseases. This mission was made possible through the partnerships of IDB, PAHO/WHO, CDC and CARPHA. In Puerto Rico, the RPHEP carried out two technical missions to advise the Puerto Rico Department of Health on surveillance of insecticide resistance and integrated vector management.
- Technical Advisory Group: The process to create a regional Technical Advisory Group (TAG) on entomology and vector control was initiated on 15 May 2015. The main function of the TAG on Public Health Entomology will be to advise PAHO/WHO on coordination of strategic actions and development of technical guidelines, based on the best scientific evidence that supports the efforts to control and eliminate vector-borne diseases in the Americas.
- Operational Model for *Aedes aegypti* control: The RPHEP has been working with the PAHO/WHO Regional Dengue Program since September 2015 to prepare a proposal for a new operating model for surveillance and control of *Aedes aegypti* in the Americas. This new model will consider the current known technical capacities of countries (e.g. using data from the insecticide management survey noted above and dengue program data), and the necessary adjustments and modifications will be made to the current model with regards to the scientific advances and proven technologies related with the areas of surveillance and vector control.
- Transgenic mosquitoes: In May 2015, the RPHEP developed and published a technical note “Transgenic mosquitoes engineered for *Aedes aegypti* control” in response to requests for technical orientation arising in some countries.

Eastern Mediterranean Region

- A sub-regional IVM training course with 17 participants from Afghanistan and Pakistan was held in Islamabad (October 2014). The key objectives included: capacity building of programme staff of Afghanistan and Pakistan to conduct entomological surveillance and IVM for all endemic and emerging vector-borne diseases; inform and encourage nationals to implement programme activities with appropriate strategies and planning so as to utilize available resources for cost-effective and sustainable implementation of IVM activities; strengthen intra- and inter-sectoral collaboration and partnership for effective and efficient implementation of the IVM Strategic Plan in Afghanistan and Pakistan ; strengthen monitoring of insecticide resistance and implement appropriate insecticide resistance management activities in Afghanistan and Pakistan; and search for indigenous alternatives to DDT and safe disposal of

persistent organic pollutants in these countries. A total of 17 participants were represented from the following provinces: Baluchistan (1 participant), KPK (4 participants), Punjab (7 participants), Sind (3 participants), and two participants from Afghanistan.

- National integrated vector management workshop (Djibouti, November 2014).
- Yemen developed a national insecticide resistance and monitoring plan (2016–2021) in December 2014. The plan includes the current situation analysis, implementation framework and annual workplan for insecticide resistance management.
- Two national training courses on IVM were organized (Jordan, 31 March and 7 April 2015); 30 malaria technicians and 30 Bilharzia technicians were trained on IVM.
- As the WHO/UNEP/GEF project period comes to an end (2009–2015), the WHO Regional Office for the Eastern Mediterranean has commissioned a final review in individual countries (Egypt, Jordan, Morocco and Sudan) and at regional level, to evaluate the achievements, derive lessons learnt and propose the way forward (April–September 2015).
- An updated regional IVM strategy for the Eastern Mediterranean Region (2016–2020) was developed at a consultative workshop (Cairo, March 2015).
- The eighth scientific technical advisory committee meeting was held (Islamic Republic of Iran, 9–11 June 2015).
- An insecticide resistance monitoring and strategic plan was developed for Sudan (July–August 2015). The plan aims to monitor insecticide resistance in vectors of malaria and other vector-borne diseases and to identify resistance mechanisms that show phenotypic resistance.
- A revised LLIN distribution strategy reflecting the current situation and strategic direction was developed for Somalia in July 2015.
- A national plan for insecticide resistance management was developed in consultation with national and international experts (for the period 2015–2019) and is intended to guide malaria elimination in the Islamic Republic of Iran in preserving and regaining the effectiveness of insecticides.
- Morocco is developing legislative requirements to oversee life-cycle management of pesticides.

European Region

- The 5-year project entitled “Demonstrating and Scaling up Sustainable Alternatives to DDT for the control of vector-borne diseases in Southern Caucasus (Georgia) and Central Asia (Kyrgyzstan and Tajikistan), 2010–2014” has been completed. The objectives of the final Steering Committee Meeting of the project (Tbilisi, 4–5 February 2015) were to:
 - inform about work done in the DDT project since the November 2013 steering committee meeting in Bishkek;
 - review the current project outcomes, reports and results (as of January 2015) against the project document;
 - receive country reports about work done and about national developments over the past 12 months of relevance for the DDT project;
 - discuss and agree the workplan for 2015 in line with the requirements of the project document;
 - receive country information on co-finance planned to be provided in 2015 as part of the country commitment; and

- present and discuss the concept note for a follow-on GEF6 project on DDT risk reduction in the Caucasus and Central Asian regions.
- The new concept note was reviewed and discussed between UNEP and GEF. It was decided to include Kyrgyzstan and Tajikistan in the project.
- The National Strategy on integrated management of vector-borne diseases in Tajikistan has been approved and printed.

South-East Asia Region

- Conducted bi-regional training in malaria entomology and vector control including insecticide resistance management (Manila, June 2015)
- Provided technical support to Bhutan (April 2015) and Sri Lanka (September 2015) to address vector control and insecticide resistance management in the context of malaria elimination. Conducted technical seminar in New Delhi on management of insecticide resistance as part of World Malaria Day celebration
- Conducted review of malaria entomology and vector control in Myanmar and developed Strategic Plan for Capacity Building for Entomology and Vector Control in Myanmar
- Developed a paper on malaria entomology and vector control in Thailand that was used as a background paper for the Malaria Program Review in Thailand.
- Supported one international consultant who did a presentation on vector surveillance and vector control at the ports of entry during a regional meeting on International Health Regulations in Sri Lanka
- Developed guidelines on vector control and personal protection of migrant and mobile populations in the Greater Mekong Sub-region.
- Concluded a study on durability and efficacy of LLINs in Nepal (final report will be available soon)
- Initiated a study on durability and efficacy of LLINs in Bangladesh
- Trained three entomologists from the Democratic People's Republic of Korea at the Vector Control Research Centre (a WHO Collaborating Centre for IVM) in India (Puducherry, 3–28 August 2015)
- Supported national training in entomology and vector control in the Democratic People's Republic of Korea
- Updated the Insecticide Resistance Management Plan in the Democratic People's Republic of Korea
- Supported IRS, LLIN distribution and insecticide treatment of clothes
- Developed National Vector Control Surveillance Guidelines
- Initiated Japanese Encephalitis Vector Surveillance in Indonesia
- Japanese Encephalitis Vector Surveillance in different sentinel sites in Bali Province
- Evaluated bio-efficacy of LLINs (Netprotect, Duranet and Royal Sentry) in malaria hyper-endemic areas of Bangladesh (October 2014 and May 2015) locally by the national entomologist.
- Conducted entomological survey for distribution and bionomics, with emphasis on vector behaviour of Anopheline fauna including malaria vectors in endemic areas of Bangladesh, and recommended appropriate control measures with emphasis on IVM.
- Carried out study on the role of Anopheline fauna in transmission of malaria in malaria-endemic districts of Bangladesh.

- The WHO Country Office in India has been engaged with independent monitoring of indoor residual spray operations in Bihar, Jharkhand, West Bengal and Uttar Pradesh (since 2014)
- Vector bionomic study in Kachin State, Myanmar (September 2014)
- Longitudinal entomological study in Kayah and Kayin states (September–December 2014)
- Vector Control Workshop – ELISA and mosquito identification (Yangon, Myanmar, February 2015)
- Basic entomological training for vector-borne disease control staff (permanent sprayers and malaria supervisors) in RAI areas – 7 states and region in Myanmar – continuing (August–October 2015)
- Insecticide resistance sentinel surveillance in Nepal annually with WHO Temporary Adviser
- Sri Lanka: In-service training for Regional Malaria Officers on entomological surveillance and vector management for malaria elimination and prevention of re-introduction organized by Anti-Malaria Campaign with WHO support
- Sri Lanka: Training of field staff on IVM organized by National Dengue Control Unit with WHO support.

Western Pacific Region

- Achieving full coverage of the population at risk with appropriate vector control measures and managing insecticide resistance in major malaria vectors continue to be a regional priority during the above period, as articulated in the Regional Action Plan for Malaria Control and Elimination in the Western Pacific (2010–2015). However significant threats to sustaining coverage have emerged since the marked reduction of funding to countries under the Global Fund’s New Funding Model.
- WHO continues to provide technical assistance to countries to strengthen implementation of IVM programmes specifically targeting high-risk and marginalized populations affected by malaria, dengue and other arboviral diseases.
- Following the launch of the Global Plan for Insecticide Resistance Management by WHO, countries have been encouraged to adopt strategies and policies in line with the recommendations contained therein and also to strengthen insecticide resistance monitoring. Insecticide susceptibility continues to be tested in several countries affected by malaria and efforts are now under way to strengthen susceptibility assays among *Aedes* spp. populations.
- Insecticide resistance monitoring was facilitated in Cambodia, Lao People’s Democratic Republic, Philippines, Thailand and Viet Nam.
- There is strong partner support for insecticide resistance monitoring in Member States from USAID, CDC, Institute Pasteur Lao and NAMRU-2 in Mekong countries.
- Capacity for in-country entomological surveillance and monitoring of insecticide resistance was also strengthened through an IVM training conducted jointly with the Ministry of Health Malaysia, National Environmental Agency Singapore (WHO Collaborating Centre), IMR Malaysia (WHO Collaborating Centre) and WHO (29 October to 3 November 2014). It was attended by 20 Malaysian Officers and 10 international trainees from Bangladesh, Bhutan, Cambodia, Indonesia, Lao People’s Democratic Republic, Solomon Islands, Timor-Leste, Viet Nam and Vanuatu.
- An IVM training aimed at improving dengue control was also conducted jointly with the WHO Collaborating Centre for IVM in Yunnan, China (8–18 March 2015) and

attended by 40 participants from China, Lao People's Democratic Republic and Myanmar.

3.2 Activities of FAO regional offices since the 8th JMPM

Asia

- APPPC training workshop on the revised Code of Conduct on Pesticide Management (Nepal, 26–30 January 2015) attended by 28 participants from 12 Asian countries
- 29th APPPC (Bali, 7–11 September 2015) on IPM delivery
- Regional workshop on Pesticide Registration Toolkit (Viet Nam, 1–5 June 2015) with 5 participating countries
- Set up database on APPPC Web
- Publication: *Progress in pesticide risk assessment and phasing out of HHPs in Asia* (based on survey)
- Projects:
 - TCP/SRL/3402: *Management of risks associated with pesticide use*
- TCP/SRL/3502: *Strengthening pesticide management in agriculture to reduce risks to health and environment*

Africa

- CSP/CILSS (Sahel Committee on Pesticides): three new GEF projects approved
- Various regional workshops on pesticide regulation and on pilot testing of the toolkit, Pesticide Stock Management System (PSMS) – PMS in 2015 in Africa and Asia.
- SAPReF multi-stakeholder Workshop on strategic planning for implementation of regional projects in July 2015
- GEF project(s): Prevention and disposal of obsolete pesticides
- UCT Postgraduate Diploma on Pesticide Risk Management

Caribbean

- Coordinating Group of Pesticide Control Boards of the Caribbean EU-funded project, followed by GEF Project 5558 – *Regional project for the development and implementation of a sustainable management mechanism for persistent organic pollutants in the Caribbean under the Stockholm Convention*. FAO: removal of 100 tonnes of PCBs (US\$ 4.37 million GEF, US\$ 26 million co-finance). Inception technical meeting (September 2015)
- Project workshop for registrars on PSMS (PMS) and toolkit

Near East

- Gulf Cooperation Council sub-regional workshop: fostering collaboration and Rotterdam Convention (February 2015)
- GEF PIF: Obsolete Pesticide Stockpiles, contaminated sites (IOMC framework) in Sudan

Latin America

- Implementation of capacity building in sound management of pesticides in eliminating POPs in Uruguay (completed in 2014)
- Implementation of a project in Paraguay to address HHPs.