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REGIONAL NETWORK ON SAFE PESTICIDES PRODUCTION AND INFORMATION
FOR ASIA AND THE PACIFIC (RENAP) - A SUBPROGRAMME OF
FARMER CENTRED AGRICULTURAL RESOURCES
MANAGEMENT (FARM) PROGRAMME

DP/RAS/93/061

PHILIPPINES

Technical report: Workshop on industrial hygiene and occupational health
and safety, Davao City, Philippines from 5-8 December 1994
Manila on 9 December 1994*

Prepared for the Government of the member States of the Regional Network
(Afghanistan, Bangladesh, People's Republic of China, India,
Indonesia, Islamic Republic of Iran, Malaysia, Myanmar,
Nepal, Pakistan, Philippines, Republic of Korea,
Sri Lanka, Thailand and Viet Nam)
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of the RENPAP Secretariat

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* This document has not been edited.

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I. INTRODUCTION

1. The Workshop on Industrial Hygiene and Occupational Health Safety, organized by the United Nations Industrial Development Organization (UNIDO) and the Regional Network on Pesticide Production and Information For Asia and the Pacific (RENAP), in cooperation with the Fertilizer and Pesticide Authority (FPA), Department of Agriculture was held in Davao City from 5-8 December and in Manila on December 9, 1994.

2. The workshop was attended by representatives of the member countries - Bangladesh, People's Republic of China, India, Indonesia, Malaysia, Myanmar, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand and Vietnam; resource persons from Canadian agencies and UNIDO; and representatives from local & international pesticide industry.

3. The list of participants is attached as Annex A of this report.

II. OPENING CEREMONY

4. An invocation was delivered by Mr. Edmundo Varona, Officer-in-charge, Crop Protection Association of the Philippines (CPAP)

5. The welcome address was given by FPA Executive Director Mr. Francisco C. Comejo. He emphasized the goal of the workshop which is to strengthen regional capability on the implementation of occupational health safety programme on pesticide production plants using the Integrated International Safety Guidelines.

6. UNIDO representative, delivered the first message. He welcomed the participants on behalf of Mr. Mauricio de Maria Y Campos, Director General of UNIDO. He thanked the Philippine Government especially the Fertilizer and Pesticide Authority for organizing this workshop. He cited the problems associated with the continued use of pesticides, the exposure of workers and the contamination of the environment. Although there is an increase in the utilization of pesticides to meet the growing demands for food production, there is also the need to consider the issue of safety in order to decrease risks by providing user-friendly and environment-friendly pesticides. He also reiterated the objectives of the workshop.

7. Dr. SP Dhua, RENPAP Regional Coordinator, gave the second message, encouraging the participants to focus attention on safety procedures in the production of pesticides, in particular, the consideration of health and the environment. He further stressed the need for technical coordination in the region with the view of ensuring safe use of pesticides.

8. Mr. Peter Guy, representing the CIDA-funded Environment and Resource Management Project (ERMP), explained the role of his project with the FPA, such as providing assistance to the ecotoxicology workshop and strengthening of pesticide policy in the Philippines. He hoped that these projects would have regional as well as international impact. He also asked the participants to assist in looking for ways to improve pesticide regulations.

9. Dr. Harvey Lerer, Director of Ecosystem Directorate, Environment Canada, encouraged everyone to make safe use of pesticides a priority, noting that there are short term effects as well as long term chronic effects, which are also dangerous. In food production, it is essential to provide a pesticide management strategy. He cited the findings that pesticides that were never used in Canada are now being detected as residues in their environment and that the changing global weather patterns are significant causes of this new findings. This therefore makes pesticide use a global concern.

10. The Hon. Roberto S. Sebastian, Secretary of the Department of Agriculture was introduced by Mr. Alex Yadao, the Regional Director for Region XI of the Agriculture Department. Secretary Sebastian declared the official opening of the workshop. In his Keynote address, he commended the organizers of the workshop and noted the increasing utilization of pesticides for increased food production in an overgrowing population in the Asia-Pacific region. Health, social costs, environmental concerns and economic advantage must be balanced. He also stressed the need to integrate policy and implementation when dealing with occupational health and environmental safety and encouraged greater regional cooperation.

III. WORKSHOP ORIENTATION

11. The workshop orientation was given by Prof. Nelia Cortes-Maramba, technical adviser for the workshop. She outlined the activities for this workshop. She clarified the need to work and to identify the gaps in the implementation of pesticide guidelines in each nation, identify the strategies to promote and implement these guidelines if these are not yet in place and lastly, she encouraged the participants to share their experiences in order to arrive at mutually beneficial solutions. She offered the technical assistance of herself and her staff.

IV. ELECTION OF CHAIR, VICE CHAIR AND RAPORTEURS

12. Director Francisco Cornejo, was elected as the overall chair of the workshop; Dr. Ranjit de Alwis was elected as vice-chair and Dr. Mohammed Khayam as general rapporteur. The following were appointed daily rapporteurs: Day 1 (Dec. 5) Dr. Inayatullah (Pakistan), Day 2 (Dec. 6) Dr. Maji (India), Day 3 (Dec. 7) Dr. Malek (Bangladesh), and Day 5 (Dec 9) Dr. Panganiban (Philippines). There was no rapporteur on 8 December as this was field trip day.

V. ADOPTION OF THE AGENDA

13. The agenda as presented was adopted unanimously. (ANNEX B)

VI. COUNTRY REPORTS

14. The country reports were delivered by the country delegates. (ANNEX C)

14.1. Bangladesh country report prepared by Md Malek and Md Hasanul Haque was presented by the latter. He outlined the organization of his country's industrial hygiene and occupational health and safety programme, which involved many departments, citing some of the regulations and ordinances of the government promoting pesticide safety. He listed the pesticides used in his country, and the companies producing these agrochemical products. Before a formulation license is granted to these companies, clearance is obtained from the Department of Environment Pollution. In spite of these regulations, some problems were identified such as the poor planning of the location of some pesticide factories, and in some cases, workers are at risk of poisoning because of the manual handling of pesticides, the inability to provide regular medical examinations for workers in small repacking units, though this is now being rectified. Technical expertise as well as modern laboratory facilities for monitoring are lacking to some extent. During the last three years, there were no reports of accidental poisoning nor officially reported cases except for newspaper accounts of suicidal cases involving pesticides. Although there were accident reports, there were no deaths.

At the open forum it was queried whether there were regulatory rules for the use of chlordane in crops. The participants were informed that chlordane was used as termiticide in the past but presently not sold anymore. But regarding other organochlorine pesticides, such as heptachlor, these are under review. Chlorpyrifos is being used as termiticide at present. On whether biological monitoring is being conducted on workers, it was reported that cholinesterase testing has been implemented recently and regular reports are submitted.

14.2. People's Republic of China. No oral report was given.

14.3. INDIA

India country report was prepared by Mr. P.N. Maji and Mr. A.K.A. Rathi and delivered by Mr. P.N. Maji. He gave a historical perspective on pesticide usage in his country, identifying the different government agencies involved and their policies and regulations on industrial hygiene and occupational safety. He then proceeded to identify occupational hazards that workers face, the legislation and the instruments for implementation of these safety guidelines. There is an expert committee which review the efficacy and recommendations on proper use of pesticides and the criteria for pesticide

banning. He cited different studies and surveillance conducted among pesticides workers by the National Institute of Occupational Health. He highlighted the key problems in the implementation of industrial hygiene and occupational health and safety programmes such as inadequate statistical data and the lack of co-ordination among the ministries. There is a poisons control center network existing in India providing toxicological data upon request. Through the Factory Act, the central government is empowered to address issues on occupational health, however, these are implemented through the State Governments. In the amendment of the Factories Act in 1987, there had been many improvements.

During the open forum, it was learned that relatively better reports come from the organized sectors through the health and safety units. As far as implementing the previous recommendations in adopting the pesticide category classification (Category I-IV), this has been adopted. Any manufacturer can produce pesticide products as long as they conform with government guidelines for safety. There is an on-going review panel studying the efficacy and adverse effects of pesticides.

Dr. Dhua commented on the need to look at pesticides use at a socio-medico-economic level. This therefore necessitates risk and cost-benefit analysis. He cited that governments of Asian countries may need to look at the costs of using pesticide (pollution and contamination) versus the health effects when these are not used (i.e. deaths associated with uncontrolled malaria and filariasis).

Dr. Maramba followed this concept by providing an example in the Philippines, wherein DDT was formerly used by the Department of Health for malarial eradication programme. DDT residues were detected in mangoes, a product with high export revenue. Considering that the malarial programme has reached a relatively successful endpoint and the possible economic loss if export of mangoes were compromised because of the strict requirements of importing countries and desire to prevent environmental contamination, DDT use in the Philippines was totally stopped. She further mentioned that in the course of this workshop there will be a Risk-Assessment lecture and that this workshop will attempt to address this issue.

The group was informed that *Bacillus thuringiensis castica* is being manufactured in India and has temporary registration against paddy pests.

14.4. INDONESIA

The country report was prepared by Mr. Arlin Gumanti and Muhammad Khayam, and was presented by the latter. He cited that pesticide safety is a concern of the government and that policies like the Health Decree 258 in 1992 of the Ministry of Health precisely promotes public health. This covers workers health, requiring training and evaluation of

technical personnel, storage and production of these chemicals, waste disposal, and the sanctions imposed on violators of these regulations. Classification of poisonous materials as well as the degree of poisoning due to cholinesterase-inhibiting agents exist. Industry is also mandated by the government through the Environment Act of 1986 to conduct environmental studies covering impact analysis, and monitoring of the environment. There also exists a network of poison control centers, more accurately a co-ordination forum, in Indonesia involving different governmental institutions. Their tasks include the control of commercial pesticide products, monitoring their use and the conduct of regulatory training programmes for workers. The Indonesians have adopted the RENPAP workshop recommendations held in April 1991, in particular, the establishment and strengthening of regulatory programme in occupational health and safety and industrial hygiene. These involve also environmental concerns where pesticide production plants are present. They also adopted the WHO hazard category for pesticides. A standard form for accident reporting exists, however it was noted that industries seldom report accidents to the government. Biological monitoring of worker's health is done at two levels, by the plant physician and by the officials of the Ministry of Health. There is also a training programme on occupational health safety system conducted by the Ministry of Health with the view to establish a regional panel of technical experts. Information exchange and networking is being done among RENPAP member countries. In support of toxicovigilance, the government has forbidden the use of some organochlorine pesticides.

During the open forum, Dr. Sugavanam commented that link between occupational units exists between Indonesia and the Philippines, and that this supports strongly the objectives of RENPAP. As regards the issue of pesticide regulation after the implementation of Integrated Pest Management and whether poisoning cases decreased as a consequence, there are no data available. It was learned that 54 pesticides were banned by the government although no critical analysis on relative toxicity was done. As a method for controlling the use of banned pesticide the government imposed a price control programme and the removal of subsidy for farmers who buy pesticides. One of the solutions to the problem appear to be a cultural one.

14.5 MALAYSIA

The country report prepared by Majahar bin Abd. Rahman and Mohd. Fauzan bin Yunus, was presented by the former. He gave a brief introduction on the labor situation in his country and the government policy towards implementing industrial hygiene and occupational health safety, a joint activity of the Ministry of Human Resources and Ministry of Health. The Occupational Safety and Health Act was recently enacted in February 1994. This is an important act covering employers, employees, manufacturers and suppliers. There is also an institute created to conduct educational training, to

provide technical services and disseminate information and conduct research particular to the local industries. Despite all these regulations cited above, there is currently no specific legislation for health and safety designed specifically for the pesticide-producing factories. There is consequently no comprehensive health monitoring conducted in pesticide-producing plants. There is limited expertise in this area and reporting system is inadequate. Reports of pesticides poisoning at work can be obtained from government hospitals, and data presented covered 1989-1992. There is a poison center located at the University Sains of Malaysia that supports pesticide information system in the country as well as in the Asia Pacific region.

During the open forum, it was commented that Malaysia has difficulty controlling the entry of molluscicide to the Philippine backdoor. Dr. Lerer commented that this problem is not unique to Asia and that there is no easy solution to this problem. Dr. Sugavanam encourage the building of Malaysia's "safety culture."

14.6 MYANMAR

The country report, prepared by U Zaw Myat Win and U Soe Win Sein, was presented by Mr. Win. He provided an introduction into his government's attitudes towards occupational health emphasizing that this involves not only health protection but also health promotion. These health and safety programmes are being carried out through the Factories Act, while issues concerning pesticides, are enforced by the Pesticide Law. Myanmar is an agricultural country, with 85% of the population's livelihood dependent on this activity. There has been notable increases in the use of agrochemicals within the last decade. The ones commonly used have been rodenticides and insecticides. He briefly described the process of registration and activities of the formulation plants. There are preventive and monitoring programmes, including the use of protective equipments for the workers and waste treatment to protect the environment. The occupational health services though available, is in the initial stage of development. With the assistance of the International Labor Organization (ILO), a systematic accident reporting is being prepared. The country, as a member of RENPAP, welcomes any help in connection with pesticide industrial hygiene, training on occupational health safety and environmental protection.

During the open forum it was learned that there is only one government-owned formulation plant in Myanmar and no accident has been reported so far. Endosulfan is still used against paddy pests. There is a regular biological monitoring of the health of workers.

14.7. PAKISTAN

The country report was prepared by C. Inayatullah and UK Baloch, and delivered by Dr. Inayatullah. He provided a brief status of his country's pesticide affairs and that the consumption rate has been increasing. There are no pesticides being manufactured but

there are 9 formulation plants in operation. There are legislations and subsequent amendments which detail the control of pesticides, covering regulation, manufacture, formulation, sale, distribution and use. However, the enforcement of these ordinances are not properly carried out. A Pesticides Technical Advisory Committee has been established. However, there are no specific laws to provide enforcement of the health-monitoring of pesticides workers and no regular programme for health monitoring of agricultural and factory workers handling pesticides. There are no statistics available concerning the health indicators of workers in formulation plants. However, there are many institutions involved in the monitoring and research on pesticides. Lack of education and economic constraints were cited as reasons for the failure to impose controls on health hazards. Occupational health is a serious problem in Pakistan. It was deemed necessary to establish an independent agrochemical monitoring agency. There is no poison control center in the rural areas, although medical facilities are available in big cities. The health staff are not properly trained to handle the cases of pesticides poisoning and antidotes are rarely available. The number of pesticides poisoning is difficult to determine due to legal litigations.

During the open forum, it was learned that though DDT and chlordane are banned, they are still available through border trade. In 1993, 23 pesticides were banned. It was commented that although organochlorines and organophosphates are almost phased out and replaced by pyrethroids, there is merit in reconsidering the total ban on OC & OP pesticides since such a ban may increase resistance to pyrethroids.

14.8 PHILIPPINES

The Philippine country report was delivered by Dr. Lynn Crisanta Panganiban. Many of the previous resolutions of the RENPAP workshop conducted in Manila in April 1991 were carried out such as adaption of the WHO classification of pesticides according to hazard and standard guide for inspection; networking and information exchange; toxicovigilance and technical cooperation among developing countries were implemented. Using the guidelines, 90% of the companies were found complying with the requirements. The low incidence of reported poisoning cases could be accounted for by the strict implementation of occupational health and safety regulations. Although biological monitoring exists for the detection of acute pesticide poisoning, it was realized that in the case of chronic pesticide poisoning, the use of other biological monitoring should be done. Through a partnership between the DOH and the NPCIS, a network of poison control centers actively involved with toxicovigilance activities was established. This is a vital network which aims to increase awareness among health personnel on the hazards of pesticides and at the same time to improve their knowledge and skills in the wholistic approach in the management of poisoning. In December 1993 and April 1994, two seminar-workshops on occupational health and toxicology in the management of pesticide poisoning were conducted for health personnel from 14 regions of the country.

Dr. Dhua, UNIDO representative and Dr. Lerer were impressed with the Philippine government's successful conduct of occupational health, safety and industrial hygiene programmes, thereby bringing discipline to the industry and safeguarding the health of the exposed population. They also affirmed the recognition by the local authorities of the chronic and insidious effects of pesticides and steps taken to contain them. It was emphasized that good environment practice is equated to good economics and it is not tenable to equate theoretical calculation of long term effects, costs, and public health damage with economic gains.

14.9 REPUBLIC OF KOREA

The country report was prepared and delivered by Lee Hae Keun. It was reported that different laws exist which cover plant, laboratory, occupational and environmental safety. Most companies implement appropriate measures which protect workers. There is unfortunately no information regarding the existing health system in pesticide plants and the statistics of pesticide poisoning in Korea during the last three years. Seoul City has an operational poison control center.

During the open forum it was learned that about 500 mortality cases due to suicidal poisoning occur yearly.

14.10 SRI LANKA

The country paper was prepared and reported by Dr. Ranjit De Alwis. He gave a brief description of the current status of pesticide use as well as the statistics of poisoning in his country. This statistics have remained the same over the last two years. The majority of these cases were due to suicidal poisoning. The few cases of occupational poisoning were due to exposure during spraying and not in the formulation factory. He explained the role of the Department of Labour and the different laws which cover pesticide and the welfare of the workers. There is a pesticide formulation committee which provides a mechanism for the issuance of license to import and use pesticides. Many pesticide formulating plants maintain standards that are below the local regulations, but the process to improve these conditions has been quite slow. Monitoring of health status of workers in factories does not follow a uniform pattern. Over the last three years, there have been no cases of poisoning reported from the factories. This is viewed as under-reporting from the industry. A few factories employ casual labor and the working conditions in these factories are poor with high potential for poisoning. Because of a greater awareness of the dangers in the handling of pesticides, the workers use personal protective equipment and attend to personal hygiene. There is a proposal to define accidents and what is meant by exposure, there is also a need to set standardized forms for reporting. A national poison information center exists which provides information and training for medical officers in the management of pesticide poisoning. A medical officer's booklet on poisoning management was also published.

Since the UNIDO meeting in Brussels in 1992, the safety guideline for pesticide formulation was adopted and used in formulation and repacking factories. First aid training courses, proper and safe use of pesticides for trainors and occupational health training programmes have been implemented. The Division of Occupational Hygiene provides expert advisory and laboratory services for factories, which include inspections, environmental and biological monitoring.

During the open forum, Dr. Dhua complimented the progress achieved by Sri Lanka and encouraged others to pursue similar activities. It was also proposed that because many plants in Asia utilized casual workers it is important to have closer surveillance among these casuals specially at peak seasons.

14.11 THAILAND

The paper was prepared and reported by Ms. Sumalee and Chutima. They reported that many agencies are involved with pesticides but minimal coordination exists. There are also agencies which are involved with hazardous substances. The functions of these agencies cover policy formulation, coordination, enforcement, setting of standards, monitoring and implementation. At present, there are 65 registered pesticide processing firms in Thailand, with mainly formulating and repacking activities. The government realizing the hazards and risks of pesticides poisoning has enacted several laws to protect workers, prevent equipments leaks and ensure the smooth operations of plants. The majority of firms conform with the minimum requirements despite perceived strict government regulations, such as site selection and methods of processing and pollution abatement. There also exists a regular monitoring of workers' health such as cholinesterase activity determination. She also demonstrated that majority of those with illness occurred among the agricultural sector. At present, there are 32 pesticides banned in Thailand. A master plan which will involve the private sector and government ministries to collaborate together is being prepared.

During the open forum, it was commented that an inter-agency committee may not be the best way to address the issue of pesticide safety and that an agency like the Department of Health can better assume the lead role.

14.12 VIETNAM

The Vietnam country report was presented by Dr. Pham Thi Phong. He reported that the country's Law of Labour Protection covers workers, employers' responsibilities, working place and conditions, safe use of equipment, personal protective equipment and emergency facilities. It also covers pre-employment and periodic medical examinations as well as treatment of workers. There also have been some restrictions in the use of pesticides, notably involving the organophosphates. There are regulations on industrial

hygiene and occupational health prescribing the responsibilities of the manager of pesticide manufacturing plants as well as the use of personal protective equipment and the standards that the workplace must have. There is also a network of poison control centers which is headed by the Ministry of Health. This network of poison control centers involves different government agencies, academe and trade union. This network assumes the responsibilities of conducting research, regular examinations, providing guidance and training on occupational health as well as system for inspection at different levels. The overall status of industrial hygiene and occupational health in manufacturing units is still a problem and among the identified causes are the low level of technical background, the "unclean" working environment and the absence of adequate criteria for assessing pesticide production plants.

VII INTEGRATED INTERNATIONAL SAFETY GUIDELINES FOR PESTICIDE FORMULATION IN DEVELOPING COUNTRIES

15. Representative of UNIDO discussed the background and rationale behind the creation of the Integrated Safety Guidelines for Pesticide Formulation in Developing Countries. He began by providing the scenario in the development of the pesticide industry resulting the emergence of new pesticides over the last three decades, beginning in the 60's and the increasing sales of these chemicals. He cited the current trend of companies to manufacture low volume, high value, low risk chemicals. He also presented conflicting and diverse reports in a number of countries on the directions they are heading with regards the use of pesticides. He pointed out the shift in focus among pesticide companies from production in the 40's and 50's to waste minimization in the 90's.

With the above background information, he presented the advantages of pesticide formulations such as importation of the active ingredients/adjuvants only, formulation done during season, flexibility to change product, among others. At the same time, he cited the problems such as the non adherence to quality control due to lack of analytical facilities, use of older types of formulations and lack of incentives to change to safer formulations especially among the small and medium scale companies which have no access to constant training, etc.

The process of formulating the safety guidelines for pesticide formulation was also described by UNIDO. In order for UNIDO to come up with the guidelines, a questionnaire inquiring on the problems faced by companies with regards safety in pesticide formulations was sent to 400 companies. Results of the survey revealed the following problems: plant location was close to residential area (34), no safety officer (20), no air treatment (35), no accident reporting (10), no air-fed visor (37), no analytical facilities (10), inadequate transport facilities (35), pervious floor (14), no bunding/dyking of plant and/or warehouse (22), fire fighting not adequate (11), inadequate medical facilities (35), noise level not monitored (6), no hazard data sheets and/or inventory of chemicals (13) and disposal of toxic wastes (61). With the above data, the Committee met and formulated 42 guidelines for pesticide formulation plants in developing countries.

VIII PLANNING A FORMULATION PLANT

16. Dr. S.P. Dhua of RENPAP discussed this topic. He outlined the different stages involved in the process of selection, manufacture and use of pesticides and the corresponding issues influencing safety hazards. The stages include: (1.) decision making on the need for pesticides (2.) process of pesticide selection, (3.) formulation phase, (4.) use of pesticide formulation. He also presented the major problems and hazards associated with both solid and liquid formulations. For example, in the undiluted method of application of the solid formulations, granules generate less dust compared to dustable powder causing less exposure for the operator.

In the open forum, the following issues/comments were raised:

16.1 Regarding the cost effectiveness of the use of low volume, high value, low risk pesticides although they are initially more expensive in the long run this becomes cost effective because they are more resistant with long duration of action and low toxicity.

16.2 A change towards safety, health and environment (SHE) issues leaves the companies with no choice but to improve on their formulation processes such as the production of safe and environmentally friendly pesticides. It would be noteworthy that the guidelines applicable to existing new plants require simple management techniques to improve operation and appropriate time is provided for companies to meet the requirements.

16.3 The Philippine experience saw the importance of a win-win situation in pesticide formulation when government regulatory agency and the industry agreed to protect workers while at the same time consideration was given to the company's earning capacity. However, health and safety cannot be compromised in the formulation of pesticides.

IX RISK ASSESSMENT AND MANAGEMENT

17. Dr. Ronald Subida of the Department of Environmental and Occupational Health, U.P. College of Public Health delivered the lecture on Risk Assessment and Management. He began with the definition of toxicity, hazard and risk. He further discussed the elements of risk assessment and management, namely, hazards identification, dose-response assessment, exposure assessment, risk characterization and risk management. In risk assessment, the pesticide data are derived such as existing exposure, routes of exposure, mechanism of action, how the substance behaves in the body, etc. He noted the importance of risk communication and the manner of informing target groups with regards the presence of risks in the workplace.

X CANADIAN ASSESSMENT AND MANAGEMENT

18. This was presented by Dr. Harvey Lerer of Environment Canada. He cited the problem of considerable discontent that existed in Canada among farmers, interest groups and industry with regards pesticide regulations. As a result, a meeting of multi-stakeholders was held to analyze the problem and come up with recommendations. It was realized in that meeting that the objective of the regulatory agency was wrong in that it focused on ensuring availability of products while minimizing risks. This resulted in the revision of the pesticide legislation changing the Pest Control Products Act to the Pest Management Act with the Ministry of Health taking charge in carrying out its provision. Other issues taken up involved public information and participation especially on ministerial disclosure, formulation with "inert" materials, decision making process (risk assessment/management, efficacy, value assessment), labelling, special reviews and reevaluation of older products, enforcement and compliance with imposition of heavy fines for offenses, data protection policy, cost recovery and review of the system to ensure that objectives are met. The recommendations have been submitted to Congress for deliberations and appropriate actions. It was realized that bureaucracy isolated itself and its efforts were perceived differently by the general public. With sharing of data, win-win situations can be worked out.

18.1. During the open forum, it was emphasized that in the conduct of farmer exposure studies there is a need to adhere to the WHO Declaration of Helsinki as amended in 1992 which requires that ethical considerations be part of the protocol review.

XI GOOD AND SAFE MANUFACTURING PRACTICE IN FORMULATION, WAREHOUSING AND TRANSPORT OF PESTICIDES

19. Dr. Jorn Rusch, technical advisor for formulation packaging in Southeast Asia Crop Protection Division of Ciba-Geigy Limited, discussed this important topic. He identified the specific hazards in formulation of pesticides which are intoxication and fire or environmental contamination. Prevention of hazards is the key to safe formulation although plants should be equipped to respond to emergency situations. Prevention involves appropriate plant selection and design and the availability of proper equipment, among others. He also discussed the hazards in a pesticide warehousing, the prevention of which involves proper management and good housekeeping practices. Hazards in transport of pesticides were pointed out with preventive measures consisting of road-worthy vehicles, training of the drivers, planning of the transport, proper pack design and careful loading of vehicles.

XII INDUSTRY STANDARDS FOR FORMULATING PLANTS, THAILAND EXPERIENCE

20. Dr. K.H. Suchai , Executive Director of the Thai Pesticide Association (TPA). focused on the implementation of the Safe Use Project being handled by the International Group of National Associations of Manufacturers of Agrochemicals (GIFAP) and the Thailand Pesticide Association (TPA). He outlined the objectives of the project as follows: (1) to reduce the incidence of pesticide poisoning, (2) to raise awareness and compliance in the safe handling and storage of pesticides within the industry, the medical profession and end users, (3) to assist relevant government agencies in terms of resources, expertise and provision of training, (4) to protect the environment. He also described the project's key activities and strategies. The first phase of the project was completed in June, 1994 with linkage created among the hospitals, private sector and companies. Sustainability of the project is a concern that needs to be addressed in the second phase.

20.1 During the open forum, the use of protective equipment in tropical countries was discussed and the approaches to addressing the problem were raised, i.e., whether through education, designing comfortable protective equipment, change of formulation or creation of new but safer pesticides.

XIII EMERGENCY SAFETY PROCEDURES

21. Dr. Kenneth Hartigan-Go, Consultant of the National Poisons Control and Information Service (NPCIS), U.P.- Manila, lectured on the Emergency Safety Procedures. He discussed the types of pesticide exposure, the rescuer's role, first aid and life support procedures, decontamination and management of poisoning, transport of victims, crowd control and safety perimeters, and access to vital information. He emphasized the key elements in the preparation and implementation of the emergency safety guidelines which consist of: (1) the proper assessment of hazard, (2) zoning of high risks areas of the plant, (3) documentation of emergency procedures, (4) regular drills on evacuation, rescue, decontamination, and first aid and their subsequent modifications, (5) cooperation and coordination of activities during emergencies, the provision of warnings and crowd control.

XIV ACCIDENT REPORTING AND MONITORING ACUTE AND CHRONIC ADVERSE EFFECTS OF PESTICIDE

22 This was presented by Dr. Nelia Cortes-Maramba, Project Leader, NPCIS, U.P. Manila. She discussed the applications of occupational toxicology investigations which are (1) determination of the "safe" or acceptable levels of exposure to airborne chemicals, (2) development of methods of biologic evaluations of the intensity of exposure to chemicals and (3) the recognition of early workers' adverse effects. Health assessment of workers in

the pesticide formulation should consist of various medical examinations provided by the management. Methods of measurement of human exposure involve (1) ambient monitoring, (2) dermal exposure assessment and (3) biological monitoring. Biological monitoring involves determination of parent compound or metabolite (like parnitrophenol in methylparathion and EPN exposure) and indirect measurements of pesticide exposure (red cell cholinesterase in cholinesterase inhibiting compounds). She also gave emphasis on performing other special examinations to detect effects related to chronic pesticide exposure such as lymphocyte and platelet neurotoxic esterase (NTE) determinations.

Dr. Maramba presented the Accident Report Form prepared by UNIDO adapted from OECD. She stressed the importance of developing a systematized pesticide accident report form.

XV FILM SHOWING ON PESTICIDE MANAGEMENT

23. A film on Pesticide management was shown presenting aspects on the recognition evaluation, control, monitoring, training, elimination, substitution, and containment of pesticides.

XVI HEALTH, SAFETY AND ENVIRONMENT MANAGEMENT SYSTEMS THE CANADA EXPERIENCE

24. Atty. Hajo Versteeg, Environmental Law and Policy Advisor, Canada, acknowledged that the participants in the workshop represent half of the world and could be a potent force when the proposed regulatory policy in this Workshop will be put into effect in their own country.

He identified major problems that may lead to ineffective SHE programs. First, is the usual tendency to package the solutions in pretty papers and ribbons although the contents are not practical and realistic for the specific country in which the solutions will be applied. Another common significant problem is the tendency for the country officials not to assume responsibilities in dealing with health and environment problems; all must act to serve these problems and all should be part of the solutions also. The point of view of different stakeholders (including pesticide industries) must be considered in order to effectively deal with these problems.

Regarding acceptable risk, different countries may have different standards. It must be admitted that the primary goal of Industry is to maximize profit. Anything that influence profit will become a motivating factor in dealing with that matter. Risk is directly proportional to hazard and time of exposure ($R = H \times E$) and in many countries where exposure cannot be controlled, it will be justifiable to remove the hazard (which may synonymous to banning Cat. I pesticides in the presence of safer alternatives). It is

also important to consider that in reducing risks four problems must be considered : availability of money, personnel, time and knowledge (technology, information, etc.). All interested parties, government, NGOs and industries can approach risk reduction efforts with different motivating factors, namely : voluntary, market-based, and/or legal instruments (legislated - federal, provincial and municipal; common law).

In Canada, the major players involved during health and environmental program planning and implementation are : a) Industry (Manufacturers, Formulators) whether multinational, national (public - private) or local (plant manager); b) Governments : Federal (several Departments); Provincial (several Departments), Municipal; c) Workers; and d) Community groups (including consumers and environmentalists).

All these players have influenced the health and environmental related programs of pesticide industries at certain points of their activities. For example, in Canada there are laws that regulate all aspects of the manufacture, formulation of pesticides including the transport of hazardous chemicals and the kind and quantity of raw materials to be used in pesticide formulation. It is also mandatory for pesticide industries to inform and train their workers because of strong rights as promoted by their union. Many NGOs also influenced pesticide industries through public information and pressures. In addition, regulatory agencies in Canada have the legal infrastructure in order that they could monitor and enforce their laws including the ability to collect evidence for prosecution. The pesticide industries also have their own very effective voluntary programs in the form of product stewardship. Provincial laws regulate all aspects of the pre-design, design construction, inspection and monitoring of the pesticide formulation plants.

XVII - OCCUPATIONAL HEALTH MANAGEMENT SYSTEMS

25. Dr. Joselito Gapas of the Clinical Epidemiology Unit of the Department of Medicine, College of Medicine, UP Manila delivered the lecture.

He emphasized that legislations have always been the dominant factor that influence the industry to maintain a certain form of Safety, Health and Environment (SHE) Management System. However, in order to be self-sustaining in the long run, the industry itself should be made more responsible for the implementation of the SHE management systems.

With regards to the health of the workers corporate Occupational Health Program should have two elements: health protection and health promotion. Health Protection is composed of a) health risk management at work; b) information, instruction and training; c) first aid and medical treatment; d) sickness and absenteeism monitoring; e) record keeping. Health Promotion consists of a) assessment of health risk associated with the

living environment or lifestyle; b) employee information and assistance program; c) record keeping. He pointed out that a good O.H. program is not an interruptive process but rather a continuous one. If risks in the pesticide formulating plants cannot be controlled adequately, an intensive health surveillance program must be implemented initially and temporarily until the hazard could be controlled to an acceptable level. Good record keeping (exposure and health maintenance records) must also be maintained to identify general health trends and problem areas of action, to fulfill legal requirements and to safeguard the company from unjustified compensation claims. Regarding risk management, the following are the hierarchy of control: a) elimination of hazard; b) substitution (look for safer alternatives); c) engineering control (more efficient & safer plans and equipments, which is expensive); d) procedural; e) personal protective equipment (PPE) which is a last resort because it is the most difficult to control and should only be an emergency option.

25.1 Industry must be convinced that SHE related programs are long-term investments that will result in greater productivity and efficiency. The "General Business Principles" should integrate SHE as co-equal in importance to its other business activities. A suggested enhanced SHE management Principles should have: visible Senior Management Commitment; sound SHE policy; line responsibility for SHE, competent SHE Advisors; high and well understood SHE Standards; effective SHE training; realistic SHE Targets and Objectives; effective motivation and communications; techniques for measuring SHE Performance; thorough incident investigation and follow-up; audits of SHE standards and practices. A suggested SHE Management System framework was explained. To achieve effective implementation of SHE management system, a proper delegation of responsibilities should be given from the highest to the lowest ranking personnel.

XVIII. INDUSTRIAL HYGIENE IN FORMULATION PLANTS

26. Professor Elma B. Torres of the Department of Environmental and Occupational Health, College of Public Health, UP Manila discussed not only Industrial Hygiene but also waste minimization. She defined Industrial Hygiene (IH) as one of the basic tools for implementation of O.H. program which is devoted to the anticipation, recognition, evaluation and control of those environmental factors or stresses, arising in or from the workplace, which may cause sickness, impaired health and well-being, or significant discomfort and inefficiency among workers. Industrial Hygiene has three basic components namely: 1) recognition of hazard; 2) evaluation of problem and 3) control of the problem. She emphasized that hazard recognition must be done which involves knowledge and understanding of the several types of workplace environmental stresses and the effect of these upon the health of the worker. The types of hazards are chemical, physical, biological and ergonomic. The ways of collecting data to determine the

magnitude of the hazard include doing a walk-through survey in order to pinpoint the locations of existing health hazard so that proper corrective actions can be taken and to identify potential health hazards under normal and abnormal conditions. Its other purposes are 1) to determine levels of exposure among workers to various atmospheric contaminants and physical agents which may be accomplished by bringing instruments or only by the use of the five senses; 2) to assess the effectiveness of control measures; 3) to investigate complaints and 4) to determine compliance with state regulations. Another way of collecting data is by doing chemical inventory (i.e. use of MSDS given by suppliers) and reviewing equipment and process.

26.1 Evaluation of the problem is a decision-making process resulting in an opinion as to the degree of health hazard that exists from chemical or physical agents in industrial operations. Evaluation requires a monitoring system which is the continuing program of observation, measurement and judgment in order to recognize potential health hazards and to judge the adequacy of O.H. programs. The two types of monitoring are environmental and biological monitoring. Biological monitoring is the systematic collection of human specimen (i.e. blood, hair, breast milk etc.) for the determination of pollutant concentration /or metabolites and also used for estimating dietary intakes. Advantages of biological monitoring are : 1) detection of early health changes among individuals, populations and communities for primary prevention. 2) assessment of the effectiveness of protective equipment and practice 3) assessment of individual variations in absorption, metabolism and distribution 4) measurement of all exposures, both occupational and non-occupational from all exposure routes.

The limitations of biological monitoring include : 1) not ideal if there is no substance in the tissue phase or in ascertaining effects like cancer 2) maybe less meaningful for legal purposes 3) less reliable at identifying source of exposure.

She defined environmental monitoring as the systematic collection of environmental samples for analysis of pollutant concentrations. Its advantages are 1) detection and quantification of exposure for legal purpose 2) detection of source of exposure and 3) applicability if there is no substance in tissue phase or in determining such effects like cancer.

In sampling for evaluation, the factors to be considered are : 1) where to sample - i.e. : collect samples at or near the worker's breathing zone or near the vicinity of the source 2) whom to sample - usually done to the most highly exposed employee 3) when to sample - preferably, samples should be collected during each shift and time of most exposure is given priority 4) how long to sample - usually a complete cycle of an operation (ie 8 hours) 5) how many samples to take - sufficient quantity of the sample must be collected to determine minute amounts of air contaminants.

26.2 In the area of waste management, the first priority is on the source reduction which means avoiding the use of chemicals that could cause hazard or pollution. Second priority is the reusing of waste material followed by mutual exchange of waste materials that can be used by other involved industries. The last option is waste treatment and disposal. Another concept of waste management is waste minimization which is defined as any activity that reduces the quantity of hazardous waste (or even non-hazardous) by an industrial process. The priorities of source reduction (reducing waste exiting a process) are the following : modifying production processes, substituting or improving the purity of raw materials, improved housekeeping and management practices, increasing the efficiency of machinery, recycling within a process. Another waste minimization technique is by recycling which means, reusing, or reclaiming waste. Rapidly emerging in Europe, is the concept of "clean technologies" which also involves waste management. Clean technologies are, technologies that prevent or minimize pollution (waste generations) and discharges to the natural environment (water, air and earth), technologies that demand less natural resources (water, energy, raw materials), use industrial process technologies that recycle wastes generated during industrial processes or prevent wastes from being generated in the first place. Technology changes may include process changes: equipment, piping, or layout changes; additional automation; and changes in operational settings. In view of its efforts in pollution reduction, the industry may benefit from the following results: 1) reduced regulatory and compliance problem 2) higher overall efficiency 3) reduced waste disposal costs 4) improved worker health and safety 5) "good neighbor" reputation with citizens and NGOs.

XIX - FOLLOW-UP DISCUSSION ON RECOMMENDATIONS OF RENPAP WORKSHOP ON 15-19 APRIL 1991

27. Dr. Cortes-Maramba was the moderator in this discussion and actions taken by each member country regarding each of the eight recommendations were reported.

27.1 Legislations related to pesticide formulation plants. Only two countries have no legislations specific for pesticide formulation plants but the others need strengthening in their regulatory processes.

27.2 Adoption of the WHO Hazard Classification of Pesticide Formulations. All the RENPAP member countries except Vietnam have already adopted or adapted the WHO hazard classification of pesticide formulations.

27.3 Development of Standard Guidelines for Inspection of Pesticide Production and Formulation Plants. Both Bangladesh and India use their own inspection guidelines specific for pesticide formulation plants. Seven countries (Indonesia, Malaysia, Myanmar,

Pakistan, Republic of Korea, Thailand and Vietnam) have standard general inspection forms for industry but not specific to pesticides. The Philippines and Sri Lanka utilize specific inspection guidelines for pesticide. The representative from China did not have the information regarding the status of their inspection guidelines.

27.4 Development of standardized accident and inquiry investigation forms.

27.5 Creation of Accident Investigation Forms :

Dr. Dhua discussed these two recommendations. He informed the group that a Standard Accident Report was finalized in the recent Brussels meeting and printed in the "green book" which may be a good basis for each country when they create their own accident report form. Dr. Maramba explained that the adoption of a uniform or standardized form among member countries would be important for comparison purposes. Dr. Sugavanam also emphasized that accident reporting is important to determine the success of the program.

27.6 Standardization of Biologic Monitoring :

Dr. Dhua reported that, although the standardization activity is one of the important components of the program, UNDP has given a low priority for the funding of this activity. For this reason, other alternative means must be explored to supplement this activity. One suggestion is the creation of a National Workshop for each country of RENPAP in order to tackle this problem.

27.7 Recognizing Regional Panel of Experts :

Dr. Dhua informed the group that regarding the training of involved personnel in O.H., UNIDO had identified Dr. Maramba and Yao Pei Pei of China as the regional experts. Unfortunately Dr. Yao Peipei could not be available for the current workshop.

27.8 Networking/Information Exchange :

Dr. Dhua reported that the previous suggestion regarding the creation and mandatory subscription to a UNIDO gazette did not push through because of funding problems. Dr. Maramba suggested to the group that instead of monthly monetary/financial contributions from different countries, it would be better to rotate or assign for each member country the responsibility to contribute articles for publications in the UNIDO gazette.

27.9 Support of Toxicovigilance Initiatives (Pro-active procedures) :

All member countries have already initiated toxicovigilance activities except for Korea and Vietnam.

In conclusion, Dr. Dhua suggested that the same group of people who attended this workshop should be present for the next Workshop. Dr. Maramba also reminded the group that actions to be undertaken, should include time frames (i.e. short term - 1 to 2 years; medium term - 3 to 5 years). Regarding the problems in standardization of biologic monitoring procedures, Dr. Maramba suggested the procurement of standards from international organizations or the US-EPA or by the creation of secondary standards among member countries who could procure the technical material from industry; the mechanism for implementing this is through technical cooperation among developing countries (TCDC).

XX PLANT VISITS

A. TADECO FORMULATION PLANT

28. The participants visited the Tadeco banana plantation and the Piltrade formulation plant. Mr. Tony Brias, Senior Vice President, welcomed the group and recognized the assistance of the group of Dr. Maramba to improve the operations of the plant. Ms. Aida Ordas thanked the management for the opportunity provided to the group to be able to visit a formulating plant and apply what they have learned during the past 3 days .

28.1. Engr. Jose Esparagoza , plant operations manager, conducted the orientation which involved the history of the plant, description of the formulation process, and existing health and safety programmes. He stated that the plant was built to formulate the chemicals needed in the banana plantation such as carbofuran, ethoprophos, etc. He highlighted the improvements done on the plant to improve the health and safety programmes which included the establishment of a semi-automated, closed system in 1993.

28.2. After the orientation, the group proceeded to the plant site and did an ocular inspection of the different areas such as the actual formulation area, the laboratory , medical clinic and waste disposal area. The standard guide for inspection on occupational health programme and technical safety of pesticide manufacturing, formulating, repackaging and other institutional uses developed by the FPA in coordination with the academe, was used for this visit.

28.4. The participants also visited the livelihood center of the plant.

B. EXTRUSION PLANT

28.5. In the afternoon, the group visited the Lorsban IPE extrusion plant. The company manufactures banana plastic bags which consist of polyethylene in combination with 1% chlorpyrifos. The process was fully automated with minimal manpower requirement except for the final process of putting holes in the bags which was semi-automatic. The bags are used to cover bananas to repel pests.

C. EVALUATION OF PLANTS

28.6. In general, the two companies were found complying with the standards set up by the FPA with regards health safety and industrial hygiene in the formulation plants.

XXI CONCLUSIONS

After 5 days of activities including country reports of RENPAP member countries, various lectures on several aspects of safety, health and environment (SHE) programmes in pesticide formulating plants and industry experience (Thailand), developed country experience (Canada) in pesticide management, workshop on identified gaps and the necessary strategies over the short, medium and long term, the following could be concluded:

1. Almost all the member countries have taken great strides in adopting SHE programs in pesticide formulation / manufacturing plants. However, major problems still exist in the areas of specific legislations/rules/regulations for pesticides and coordination of various ministries / government agencies involved in ensuring safety and health of workers and the environment that the holding of a national workshop on occupational safety, health and industrial hygiene in each member country could improve the coordination and collaboration not only among agencies of government but also among government, industry, labor and consumer groups.

2. All the member countries have already adopted in toto or adapted the WHO classification of pesticide formulations according to hazard.

3. The need for improving the monitoring of workers in pesticide formulation plants to assess exposure and internal dose so as to protect the workers not only from acute poisoning but as importantly from the chronic adverse effects of pesticides should be implemented among all member countries.

4. Technical cooperation among the member countries is very limited and should include not only sharing of human resource or technical experts but should also be in the field of standardization of laboratory methods and a supply of secondary standards for pesticide quality control and biological monitoring of the workers.

5. Exchange of information/networking of communication is still lacking among RENPAP member countries. The need to support the RENPAP/UNIDO gazette by active participation of member countries in contributing country experience in SHE programs in pesticide management had been felt.

6. The invaluable role of RENPAP/UNIDO in making government, industry and other stakeholders aware of the need for SHE in the management, formulation and handling of pesticides was unanimously voiced by member countries. The continuing support of these UN agencies and governments including industry in providing technical and financial assistance to member countries was strongly endorsed.

RECOMMENDATIONS

I. Adoption of the Integrated International Safety Guidelines for Pesticide Formulation in Developing Countries.

The Workshop

Appreciating the invaluable technical and financial assistance of UNDP/UNIDO/RENPAP and the active participation of network member countries in this workshop on Industrial Hygiene and Occupational Health Safety in Pesticide Formulation Plants;

Recognizing the socio-economic impact of safety, health, and environment programs (SHE) and clean technology in pesticide formulating plants;

Noting that the project management committee meeting held in China unanimously adopted these guidelines and

Noting further that majority of the countries of the region do not have specific guidelines for pesticide formulations;

RECOMMENDS

That member countries in the region adopt the UNIDO "Integrated International Safety Guidelines for Pesticide Formulations in Developing Countries" to serve as the core guidelines in member countries, and to strengthen the implementation in those countries with general guidelines.

II. National Workshop on Occupational Safety, Health and Industrial Hygiene

The Workshop

Recognizing the need for greater awareness, collaboration and cooperation among government agencies, industry and stakeholders, in ensuring safety and health of workers at the production and the user end, and protection of the environment;

RECOMMENDS

That UNIDO/RENAP extend technical and financial assistance to each member country in the region to enable each country to hold a national workshop on occupational safety health and industrial hygiene in collaboration with other agencies as relevant.

III. Standard Guidelines for Inspection of Pesticide Production and Formulating Plants

The Workshop

Recognizing that most countries only have general inspection guidelines for industry;

Noting that pesticides by their very nature are toxic substances thus would require specific inspection guidelines for pesticide production and formulation; and

Noting further in this meeting that the guidelines for pesticide inspection have been found useful and practical;

RECOMMENDS

That UNIDO/RENAP prepare the final forms of the guidelines for pesticides formulating plant inspections and have these final guidelines available for all countries for adoption.

IV. Adoption of the Standard Accident Report Forms

The Workshop

Recognizing that member countries lack a specific accident report form ; and

Noting that a standard accident and injury form was finalized in the Brussels meeting and made available to all participants in this workshop ;

RECOMMENDS

That member countries adopt the simplified accident form to enable industry to comply with the required accident reporting and enable the country and the region to derive a realistic or factual incidence of accidents occurring in pesticide formulating plants and agree to disseminate the information to other countries in order to prevent similar accidents from happening.

V. Strengthening of Ambient and Biological Monitoring Activities using Technical Cooperation among Developing Countries (TCDC)

The Workshop

Recognizing that ambient and biological monitoring for acute and chronic effects of pesticides among workers in pesticide plants is at its early stage of implementation for majority of the countries of the region; and

Noting that the main problems are lack of expertise and standardized procedures in availability of primary/secondary pesticide standards;

RECOMMENDS

That UNIDO/RENAP extend technical and financial assistance to member countries to implement TCDC in pesticide ambient and biological monitoring, including training of personnel, availability of secondary standards, and facilitating the acquisition of necessary equipments and reagents in collaboration with other relevant agencies.

VI. Strengthening of Networking and Information Exchange

The Workshop

Recognizing the value for exchange of information regarding pesticides among member countries ; and

Noting that networking of communications is still lacking among RENPAP member countries; and

Noting further that there is a need for active participation of countries in the preparation of the UNIDO/RENPAP gazette;

RECOMMENDS

That member countries contribute actively articles for publication in the gazette regarding banned or restricted pesticides, accidents in pesticide formulating plants, acute and chronic effects of pesticides and the impact of pesticides on the environment; and such communication be channeled through the technical coordinating unit (TCU) or directly through the regional coordinator unit (RCU).

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Tel. No. 64389
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STANFILCO, A Division of Dole Phil., Inc.
Ladislawa Garden Village
Buhangin, Davao City
Tel. No. 221-6844
Fax No. 221-0535

Wise and Company

House of Investments, Inc.
Malayan House, Lanang, Davao City
Tel. No. 63660/63661

Tagum Plastic
Madaum, Tagum, Davao del Norte
Tel. No. 64961

Remegio Soberano
Farm Superintendent

Elviro Tabar, M.D.
Chief of Hospital

Luzviminda Agoilo
Company Nurse

Jose Esparagosa
Plant Manager

Victorino Martizano
Management Consultant

Gregorio Yap
Manufacturing Supervisor

Romeo Yuzon, Jr.
Company Physician

Gregorio Timple, Jr.
Company Physician

Ida Geralde
Industrial Sales Rep. Engineer

Rodolfo Ancheta
Agricultural Manager

Joel Bandong
Plant-in-Charge

OBSERVERS

**Department of Agriculture
Davao City**

**Alex Yadao
Regional Director XI**

**Department of Health
Davao City**

Cyrus J. Trocio, M.D.

FERTILIZER AND PESTICIDE AUTHORITY

Regional Officer

Region

I	George Bilanggo
II	Henry Fronda
III	Antonio Cruz, Jr.
IV	Ma. Sonia Calleja
V	Hilarion C. Yater
VI	Ephraim B. Gascon
VII	Gerry Valerio
VIII	Norberto Redruco
IX	Avelino L. Caperig
XI	Ilominda Salting
XII	Juan Legario
ARMM	Sumail K. Sikak

Secretariat

**Wernher Bautista, M.D.
Bella Fe Carmona
Nena Reprado
Regina Lagance
Erlene Bulseco
Benjamin Acero
Marivic Polutan
Gabriel Evangelista**

**REGIONAL WORKSHOP ON INDUSTRIAL HYGIENE
AND OCCUPATIONAL HEALTH AND SAFETY
INSULAR HOTEL, DAVAO CITY, PHILIPPINES
DECEMBER 5-8, 1994
MANILA, DECEMBER 9, 1994**

PROGRAM

DAY 1 (DECEMBER 5)

EMCEE / MODERATOR - MRS. AIDA V. ORDAS

- | | | |
|-----------------------|---|---|
| 8:00 - 9:00 am | REGISTRATION OF PARTICIPANTS | |
| 9:00 - 10:30 | Opening Ceremony Invocation | - Mr. Edmundo Varona
Officer-In-Charge
Crop Protection Association of the
Philippines (CPAP) |
| | Philippine National Anthem | - Mrs. Ilominda Salting
FPA Regional Coordinator
Region XI |
| | Welcome Address Recognition of
Guests and Participants | - Mr. Francisco C. Comejo
FPA Executive Director |
| | Message | - Mr. Kevin McGrath
UNDP Resident
Representative |
| | Message | - Dr. B. Sugavanam
UNIDO, Vienna |
| | Message | - Dr. S. P. Dhua
Regional Coordinator
RENAP Project |
| | Message | - Dr. Peter Kenmore
Regional Programme Coordinator
FAO Inter-Country Programme for
IPM in Rice |
| | Introduction of the Guests Speaker | - Mr. Alex Yadao
DA Regional Director
Region XI, Department of Agriculture |

	Keynote Address and Official Opening of the Workshop	- Hon. Roberto S. Sebastian Secretary Dept. of Agriculture
10:30 - 11:00	COFFEE BREAK	
11:00 - 11:30	Workshop Orientation	- Nelia P. Cortes-Maramba, M.D. Professor Dept. of Pharmacology College of Medicine, UP Manila
11:30 - 12:00	a. Election of Chairpersons and Appointment of Rapporteurs 1) Over-all Chairperson 2) Daily Chairperson 3) General Rapporteur 4) Rapporteur per Topic b. Adoption of Agenda	
12:00 - 1:00	LUNCH BREAK	
1:00 - 2:00	Country Reports	
	<ul style="list-style-type: none">* Afghanistan* Bangladesh* People's Republic of China* India	
2:00 - 3:00	<ul style="list-style-type: none">* Indonesia* Iran* Malaysia* Myanmar	
3:00 - 3:15	COFFEE BREAK	
3:15 - 4:15	<ul style="list-style-type: none">* Nepal* Pakistan* Philippines* Republic of Korea	
4:15 - 5:30	<ul style="list-style-type: none">* Sri-Lanka* Thailand* Vietnam	
6:30 pm	Welcome Dinner to be hosted by the Honorable Secretary of Agriculture, Roberto S. Sebastian	

DAY 2 (DECEMBER 6, 1994)

AM

9:00 - 9:30

**Topic: The Integrated International Safety Guidelines for
Pesticide Formulation in Developing Countries**

- Background and Rationale
 - Introduction
 - Description of the Components of the Guidelines
- Dr. B. Sugavanam
UNIDO, Vienna

9:30 - 10:15

Topic : Planning a Formulation Plant

- Site Selection
 - Materials (Inventory and Specifications)
 - Plant Design
 - Clean Technology
 - Safe Plant Operation and Equipment Maintenance
- Dr. S. P. Dhua
Regional Coordinator
RENPAP/UNIDO

10:15 - 10:30

COFFEE BREAK

10:30 - 11:15

Risk Assessment and Management

- Dr. Ronald Subirya
Professor, College of Public
Health

11:15 - 12:00

Pre Construction and Construction
Activities

- Canadian Experience on Pesticide
Risk Management

- Dr. Harvey Lerer
Director, Ecosystem
Directorate, Environment

12:00 - 12:30

OPEN BREAK

12:30 - 1:30

LUNCH BREAK

PM

Topic : Formulation Plant Operation

- | | | |
|-------------|--|--|
| 1:30 - 2:15 | Good and Safe Manufacturing Practice in Formulation, Warehousing and Transport of Pesticides | - Dr. Jom Rusch
Technical Adviser
for Formulating Packaging in
South East Asia Crop Protection
Division Ciba-Geigy Limited |
| 2:15 - 3:00 | Safe Use Project-Thai Experience | - Dr. K.H. Suchai
Executive Director
Thai Pesticide Association |
| 3:00 - 3:15 | - COFFEE BREAK | |
| 3:15 - 5:30 | <u>Topic : Occupational Toxicology</u> | |
| 3:15 - 4:00 | Emergency Safety Procedures | - Dr. Kenneth Hartigan-Go |
| 4:00 - 5:30 | Accident Reporting, Interpretation and Management of Acute and Chronic biological monitoring results | - Dr. Nelia P. Cortes-Maramba |
| 5:30 - 6:00 | OPEN FORUM | |
| 6:00 - 6:30 | Pesticide Management Film Showing | |
| 7:00 PM | Dinner to be hosted by the Pilipino Banana Growers and Exporters Association (PBGEA) | |

DAY 4 (DECEMBER 8, 1994)

AM

7:00 Leave Insular Hotel for TADECO's
Formulations Plant

8:00 - 8:30 BREAKFAST

8:30 - 10:30 Briefing and Occular Inspection - Mr. Jose Esparagosa
Plant Operation Manager

10:30 - 1:00 Plant Visit of the Lorsban IPE - Mr. Arcadio Mendoza
Extrusion Plant Plant Manager

PM

3:00 - 4:00 Drafting of Workshop - Dr. Nelia C. Maramba
Recommendations

Preparation for early morning
departure for Manila

DAY 5 (DECEMBER 9, 1994)

AM

7:00 Departure from Davao

9:30 - 12:00 Visit at Bayer Formulation Plant in
Canlubang, Laguna

PM

1:30 - 3:00 Visit at Rhone-Poulenc Plant in
Namayan, Mandaluyong

3:00 - 5:00 Finalizing of Workshop
Recommendations

5:00 - 6:00 Closing Ceremony at Galeria Suites

6:00 - 6:15 Adoption of Workshop Report

6:15 - 6:30 Closing Address - Hon. Nieves Confesor

6:30 - 6:45 Closing Address - Hon. Juan Flavie

6:45 - 7:00 Distribution of Certificates

7:00 Dinner to be hosted by the Crop
Protection Association of the
Philippines (PCAP)

UNIDO COMMENTS

The workshop was considered to be well organized in such a format as country report, lectures, case studies, group discussion session, and field trip. The successful achievement of the workshop was reflected in the conclusion and recommendation that every participant representing Asian countries recognized the need for a national workshop of the same kind. It was concluded in the workshop that support of UN agencies led by the RENPAP/UNIDO in enhancing the Safety, Health and Environment (SHE) aspects of production, formulation, and handling of pesticides should be continued. Activities suggested in the conclusion were holding a national SHE workshop emphasizing intimate coordination of interagency/ ministry and various societal sectors, improving biological and chemical monitoring of workers and working environment, technical cooperation on human resources and technical materials and exchange of information/networking of communications on safety data and case of accidents.

Substantive recommendations to implement the activities were utilization of the ready available manual "Integrated International Safety Guidelines for Pesticide Formulation", new accident report forms, inspection guidelines, strengthening of ambient and biological monitoring activities, and strengthening of networking and information exchange.

The workshop placed emphasis on identification of the cause and resolve the problems raised by the participating countries in relation to worker safety in pesticide plant. The topics need further discussion in the forthcoming workshops are:

- 1) Poisoning statistics: This is the very basic data needed to realize the importance of SHE programme and to check the progress with adoption of the remedial measures. Voluntary participation of the industry is critical for the meaning data collection;
- 2) Regular medical check-up for workers: Special medical care for the workers in pesticide plant is needed;
- 3) Illiterate and/or casual workers: These group of workers are prone to cause safety problems;
- 4) Poison control center: These facilities are not available in rural areas or in the area where small-size plant is located;

On the basis of review on the report of the workshop it is recommended that:

To governments of the developing countries;

- 1) To organize a national workshop to disseminate the SHE programme;
- 2) To strengthen the legislative/administrative measures to secure the worker safety in pesticide plants by adopting safety guidelines, accident report forms, and inspection guidelines;

- 3) To make certain that workers' health is not in jeopardy by support for monitoring activities and information exchange/networking;
- 4) To strengthen the poison control center system to reach the remote areas of the country.

To pesticide industry;

- 1) To be transparent and voluntary to report accidents or monitoring data to the government;
- 2) To provide special medical care for the workers;
- 3) To educate regular or casual workers on the safety precautions in handling pesticides.

To international organizations:

- 1) To coordinate the overall operative effort of the developing countries in SHE programme;
- 2) To support activities in monitoring the workplace, information exchange, and exchange of human resources, and development of training programmes.