



POPs NEWSLETTER

No 20, DECEMBER 2010

PREPARED ON BEHALF OF IHPA

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The aim of this newsletter is to disseminate information in a cost-effective way on the Development taking place in the area of POPs as implicated in the Stockholm Convention and other pollutants of concern. It will cover, among others, the news on science and technology for disposal of obsolete stocks and remediation of POPs contamination, which might be of interest for commercial exploitation both in developed and developing countries. Special emphasis will be given to bioremediation, non-combustion related technologies which will benefit developing countries. The newsletter will not go into technical details of selected scientific publications but only highlight salient features for the benefit of the readers. One can subscribe and read IHPA Newsletter (2 times/yr free of charge) at <http://www.ihpa.info/resources/newsletter/>.

NOTE FROM THE EDITOR

On behalf of the newly formed Editorial Board, I would like to take the privilege to thank Mr. John Vijgen and the Board of Directors, IHPA, for assigning us the responsibility of preparing the IHPA Newsletter w.e.f. December, 2010. We also gratefully acknowledge the contributions of Dr. Bala Sugavanam and his editorial board, which have virtually paved us the way to proceed forward. We also acknowledge the great response received in the form of long useful informative articles within the shortest noticed period, and also beg apology to them for shortening their articles for space limitations of the newsletter.

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Hot news

following Mini-Hearing:

15 November 2010, Brussels EU Parliament:

Ria Oomen-Ruijten, Esther de Lange and Dan Jørgensen, Members of European Parliament urge 5 Directors General of EU Commission to take concrete steps to develop an Action Plan to fight obsolete pesticides in the neighbouring partner countries:

After the Mini-Hearing on Obsolete Pesticides in Eastern European Countries, the Caucasus and Central Asian Countries in the European Parliament on 29 of June 2010, IHPA had sent a letter requesting 5 EU Director Generals to come forward with a plan on Obsolete Pesticides. On 20 October 2010, EU Commissioner Karel Kovanda answered positively that:

“The European Commission is fully aware of the environment and health concerns posed

by obsolete pesticides and other unused hazardous chemicals in the region.

Action is taken within the EU's existing policy framework, i.e. the European Neighbourhood Policy and the EU-Central Asia Strategy, to raise awareness in partner countries, and promote a strategic and legislative approach.

Building on existing initiatives and coordination with local and international institutions, the European Commission is also examining possibilities for granting financial assistance in the context of existing instruments, to complement activities of other donors already active in this field.”

However, no concrete action has been brought forward by Mr. Kovanda in his letter. Therefore, Ria Oomen-Ruijten, Esther de Lange and Dan Jørgensen, Members of the European Parliament expressed clearly in their letter: “We believe, however, that concrete steps are needed to bring the active donors together and call on the Commission to develop an Action Plan to fight obsolete pesticides in our neighbouring partner countries”

For further details see letter on [<Latest IHPA News>](#).

1. MINI HEARING ON OBSOLETE PESTICIDES – 29 JUNE 2010 – EUROPEAN PARLIAMENT ASP 3 E 2

Paying serious concern to the situation of obsolete pesticides in Ukraine, Moldova and Armenia based on information from John Vijgen, Director, International HCH & Pesticides Association (IHPA) a year ago, the Members of the European Parliament Ms. Ria Oomen-Ruijten and Ms. Esther de Lange, together with John Vijgen took joint initiative to organize a *Mini Hearing on Obsolete Pesticides in Eastern European countries, Caucasus and Central Asia Countries, in the European Parliament on 29 of June 2010*. John Vijgen, the Director, IHPA made an open invitation through IHPA Newsletter (Issue #19) encouraging interested parties to participate in the debate. As per pre-set schedule, the *Mini Hearing* was held from 14.00 till 16.45 on 29 of June 2010 in Brussels. Sixty two dignitaries including representatives from World Bank, FAO, NATO, Green Cross, CEPS, ECPA, OSCE, ISTC, EU Commission, Countries from Central and Eastern Europe, Central Asia and Caucasus regions participated in the hearing.

The *Hearing* was marked by the opening speech by MEP Ms. Ria Oomen-Ruijten, which was followed by presentations by OSCE Ambassador Sergey Kapinos, Armenia; Richard Thompson and Joergen Maersk Pedersen, FAO; First Deputy Minister Vitalii Boot, Oleksander Ovdienko, Ministry of Emergency, Ukraine; Marta Ciraj, Ministry of Health, Slovenia; Mariana Grama, Ion Barbarasa & Valentin Plesca, Moldova; Gulchehra Aliyeva, ECORES, Azerbaijan; John Vijgen, IHPA; Christian Egenhofer, CEPS; Andrew Murphy, EU Commission; DG Environment, and Statement by Elena Manvelyan, AWHHE, Armenia. Following presentations, a threadbare Discussion was held along with the contribution of WB in written statements. The *Hearing* was concluded by MEP Ms. Esther de Lange. For details of the Mini Hearing and presentations please visit <www.iHPA.info> (Mini-Hearing on obsolete pesticides – Conclusions)

In her speech, Ms. Ria Oomen-Ruijten pledged “the situation on obsolete pesticides in Ukraine, Moldova and Armenia is very concerning. In even more countries the situation is critical and is doing great damage to environment and people. Therefore we initiated this meeting in cooperation with Esther de Lange, who is a member of the environment committee in the parliament. We want to raise attention, get obsolete pesticides on the European agenda and aim at a permanent international cooperation instrument.” She also expressed her satisfaction for enthusiastic and inspiring messages received from different sources and at the presence of so many experts and nationalities from countries like Ukraine, Moldova, Russia, Denmark, Netherlands, Belgium, Armenia, Uzbekistan, Japan, Norway, Germany and Albania and organizations like FAO, OSCE, NATO and World Bank. She recalled as a member of the European Parliament for more than 20 years numerous meetings on obsolete pesticides. She acknowledged good cooperation between producers and users of pesticides and an active role of governments and the European institutions, which helped achieve a great deal in the western part of the continent. She however exclaimed “In many countries there is still a reason for great concern. And there is still great need for more coordination and cooperation. Especially funding and the exchange of knowledge and "best practises" are essential.” She hoped this meeting as a good opportunity to make a start of a better cooperation between organisations and countries.

She opined “After the enlargement of the European Union, the European Parliament has continued, and even reinforced its commitment to the elimination of obsolete pesticides in member states as well as neighbouring countries. Since EU member states are effectively

dealing with polluted sites in their own countries, there is a big responsibility for the EU to their neighbours. This is possible by funding, assistance in cleaning up sites, delivering knowledge or by coordination. This is where the Commission can play an important role.” She further urged “the Commission should make an inventory where the problems are, what different players can offer and how with joint forces damage can be reduced or even prevented. Within the European commission DG RELEX is dealing with obsolete pesticide because it's dealing with this problem outside the EU. But more influence and participation of DG ENVI is wishful because it is an environmental problem.” She expressed her satisfaction saying that the Commission was represented at the Mini Hearing by DG ENVI and the two DG's were working more and more together on this subject. She finally pledged that the meeting would play an important role in the debate on fighting obsolete pesticides and to get rid of those stockpiles as a new starting point.

John Vijgen, Director of IHPA highlighted among others on the (i) initiative taken by MEPs along with Participants from World Bank, FAO, NATO, Green Cross, ECPA, Countries from Central Europe, Central Asia and Caucasus regions, (ii) on the importance of obsolete pesticides since they pose a local and regional risk to human health and the environment, obsolete pesticides are, although banned since many years, still present in the environment and in food and feed, their global amount is estimated on 0.5 M tons (HCH excluded). He explained graphically in a unique way the “U” turn of commitment as *Sensing*: IHPA urges for action over more than 18 years, *Co-sensing*: That's why all participants are at the meeting to become part of the solution, once they have taken notice of this problem, and *Co-creation*: Concerted action is required.

The *Mini Hearing* ended with the following Conclusions and Recommendations:

- Urgent cases as reported from Armenia and Ukraine demonstrate an urgent need for short term action. The fact these cases have been presented by high level representatives, gives evidence that the governments of these countries are committed to act. But the size and complexity of these problems, combined with a lack of in country expertise and adequate financing also urges the need for assistance.
- OCSE, FAO, WB and other donors emphasized the importance of collaboration between donors and with EU and the countries from the region.
- Besides the need for urgent action, the examples as presented from Armenia, Ukraine and Azerbaijan demonstrate that Governments need assistance in setting up proper programmes for the elimination of Obsolete Pesticides and need sharing of concepts and expertise.
- The structured approach as presented by FAO is strongly recommended as a basis for both the set up of such programmes and to provide a common basis and ‘language’ for exchange of experiences and information.
- The management of Obsolete Pesticides as developed by Moldova is an excellent reference for other countries. This team of highly committed experts combines a proactive approach of donors, adequate networking with international experts and active communication with a pragmatic approach and focus on developments of low cost technologies. Being one of the poorest countries in the region, they have shown to be as well effective as efficient in their approach of Obsolete Pesticides. Notwithstanding their high commitment, they need additional financial support to continue their well developed approach.

- The initiative taken by Slovenia to address Obsolete Pesticides to the agenda of the World Health Assembly contributes to drawing the attention to the effects of dangerous chemicals on human health. (Recent) publications show a growing concern of medical scientists for the effects on the endocrine system of newborns and infants.
- The plea as addressed by Slovenia to develop and structure the Danube problem over a cross country river basin management program is a good example of setting up a long term partnership between countries to cooperate on a concerted approach. These initiatives deserve EU support.
- EU Commission confirmed the importance of better coordination, and improved use of existing instruments. The Commission stated to include Obsolete Pesticides in the EU External Policy and to provide financial assistance, under the condition that countries give priority to their initiatives and fund raising within the limits of their national budgets.
- Members of the European Parliament are recommended to re-activate the Working Group on Obsolete Pesticides to provide support and pressure on the concerted actions as proposed by the Commission.
- Members of European Parliament Mrs. Ria Oomen-Ruijten and Ms. Esther de Lange expressed to make efforts that obsolete pesticides becomes a priority issue and should remain on the EU agenda until a final solution has been obtained. They also proposed to put EDF on obsolete pesticides with more force in the strategy for ENPI

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2. PERSISTENT TOXIC SUBSTANCES – THE USE OF TOP OF FOOD CHAIN ORGANISMS IN BRAZIL AS SENTINELS OF ENVIRONMENTAL POLLUTION - AN ONGOING JOINT RESEARCH PROJECT BETWEEN BRAZIL AND EUROPE

João PM Torres, Paulo Renato Dorneles (UFRJ) and José Lailson-Brito Jr. (UERJ)

Brazilian Amazon now facing intense anthropic degradation is associated with deforestation for agricultural and cattle grazing and the building of new hydroelectric reservoirs, roads and other enterprises that are claimed to lead to a better development of the northern region of Brazil. The main question is how to ally this development with the protection of the last continuous rain forest area of the globe. The amplification of the knowledge on the distribution and fate of persistent toxic substances (PTS) in the Amazonian environment is the objective of this on-going research to contribute with good science for socio-economic improvement and sustainability.

DDT based pesticides were highly used in Brazil since 1945, especially in the agriculture and against insects that are disease vectors. In 1986, its use in agriculture was banned and, in 1997, its use against disease vector was also halted. However, the presence of DDT and its metabolites in forest soils, breast milk and in the aquatic biota is common, especially at the Amazon. Recent studies in Amazon samples revealed that this contamination is relatively high and includes other organochlorines, PCBs and HCB, besides DDT and its main metabolites. The physical and chemical properties of DDT and its metabolites, as well as of the other organochlorine compounds make them to be readily absorbed by the local biota. The accumulation ratios vary among different species, according to the range of the concentrations, environmental conditions and time trend of exposure.

Most animals may accumulate this kind of compounds directly from the water but the main root seems to be their food obtained from the surroundings of the aquatic environment, what can be directly related to their food habits (e.g: carnivorous, detritivorous or herbivorous). In general, those organisms located on higher trophic levels tend to have more OCPs on their bodies, but this cannot be taken as a rule, since their food habits may represent sometimes a high exposure, like for example some mud-eaters (detritivorous fish) *Prochilodus lineatus* that rely on the organic matter in decomposition that is deposited in the bottom sediments of the rivers. Some organisms can be used as biological monitors of the alterations of the ambient characteristics promoted by pollution. Phillips & Segar (1986) defined a sentinel organism as an organism that can be used to evaluate the level of the biological availability of conservative substances in ecosystems. Sentinel species accumulate the pollutant without showing toxicological effects or showing little sub-acute effects, being tolerant to the stressor concentrations. Sentinels can be used to measure the total availability of a pollutant since the higher the amount present in a sample, in principle it is easier to measure it. Most frequently, the pollutant concentration in the tissues of the sentinels may serve as (1) reference concentrations for the evaluation of the availability to other organisms, (2) to integrate a complex signal of pollution or (3) to quantify the ecological meaning of the contamination. Taking this in mind, we propose a “sentinel system”, where data related to contamination levels on the aquatic biota will be regularly and systematically collected and analyzed in order to identify potential threats to the health of the other animals and to human populations (*National Research Council - EUA, 1991*).

Only during the 1970 decade that was proposed in a more formal way the use of aquatic mammals as environmental sentinels, and since then, several publications have reworked this idea. Recently, Lailson-Brito showed the viability on the use of some cetacean species as indicators of the trophic flux of pollutants in Brazil, showing that there are important differences even in different populations within a same species, in this case, the grey-dolphin *Sotalia guinanensis*. In the Amazon Region, the red-dolphin (*Inea geophrensis*) is common and abundant with a wide distribution in the main rivers and tributaries that forms the Amazon River basin. This species is the biggest freshwater cetacean, and the males can reach 2.25 meter of total length. Nowadays, the species is classified as vulnerable by the *IUCN*, being the great menaces for its conservation the changes in the rivers due to the construction of dams, the accidental capture in fishermen nets and the contamination with pollutants. Recently, Torres and co-workers, found HCB, DDTs and PCBs in fat tissues of *I. geophrensis* collected at the Solimões and Madeira Rivers that indicate high contamination in that particular region. This project is using such concept of sentinel species in the study of organochlorine compounds in the Amazon Basin, together with local scientists from UNIR (Rondonia State) and has important inputs from CSIC (Spain) and Universities of Liège and Antwerp (Belgium).

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3. GLOBAL ENVIRONMENTAL ASSESSMENT INFORMATION SYSTEM (GENASIS)

Karel Brabec, Jaroslav Urbanek and Ivan Holoubek; Research Centre for Toxic Compounds in the Environment (RECETOX), and Brabec and Urbanek also from Institute of Biostatistics and Analyses (IBA), Masaryk University

Research Centre for Toxic Compounds in the Environment (RECETOX) together with the Institute of Biostatistics and Analyses (IBA) has been developing the Global Environmental Assessment Information System (GENASIS, <http://www.genasis.org>). GENASIS aims to create

a platform for management of shared environmental data supported by tools for aggregation, visualisation, data analyses, models and expert interpretation of ecological and human health consequences. Initial version, launched at the beginning of 2010, is based on the objectives and conclusions of the National Implementation Plan (NIP) to support implementation of the Stockholm Convention on Persistent Organic Pollutants in the Czech Republic. General information on Stockholm Convention (SC), encyclopedic description of the substances covered by SC, overview of data available from NIP and international projects and presentation of related scientific topics (modelling, trajectories, and risk analysis) can be found on the web portal.

A key part of the GENASIS portal is the Analytical module which enables interactive visualisation of verified data stored in GENASIS database. Initial dataset contains data from ambient air monitoring of POPs within the international MONET project and long-term monitoring at the Kosetice observatory, which is a part of EMEP programme. Version 1.0 allows user to view basic characteristics of selected data, display the sites location, and distribution of measured values, and provides basic time series analyses (seasonal and long-term patterns). The next step intended for the version 2.0 is an extension of the database by monitoring of pollutants in soil and water, together with analytical tools enhancement including development of spatial analyses tools and comparison tool for several substances or matrices. Development of interactive national POPs inventories is scheduled for 2011.

The GENASIS database will connect data sets from a number of various environmental monitoring projects and programmes, which may significantly help to comprehensive understanding of pollutants fate in the environment and their impact on ecosystems and human population.

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4. PROJECT CETOCOEN

Jana Klanova, RECETOX, Masaryk University, Brno, Czech Republic



New infrastructure of the regional centre of applied environmental science is currently being built in the Bohunice campus of Masaryk university in Brno, Czech Republic. The CETOCOEN project is supported by European structural funds, Operational programme “Research and development for innovations”. Seventeen million euro will be invested into building

a research and educational facility for the newly established Research centre for toxic compounds in the environment (RECETOX), fully equipped to host 50 scientists and the same number of Ph.D. students.

The goal of the CETOCOEN project is to build a centre serving as the regional base for a research in the area of environmental chemistry and ecotoxicology, environmental and human risk assessment and modelling, a study of an impact of technologies, and the environmental management including management of environmental information. At the same time, the centre serves as a platform for capacity building and transfer of technology, educational activities and expert consulting.

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5. REVIEW ARTICLE “HEXACHLOROCYCLOHEXANE (HCH) AS NEW STOCKHOLM CONVENTION POPs – A GLOBAL PERSPECTIVE ON THE MANAGEMENT OF LINDANE AND ITS WASTE ISOMERS” PUBLISHED IN ENVIRONMENTAL SCIENCE POLLUTION RESEARCH (IN PRESS).

John Vijgen, P.C. Abhilash, Yi Fan Li, Rup Lal, Martin Forter, Joao Torres, Nandita Singh, Mohammad Yunus, Chongguo Tian, Andreas Schäffer and Roland Weber

The background is that three HCH isomers (α -, β - and γ - (Lindane)) were recently included as new POPs in the Stockholm Convention and therefore the legacy of HCH and Lindane production became a contemporary topic of global relevance also on UN and political level.

The review article briefly summarizes the outcomes of the Stockholm Convention process on HCH and makes an estimation of the amount of HCH waste generated and dumped in the former Lindane/HCH producing countries.

In a preliminary assessment, the countries and the respective amount of HCH residues stored and deposited from Lindane production are estimated. Between four and seven million tonnes of wastes of toxic, persistent and bioaccumulative residues (largely consisting of POPs alpha- (approx. 80%) and beta-HCH) are estimated to have been produced and discarded around the globe during 60 years of Lindane production. The extent of the HCH waste/stockpiles therefore exceeds present estimates of other obsolete pesticides such as the pesticide stockpiles in Africa (estimated at 55 000 tonnes) (Africa Stockpiles Programme 2009) and in the Eastern European region with an estimated 150 000 to 500 000 tonnes (Int. HCH and Pesticides Forum 2001; Rippen 1996). It is the single largest POPs stockpile with overall quantities exceeding those of all other Stockholm Convention POPs wastes combined. Only for approximately 1.9 million tonnes information is available regarding deposition highlighting the huge task to be done in the implementation of the Stockholm Convention. Countries which had Lindane productions and therefore HCH waste deposits to assess and control/remediate are: Austria, Brazil, China, Czech Republic, France, Germany, Hungary, India, Italy, Japan, Macedonia, Nigeria, Poland, Romania, Slovakia, South Africa, Spain, Switzerland, Turkey, The Netherlands, UK, USA, former USSR. The paper highlights the environmental relevance of deposited HCH wastes and the related POPs contaminated sites and provides suggestions for further steps to address the challenge of the legacy of HCH/Lindane production. The article also includes a chapter on substitution of Lindane for the last permitted exempted uses allowed by the Stockholm Convention which are head lice and scabies. The information on alternative uses has also been compiled in a report <<http://www.akaction.org/REPORTS/Alternatives%20to%20Lindane%20Report%204-29-09.pdf>>

The review article suggests some key considerations for the implementation of the Stockholm Convention including one that national governments, GEF, and its implementing agencies UNEP, UNIDO, FAO and UNDP, as well as the Stockholm Convention Secretariat together with the respective industries would have the key responsibility for these tasks, and to ensure that the National Implementation Plans of the respective countries can be updated in a timely manner.

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6. NEWEST PUBLICATION ON THE POLLUTION AROUND THE LAST LINDANE PRODUCER NOW AVAILABLE

Evaluation of hexachlorocyclohexane contamination from the last lindane production plant operating in India, Simran Jit & Mandeep Dadhwal & Hansi Kumari & Swati Jindal & Jasvinder Kaur & Pushp Lata & Neha Niharika & Devi Lal & Nidhi Garg & Sanjay Kumar Gupta & Pooja Sharma & Kiran Bala & Ajaib Singh & John Vijgen & Roland Weber & Rup Lal, Environ Sci Pollut Res DOI 10.1007/s11356-010-0401-4, has open access and can be downloaded at: <http://www.springerlink.com/content/b04145h35061vq28/fulltext.pdf>

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7. THE ROLE OF STEWARDSHIP IN PESTICIDE RISK REDUCTION – A SYNOPSIS OF TWO SUB-REGIONAL WORKSHOPS

Yeneneh T. Belayneh, Ph.D., Director, University of Maryland Eastern Shore, detailed as Senior Technical Advisor to USAID/OFDA, USA, ybelayneh@ofda.gov

The overarching objective of the pesticide stewardship program (PSP) is to develop and implement strategies that will improve pesticide delivery systems (PDS) with an ultimate goal of minimizing human health risks and reducing environmental pollution associated with pesticide misuse and thereby contributing to the national economy.

Pesticide Stewardship Networking – implementation framework

Effective implementation of the overarching objectives of the stewardship initiative to improve and enhance existing PDS, would require a coalition of stakeholders and a public-private sector synergy. Such strategy can be implemented through and as a Pesticide Stewardship Network (PSN).

The PSN approach stimulates and encourages pesticide experts, regulatory authorities, non-governmental organizations, private sector, researchers, academia, end-users and others to engage in a continued dialogue. Such dialogue significantly improves information flow, help reduce and mitigate pesticide related health risks, contribute to protecting the environment and conserving the much needed natural resources. The PSN process can help avoid duplication of efforts by optimizing resource utilization, employing integrated production systems and contribute to the overall food security and the national economy.

The PSN strategy and its programmatic elements are implemented through the existing structure in the agriculture, public health, and other sectors relevant to its core messages and overarching goals and objectives. Engaging public and private sectors will not only help improve the stewardship education and training programs for the various sectors, but also

creates a viable synergy between and among the key stakeholders that play a crucial role in forging ahead a strong and viable PDS at the national, sub-regional as well as regional levels.

The PSN program has a strong conviction for behavior change across a spectrum of stakeholders, among other things. To attain this, the program actively engages in imparting knowledge and skills by employing available means of knowledge transfer. It also launches structured and target-oriented awareness raising and advocacy initiatives by employing available means of communications. It also advocates for the creation of synergy among plant protection staff, environmental practitioners and regulatory bodies and help lay out the foundation for a safer and sustainable use of pest control tools.

The PSN can serve as a tool for proper disposal of obsolete and dangerous pesticides and encourages the search for and introduction of effective and safer alternative pest control tools to minimize accumulation of obsolete stocks.

The Three Step Approach

Following the above strategies and tactics, two sub-regional workshops were launched in 2008 and 2009 in East Africa and the Horn of Africa, respectively, The workshops led to the creation of nuclei of two PSN associations in the sub-regions.

In both the East Africa and the Horn of Africa, the creation of the PSN nuclei involved a series of events within “the Three Step Approach”, i.e., intensive exploratory consultations with key stakeholders, a focused pre-workshop seminar and the launching of the [sub-regional] workshop. The launching of the stewardship workshop revolved around three primary operational themes:

1. Developing practical and implementable PSN program,
2. Analyzing needs assessments through the first two steps of “the Three Step Approach” and custom tailoring mechanisms for knowledge and skills transfer at all levels,
3. Launching enhanced and improved communication systems that traverse non-traditional domains.

Observations and lessons from “the Three Step Approach”

I. The First Workshop on Pesticide Stewardship Networking - The East Africa Sub-Regional Experience

The first ever pesticide stewardship workshop was launched in Tanzania in May, 2008 as the East African sub-region [stewardship] initiative. The workshop greatly benefitted from collaborative efforts among US Office of Foreign disaster Assistance (USAID/OFDA), US Department of Agriculture (USDA), various ministries, NGO’s, academia and others. Full participation by Kenya, Uganda and of course, the hosting nation, Tanzania gave the workshop a great sense of sub-regional. Added to this, the former Tropical Pesticide Research Institute (TPRI) that once had a jurisdiction over all pesticide related activities in the then East African community played a crucial role and was one of the major attractions for the launching of PSN in Arusha, the hometown of TPRI. Although the establishment [TPRI] has since retained its former acronym, it had gone through a name change to reflect its national significance and ownership, hence, Tanzania Pesticide Regulatory Institute.

The East African Sub-region pilot program was able to create a nucleus of the first ever PSN in Tanzania and the region. As a result of the execution of the three-step processes, namely extensive exploratory consultations, intensive dialogue and pre-workshop seminar and the all-inclusive sub-regional workshop, there is a great expectation for rolling out of dozens of networks of trained PS persons equipped with experienced training skills and knowledge. In addition, production of robust and custom tailored training materials is expected. Countries that were represented at the Tanzania PSN workshop have been encouraged and expressed interests to forge ahead with the creation of national level PSN programs and sow the seeds for similar initiatives in their respective regions.

Relevant National ministries, international and regional institutions such as the International Center for Insect Physiology and Ecology (ICIPE), the Desert Locust Control Organization for Eastern Africa (DLCO-EA) and others to which pesticide is an important issue, are encouraged to play a significant role in the development and roll-out of the PSN programs in their respective areas.

II. Workshop on Pesticide Risk Reduction through Stewardship Initiative – The Horn of Africa Sub-Regional Experience

In Ethiopia, the PSN program was initiated through collaborative efforts among OFDA, USDA, DLCO-EA, the UN Food and Agriculture organization's Commission for Controlling the Desert Locust in the Central Region, various ministries, non-governmental organizations, academia, research, private sector, and other stakeholders.

As in Tanzania, the PSN initiative in Ethiopia started with countless exploratory interactions, dialogue and discussions as well as a number of face to face meetings and a pre-workshop seminar followed by five days of intense workshop which attracted partners and stakeholders from neighboring countries in the Horn of Africa.

The observational lessons and experiences from both the Eastern Africa and the Horn of Africa demonstrated the existence of stark similarities between the PDS in the sub-regions. Some of the similarities are as follows:

- Pesticide related problems in both sub-regions are as critical as they could ever be.
- Lack of adequate resources and weak enforcement capabilities are very much similar in both regions.
- The level of disconnect between the pool and sink of knowledge, skills and expertise in one sub-region is a near-mirror-image of the other.
- There is a critical need for strong hands in monitoring and enforcement of procedures, policies and regulatory standards aimed at improving handling and minimizing misuse of pesticides among subsistence and large-scale farmers and vendors in both regions.
- Counterfeit pesticide products enjoy easy market access in both sub-regions.
- Stocks of obsolete, unusable and toxic pesticides exist in both regions.
- Diversions of products from intended use to inappropriate and risky businesses are all too common in both regions.

Communications and interactions among and between key stakeholders, including those that regulate, provide technical inputs, supply etc., are very weak to none in both sub-regions. To sum up, the problem of pesticide misuse, abuse, and lack of knowledge and resources among the end- users and those that are charged with monitoring and inspection

of these processes are abundantly evident and the need to intervene and address these problems is very critical.

Conclusions and recommendations

The two sub-regional workshops have defined clearly the status of the PSD in their respective regions. Furthermore, they have demonstrated the crucial role that institutionalizing the PSN program can play in improving the PDS at both the national and sub-regional levels. Doing so will certainly contribute to the overarching goal of building a culture of stewardship through a network of stakeholders in a manner that will guarantee sustainability and continuity. While initiating the PSN program is a good beginning and the right path to pursue, strong commitments and sustainable engagements will remain essential to mainstream the program as part and parcel of the national and regional PDS. Experiences, skills and knowledge that reside within various local, regional, and international organizations and institutions are essential ingredients for nurturing budding PSN initiatives and should be tapped into. Efforts should be made to entice and encourage these entities to participate in and contribute to the PSN initiatives. In the regions/sub-regions where pesticide registration procedures have been harmonized or are in the process, PSN can play a crucial role to expedite the creation of a system that straddles political boundaries. Most if not all developing countries are plagued by free and illegal movements of counterfeit agrochemicals across their porous borders. Expanding PSN programs and networking neighboring countries can significantly improve policing and halt unwarranted proliferations of such products. Hence, PSN partners are encouraged to share information, collaborate with their counterparts and create networks to abate such illegal and dangerous movements.

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8. PERSISTENT ORGANIC POLLUTANTS AND RELATED ISSUES IN UZBEKISTAN

Zulfiya Suleymanova

There are 12 Persistent Organic Pollutants (POPs), including 8 pesticides which are: Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor, Mirex, Toxaphene. In addition to the group of persistent organic pollutants, there are also industrial chemicals: polychlorinated biphenyls (PCBs) and hexachlorobenzene (also a pesticide) and unintentional by-products formed during waste incineration - dioxins and furans.

In the middle of the last century these pesticides (except for Mirex and Toxaphene) were used in agriculture in the Republic of Uzbekistan. It is known that during the Soviet Union period the main agricultural production of the Uzbek Republic was cotton. To preserve the harvest and to prepare for collection of the raw cotton, it was necessary to use all available means of protection of cotton plants. For example, Aldrin and Dieldrin were used for seed treatment and spraying of cotton. Because of the fact that irrigation was used extensively in the Republic of Uzbekistan the pesticides often migrated from the soil into the water. In the Soviet Union the use of DDT was banned in 1970. Aldrin and Dieldrin were banned in 1972, Heptachlor and HCH in 1986.

In Uzbekistan at that time, the prohibition and restriction of the use of pesticides, including POPs, resulted in the accumulation of large amounts of POPs in farmer's stocks all over the Republic. Many of them were taken from populated places and buried in trenches. Later,

concrete sarcophagi were constructed where illegal and unusable pesticides and its containers were buried. In this way, the first burial sites with hazardous and obsolete pesticides appeared. Each region of the Uzbek Republic has such burial sites.

The inventory of farmer's stocks, realized by the State Committee for Nature Protection, with financial support from the International Program of the UN Environment, revealed the presence of hazardous plant protection chemicals, including POPs. It was decided by the Government to transport all obsolete pesticides to the centralized stores and protect them with security measures.

Over the past decade the policy of pesticide use in the country has changed. The use and consumption of pesticides per hectare was reduced. The State system of registration of pesticides in the country has been established. Chemical products that are dangerous to people and environmental objects have been excluded from the "List of chemical and biological plant protection agents allowed for application in the Republic of Uzbekistan". New chemical products which are less hazardous replaced the old ones. For example, the synthetic pyrethroid chemical products are effective at low doses and have a good selective ability affecting mainly the pests. They are less persistent in the environment and almost do not remain in the food.

In the new law on "Protection of atmospheric air", adopted by the Government of the Republic, the application of chemical products of plant protection is permitted only by overland distribution (i.e. not by airplane). According to the Law on "Protection of agricultural plants from pests, diseases and weeds", the State Register with prohibited and restricted chemical products" has been published. Based on the recommendation of the State Committee for Nature Protection, 8 of the 12 POPs and the most dangerous compounds for humans and environment were included.

The State Committee for Nature Protection oversees the nature protection compliance in the areas around the storages and burial sites where hazardous chemicals and obsolete pesticides are stocked or buried. With the support of the Government of the Republic, the State Committee for Nature Protection made arrangements to secure fencing of dangerous burial sites with obsolete pesticides, install identification and warning signs and around-the-clock guarding.

Many of the existing burial sites with dangerous obsolete pesticides are in areas of high seismicity and in areas prone to landslides or mud flows. Kept under the ground for more than 40 years, these obsolete pesticides remain a challenge for the country and are a "time-bomb" that could lead to dangerous consequences. They must be prevented now by taking concrete measures.

The State Committee of the Republic of Uzbekistan for Nature Protection, since 2001, has repeatedly initiated the procedure for ratification of the Stockholm Convention by the republic. Currently this issue is addressed by the Parliament and we hope that our government will support us.

As mentioned in the first part of this article, there are stockpiles of obsolete pesticides, including the POPs in the Republic of Uzbekistan. The problem of environmental pollution by POPs is very acute in our Republic and we should resolve it independently from the membership in the Stockholm Convention. However, the participation in the Convention will let us use the agreement in order to bring the latest technologies, to get financial and information resources and to ensure the environmentally sound management of POPs.

Several international organizations have programs for the collection and destruction of obsolete pesticides in developing countries and countries with economies in transition. These include FAO, UNEP, the International Organization for the effective management of chemicals, the World Health Organization (WHO), The United Nations Industrial Development Organization (UNIDO). There are some successful programs for the destruction of obsolete pesticides in the CIS countries: Belarus, Ukraine, Moldova, etc.

For the destruction of stocks with obsolete pesticides it is necessary to have reliable information on their number and their locations. For doing that a project was launched named "Technical Study on obsolete pesticides in Kyrgyzstan, Tajikistan and Uzbekistan". In 2009, with financial support from the World Bank Group, a technical study of obsolete pesticides in the Republic of Uzbekistan was organized. The studies were conducted under the guidance of international experts, representatives of international organizations with extensive experience in inventory of POPs (use and storage, and survey of contaminated areas). The following organizations have participated in the project; the International Association for HCH and Pesticides (IHPA), Denmark, Tauw, the Netherlands, Green Cross, Switzerland. The aim of this study was to identify priority areas and learn the best methods of resolving the obsolete pesticides problems through inventory, prioritization work, identifying preliminary risk assessment and feasibility study of alternatives for the safe destruction of such stocks.

The project included the training for trainers program for local staff with theoretical and practical training on safe inventory work on POPs contaminated sites. A workshop on the preliminary results of the experts on the inventory of obsolete pesticide stocks and polygons in Khorezm and Surkhandarya regions was held in the World Bank office in Tashkent in November 2009. The seminar was attended by representatives of international organizations, departmental ministries and agencies, nongovernmental organizations who have shown special interest and endorsed the work undertaken. At the final workshop in Dushanbe (organized with the help of a number of international and nongovernmental organizations for three republics: Kyrgyzstan, Tajikistan and Uzbekistan) reports on the situation of stocks and polygons with obsolete pesticides in these Republics were submitted by international experts. The workshop was attended by representatives of international companies and research centers of developed countries in Europe, Asia and America, all in the field of POPs destruction and remediation of contaminated areas. They presented the latest global technologies on methods of destruction of obsolete pesticides and POPs and the possible methods of remediation of contaminated soils.

The program management of POPs in Uzbekistan could be continued if the Government of the Republic approves the initiative to ratify the Stockholm Convention on Persistent Organic Pollutants. The task of cleaning up the stocks is not an easy one. It is technically difficult, dangerous and costly. Such work should be done by experts with the necessary experience and training and will require adequate funding.

I would like to end the article with the words of the representative of the International Organization for food (FAO), a prominent expert on the problem of obsolete pesticides, Dr. Alemayehu Vodagene: "If this problem is not addressed now and left for later, then these costs will increase as the risk of ecological disaster will be greater".

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9. UNIDO CONFERENCE

Bala Sugavanam

UNIDO organized a highly technical three day meeting entitled “Linking Chemicals, Climate Change, Carbon Market and Energy Management” at The Vienna international Centre, Vienna from 11-13 October 2010. The meeting attended by more than 100 delegates from around 40 countries was an innovative idea of linking the major chemical conventions with climate change and energy management. It was intended to be a professional exchange and conclusions among institutions, national focal points relevant specialists and UNIDO Senior and Technical Staff. Papers were presented from projects related to Montreal Protocol, Stockholm Convention and Climate Change. The meeting under POPs presented innovative approaches to reduce and/or eliminate POPs chemicals, linking POPs convention with climate change issues, highlights of new POPs, chemicals management and alternatives. Papers were presented on compliance with POPs emission standards, clean-up of obsolete POPs stockpiles and wastes, medical waste management and co.benefits with other global conventions. It also discussed POPs policy issues to introduce BAT/BEP and harmonization at regional level GEF representative from the Scientific and Technical Advisory Panel (STAP) spoke at length about GEF requirements for funding and eligibility based on carbon credits and how they could be cross cutting into various convention strategies and requirements. There were small panel discussions on technology issues and implications, policy issues and implications and financial issues and implications.

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10. MALARIA AGAIN UNDER THE MICROSCOPE

Bala Sugavanam

In the past, this Newsletter extensively covered malaria (No17, June 2009) because of its linkage to DDT and consequently to Stockholm Convention. Malaria along with TB and HIV gets a major international aid running to a pledge of 10-15 billion dollars. A recent book by Sonia Shah entitled “The fever :How Malaria has ruled Humankind for 500,000 years” argues “trying to eradicate malaria may be less beneficial than working to control it”. In the January issue of the Proceedings of National Academy of sciences it was reported that a team of malariologists from France and Gabon have found that the most malignant malaria parasite –*Plasmapodium falciparum* presumed to be exclusively human pathogen, has been found in inside the bodies of gorillas from Cameroon and Gabons. According to the report it means that a possible wild reservoir of humankind’s most malignant malaria could mean that it will be impossible to eradicate malaria. Similarity it is cited to 1930 discovery that monkeys carried yellow fever virus which abandoned the hopes of eradicating tallow fever. With this new discovery debate will once again raise the issue between malaria eradication vs malaria control.

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11. AGAIN A POOR COMMUNITY LEFT TO BEAR THE BURDEN OF MERCURY CONTAMINATION

Bala Sugavanam

Following BP oil leak in the Mexican Gulf, there was the toxics sludge from Alumina factory in Hungary that practically poisoned villages and now there is a report coming from India as to how a thermometer manufacturing company has poisoned the ground in a scenic town in a beautiful hill station in South India. Apparently the company has been manufacturing mercury thermometer for export using, many incentives given by the government. After a number of complaints from employees getting poisoned, the factory was closed but the whole nearby area was contaminated with mercury. The local company a subsidiary of a multinational is shelving any responsibility because of the various incentives including immunity against polluting the surroundings

Most of the workers who worked in the company report varying symptoms. These include headache, skin problems, eye problems, chest pain, dental problems, nose bleed, vomiting, blooded urine, breathing problems, impotency, irregular menstruation, miscarriage, giddiness, tremors, and inability to grip effectively. According to Dr Linda Jones of Massey University from New Zealand “these symptoms are classic symptoms of occupational mercury poisoning”. Dr Jones is an expert in neurobehavioural assessment in mercury poisoning, tremor assessment, and critical health psychology. “Mercury,” Dr Jones says, “is the third most toxic element in the world after arsenic and lead.” What would have put workers most at risk was vapour from ordinary liquid mercury, which is what the factory used in its thermometers. At room temperature, mercury gives off vapour the whole time at low levels. But the more it is heated, the more vapour it gives off, she says. “Mercury vapour,” Dr Jones explains, “gets absorbed through the mucous membrane [when you breathe], gets into the blood stream, and goes straight into the brain.”

According to reports, up to 17 tonnes of mercury would have been dumped on the ground when the factory was closed. Apparently the thermometer factory premises have concentrations of over 500 parts per million (ppm) of mercury in the soil. According to the Japanese Public Health Association, if concentration levels exceed just 1 ppm, there is a risk of contaminating the water. In addition, there is the possibility of mercury transformed into highly toxic methylmercury in the environment.

Struggling to make ends meet with their health bills, the workers have banded together to form the 559-strong Ex-Mercury Employees Welfare Association, filed a Public Interest Litigation suit in the Madras High Court. The association wants an economic rehabilitation scheme and a healthcare treatment and monitoring programme at the company's expense for everyone who ever worked in the factory. It also wants the company prosecuted.

Hindustan Unilever which operated the factory denies that any of the health problems of the workers or their families was the result of mercury exposure in the factory. Four years after the case was filed and nine years after the factory was closed, the workers are still fighting for compensation. The last court hearing was in June 2008. Like the infamous Bhopal accident the case will go on for years before any settlement is reached until then the environment and the human health are the victims of nonexistent of “pollutor pays” rules in the past. (Source Frontline, The Hindu, Chennai)

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Sense of humour

A man from Southampton, England, volunteered to be a guinea pig in a test to examine the effectiveness of an antimalarial drug. He was deliberately infected with malaria in a hospital in Oxford. The man apparently without taking drugs disappeared. Police were contacted to locate the person who needed badly the antimalarial drug. Later it was revealed that the man was found abroad probably on a holiday.

12. TURNING E-WASTE PROBLEM INTO AN OPPORTUNITY

Bala Sugavanam

The world currently generates 40mt/year of e-waste. Around 25% of e-waste generated in Europe disappears. Informal recycling in developing countries (eg., Nigeria, Ghana) generates harmful emissions exposing thousands of workers not covered by any labour safety rules. With proper legislation and adopting safety procedure, reclaiming valuable materials was worth \$5.7 billion in 2009 and could reach \$14.7 billion by 2014. That is definitely wealth from waste if properly organized under international cooperation. (*Source: Chem & Ind. 12 July 2010*).

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13. FINAL RESULTS WORKSHOP OF FIRST WORLDWIDE UNEP INTERCALIBRATION STUDY ON POPs – ASIA REGION

Mahbubar Rahman

A workshop was held at Regal Riverside Hotel Shatin, Hong Kong SAR, China, from 26 to 28 February 2010. The opening session took place in the evening of 26 February 2010 and was chaired by Dr. Zongwei Cai, Chemistry Department of Hong Kong Baptist University, the organizer of the workshop. The workshop participants were welcomed by Professor Rick Wong, Dean, Faculty of Sciences, Hong Kong Baptist University, who highlighted the long-standing cooperation between his university and UNEP Chemicals on POPs issues, when the Asia regional report of the UNEP-GEF project “Regionally Based Assessment of Persistent Toxic Substances” was coordinated by his university.

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14. 11TH INTERNATIONAL HCH & PESTICIDES FORUM

John Vijgen, Director, IHPA

The 11th International HCH & Pesticides Forum has been scheduled to be held from 7-10th September 2011 in Gabala in Azerbaijan. Please do not forget to reserve these dates in your agenda for 2011. The Forum will include 3 days of workshops and a special field trip on the 4th day. The interested individuals and/or organizations are invited to join the forum and bring in new experiences and actively participate in the debates. For details and updates of the Forum please visit the HCH Forum website <www.hchforum.com>. Electronic registration will be opened on 10 December 2010. All newsletter readers will receive the call for papers in the coming days.

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