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RESTRICTED

REGIONAL NETWORK ON SAFE PESTICIDES PRODUCTION AND INFORMATION FOR ASIA AND THE PACIFIC

(RAS/93/061)

FINAL REPORT
(As per para 2.09 (f) of the UNIDO Contract No. 94/065)

Prepared by

Institute of Pesticide Formulation Technology - the Contractor for the Project

United Nations Industrial Development Organisation, Vienna

This document has not been formally edited

REPORT SUMMARY SHEET

Country	:	Asia/Pacific Region
Project Title	:	Regional Network on Safe Pesticides Production and Information for Asia and the Pacific.
Project No.	:	DP/RAS/93/061
Executing Agency	:	United Nations Industrial Development Organisation (UNIDO).

I. Brief Statement

OBJECTIVES AND ACHIEVEMENTS

Regional Network on Safe Pesticide Production and Information for Asia and the Pacific (RENPAP) project was created in response to the survey conducted by the UNDP, UNIDO (and other UN agencies) on pesticide development and use patterns in Asia and Pacific regional countries. This survey indicated that these countries had local raw materials and inert ingredients which could be used for making pesticide formulations and in other steps in pesticide manufacturing. The survey concluded that the UN agencies should encourage pesticide manufacturing and formulations by providing technical and financial assistance. As relevant market information was not readily available, i.e. national pesticide markets, production technologies and testing facilities for local raw material evaluation, these countries required implementation of strategies to gain this information. RENPAP is one of the largest networks comprising of 15 countries namely, Afghanistan, Bangladesh, People's Republic of China, India, Indonesia, Iran, Republic of Korea, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam and is one of the largest networks of UNDP/UNIDO in the Asia Pacific region. RENPAP has been pursuing its mission of "Protection of the environment and providing safety to the farmers in the field and the workers at the production centres and increasing agricultural produciton through scientific choice and adoption of safer and environment friendly technologies and products needed for alleviation of poverty and hunger by addressing food security" through using a harmonised approach in promoting clean technologies, assessing and revamping old / operational plants, promoting the use of appropriate personal protective equipment, effluent treatment and pollution control, establishing effluent standard limitation based on best technology available, and following the Brussels Guidelines in giving assistance to industries to enable them to meet the safety standards and develop safer pesticides and their formulations including bio-pesticides and botanical pesticides.

As stated in the original document (RAS/82/006/A/01/37), the project is unique since it incorporated a novel concept in bringing together a group of countries having the same pest and pesticide problems for the purpose of solving them by identification of the individual country problems, sharing their experiences, and remedying the problems and strengthening the pesticide production and use patterns through training, study tours, technology transfers, etc. All the national coordinators sincerely believe that the RENPAP project is appropriate for all the member countries to solve their pest and pesticide problems through the production of required pesticides, harmonization and uniform methodologies to reduce the costs and increase the quality of products.

The major activities of RENPAP are being implemented in a highly decentralised manner through 8 Technical Coordinator Units(TCUs) hosted by 8 selected member countries which are the focal points of specialised operations of the network and they are -

a) User and Environment Friendly Pesticide Formulation Technology in India.

b) Bio-botanical Pesticide Development in Thailand

c) Pesticide Application Technology in Malaysia

d) Eco-toxicology in Pakistan

e) Industrial Hygiene and Occupational Health Safety in Philippines

f) Monitoring of Pesticides in Air, Water and Soil, Republic of Korea

g) Industrial Safety, Environment Protection and Effluent Treatment and Disposal in Indonesia

h) Development and Use of Computer Software for Pesticide Market Data, Input, Storage, Retrieval and Dissemination in India and Thailand

All the TCUs have been developed as Centres of Excellence through RENPAP assistance and are serving not only the interest of the country but also that of the participating member countries of the network in the respective field of specialisation through training, consultancy and trouble shooting. Some of these TCUs have attracted funding from donor agencies besides Govt. funding and have got transferred with country programme.

Development Objectives

To promote the production of environment and user-friendly pesticides and their formulations including bio-botanical pesticides and encourage safe handling and disposal as well as effective application technologies thereby playing a complimentary role to the other sub-programmes by making available more IPM compatible products and techniques of safe handling and use.

Immediate Objectives

The immediate objectives defined for achieving the development goals of this sub-programme are :

a) To promote safe use and disposal of pesticides;

b) To promote production of environment friendly pesticides and their formulation, including bio-botanical pesticides.

The status of progress of implementation of the project activities as contained in the workplan finalised by the Project Management Committee held in Delhi from November 17-19, 1997 and in Nepal from February 16-17, 1999 are enclosed at **Annexure I** and **II**.

The Evaluation Mission, fielded by the UNDP/UNIDO in 1997 independently looked at the situation that prevailed in 1982 (before RENPAP) and thereafter (see Evaluation Mission Report, April-May 1988). The production figures are indicative of (a snapshot of) the situation in 1982 and may vary slightly from year to year. They showed, however, an order of magnitude of (what was) the situation as far as the general context is concerned.

The evaluation results indicated that -

a) The production capacities for the formulation of pesticides already existed in 8 of the 15 countries;

b) The production capacities are only utilised at an average +30%

c) Most (95%) of the regional needs in pesticides was already covered by local formulation;

d) Six countries (Afghanistan, Bangladesh, Nepal, Myanmar, Pakistan and Sri Lanka) do not formulate locally (or formulate locally less than 40% of their needs); and

e) Major discrepancies exist between countries in terms of economic status and consumption of pesticide technical grade per capita and or per hectare.

Based on the above analysis, the regional countries can be divided into three groups.

Category 1 : This group (also known as Well Developed Countries or WDC Group) includes India, Republic of Korea, and Peoples' Republic of China (and also Indonesia) which have (a) existing know-how in manufacture and formulation technology; (b) substantial proportion of production capacities in the hands of public sector; and (c) existence of small and medium scale private formulators.

Category 2 : This group (also known as Medium Developed Countries or MDC Group) includes Malaysia, Thailand, Indonesia, Pakistan, Philippines, Sri Lanka, Iran and Vietnam which have formulation capacities mainly in the hands of multinational.

Category 3 : This group (also known as Less Developed Countries of LDC Group) includes Afghanistan, Bangladesh, Myanmar and Nepal which have limited use of pesticides per capita and / or ha.

These three groups of countries are expected to have different attitudes and motivation toward the benefits / return the RENPAP could provide and would put different emphasis on activities such as :

a) Technology transfer;

b) Harmonization of regulation and standardisation of uniform methodologies, and

c) Training and education

The needs and expectations of the countries in each category are also different. The countries in Category 1 share the knowledge and experience with other members. With RENPAP's training programmes and other assistance, the countries in Category 3 will have an opportunity to elevate their status. The countries in Category 2 are also expected to get benefit in several ways. For example, the countries in Category 2 get the formulation technology from countries in Category 1. (India and China have built up an infrastructure for technologies for safe and environment friendly pesticide formulations which are shared by others). Without RENPAP, such information and awareness would not have been possibly available to these countries. In other words, technical cooperation among the developing countries (TCDC) is really at work by sharing the technology know-how and resources. The countries WDC) in Category 1 which acquired formulation technology through UNDP assistance have gained experience and expertise and theya re imparting their technology know-how to other countries in Categories 2 and 3.

Table RENPAP Member Countries Belonging to Different Categories

Category 1 (WDC)	
China	Production and consumption
India	Technicals and formulations
Republic of Korea	Ability to export
Indonesia	
Category 2 (MDC)	
Philippines	Impact on training and technologies
Thailand	Awareness in Formulations safety and efficacy
Vietnam	
Malaysia	
Pakistan	
Sri Lanka	
Iran	
Category 3 (LDC)	
Bangladesh	
Afghanistan	No production and no formulations
Myanmar	(If at all they have, they are below 40% total consumption)
Nepal	

WDC - Well developed Countries
MDC - Medium Developed Countries
LDC - Least Developed Countries

2. **Benefits to Member Countries through RENPAP - An Economic Analysis**

The Evaluation Mission identified the following benefits to each category by becoming members in RENPAP network.

"Benefits to LDC Group

Let us see how the countries in Category 3 (Table 8.1) got the benefit from RENPAP training programmes. Bangaldesh, Nepal, Vietnam and Myanmar nominted 112 persons to send for training. During the eight year period (1989 - 1997), RENPAP organised 28 workshops and training-related meetings. The cost for each workshop/ meeting is estimated at $10,000 (average figure) which was entirely borne by RENPAP.

Number of countries	4 countries in Category 3
Number of workshops/Meetings	3.5 workshops(on average) x 8 years = 28 workshops / meetings in 8 year period
Total number of country nominees	4 per workshop/ meeting
Total number of nominees who attended 28 workshops	112 Cost for each workshop / meeting $ 10,000 (average) includes travel and DSA
Total cost for attending the workshops / meetings :	112 nominees x $ 10,000/nominee = $1.120,000

RENPAP paid a total of $1,120,000 (travel-related expenses) for the country nominees from LDC. Additionally, the lDC countries sent their people for in-depth training. The cost for this in-depth training effort is estimated at $0.4million. This would bring the total to $1.5 million which was paid by RENPAP just for training alone. (The above costs did not include the institutional overhead for human resources, facilities, materials and training-related expenses which would amount to about $250,000). We consider that this is the direct benefit for these countries. Without RENPAP, these countries would not have derived this kind of economic benefit. Because of the TCDC component in RENPAP operations, the countries from LDC gained the know-how (which is otherwise not easily available from other sources) which would have costed about $1.5 million to lDC group.

Benefits to MDC Group

Let us look at the benefits to Category 2 countries (MDC Group). These countries produce only formulations. But they do not know the formulation technology which is considered to be proprietary information (a guarded secret) and is not easily available to these countries. This group does not know what the safe formulations are. They got the konow-how by participation in the RENPAP workshop and other training programmes. These countries have received assistance from UNDP (and other organisations such as DANIDA and CIRAD for institution building) and RENPAP for strengthening their capabilities (consultants and experts). For example, Thailand received the training in data collection (CIRAD) and biopesticides (consultant): Indonesia (UNIDO consultant) and Malaysia (experts) benefited from UNIDO consultants: and Pakistan from DANIDA. The contributions from UNDP and other organisations are conservatively estimated at $1 million. There are several benefits to this MDC Group because of their active participation in RENPAP activities and some of which are noted below:

Material Benefits to Category 2 Countries (MDC Group) from RENPAP

1) Got an opportunity to move into safer formulations technology
2) Refined quality assurance
3) Awareness in health and occupational safety
4) Technology for Biopesticides (from China and Thailand)
5) Know-how for effluent treatment and waste disposal
6) Control of toxic substances in the environment through Ecotoxicology and analytical methodologies

Economic Benefits to Category 2 Countries (MDC Group) from RENPAP.

Consultants support	$400,000
National Coordinators	15,000
Subcontract work	100,000
Equipment and facilities	60,000
RENPAP Headquarters	400,000
Total Amount	$975,000

In summary, the MDC group received about $1 million from RENPAP besides gaining the knowledge because of its participation in RENPAP activities.

Benefits to WDC Group

The WDC Group which belongs to Category 1 countries also received benefits from RENPAP, besides their commitment to TCDC (transfer of technology and the know-how and generous financial support to promote the TCDC concept). Their support was considered to be proportionate taking into teh consideration of the size of their countries (India and China), their

population (China, India and Indonesia) and the industry. For example, India received $4.2 million from UNDP (support) for its country size (second largest in RENPAP) with 0.8 million population and a mature industry which produces and exports technical grade pesticides worth about $ 500 million. China which is larger than India in size with 1.2 billion population also produces several pesticides (technicals and formulations). The Republic of Korea, on the other hand, produces pesticides and exports the technicals and the formulations. China and India are largest producer of pesticides and endangers the environment by producing more toxic chemicals.

Material Benefits to Category 1 Countries (WDC Group)

1) Awareness in biopesticides and data collection
2) Specialised training - National Coordinators
3) Specialised training to Technical Coordinators and others
4) Infrastructure development support (includes all units)

Economic Beneifts to Category 1 Countries (WDC Group)

China and India received the UNDP funding for their country projects. China has three on-going country programmes and India currently has one programme that receives UNDP funds. The country prorammes in China and India are approved for infrastructure building. About 40 people were trained for these three UNDP-funded programmes in China. The total amount spent for training is estimated at $400,000(assumption / person on average) which is the amount apportioned to RENPAP. Likewise India sent approximately 15 people for training and the training costs were estiamted at $150,000. The total UNDP funds received by China and India through country programmes would amount to $ 550,000 (or $0.5 million).

In summary, the WDC group received about $0.5 million for RENPAP related activities besides gaining the knowledge because of its participation in RENPAP activities.

Summary of Activities

As noted above, the UNDP assistance to each Category is as follows :

Category 1	$ 0.5 million
Category 2	$ 1.0 million
Category 3	$ 1.5 million

Category 1 - China and India contributed $ 5 million for their country projects and the facilities are available to use of other countries of RENPAP Network. Increased participation of industry was noted in Category 1. The countries in Category 1 also received additional support for country projects (and they were not included in the $0.5 million support).

Category 2 : The TCU's (Malaysia, Pakistan, Thailand and the Philippines) have contributed their know-how to other ocuntries in the Network.

Category 3 - There is no (monetary or material) contribution from these countries to the network but they are the direct beneficiaries. Had they not joined the network, they would not have got the benefits.

In summary, the Evaluation Mission noted that each category that participates in RENPAP got a quantifiable benefit. More specifically, it is a material benefit to LDC groups (everything about formulations and their safety) in order to move them into higher category (MDC). The MDC group got the techhnology know-how through the participation in RENPAP activities. The WDC group developed infrastructure for institutional building in formulation technology and methods development. This group in turn shared its expertise with other group. The industry benefitted

from this category which will be used for exporting their products and new technologies to other RENPAP countries.

Benefits to Society at large

In the first two phases (1982-1988) of the RENPAP (in 1980s) most uses of the DDT were eliminated and also brought awarness for the development of the safer pesticide technologies. RENPAP instituted training programmes to country governments regarding the pesticide safety and handling, among other issues.

In the later two phases, the direct benefits were the elimination of BHC in India, the elimination of toxic pesticides in the Philippines and the elimination of organic solvents in pesticide formulations in China and India. The environmental pollution control in the region is in accordance with the mandates for global pollution control (reducing the emissions of the volatile organics). The (water-based) new formulations are safer to applicators (farmers) while eliminating the environmental pollution."

3. Ripple Effects of RENPAP programme Linkages and Government Inputs for country programmes.

As a result of the successful implementation of the RENPAP activities the following country programmes emerged with strong support of the member governments, the UNDP and bilateral agencies.

1. UNDP approved "Sustainable Soil Fertility and Pest Control Programme" (CPR/91/120/121) with government contribution of RMB 19 million, equivalent to US $ 4 million. The programme was to develop safe pesticide formulations based on the technology transfer from the UNDP/UNIDO assisted Center in India named Institute of Pesticide Formulation Technology. RENPAP serves as the conduit for the effective transfer of technology, training and consultancy adopting the TCDC concept. Following development, the Center provides training, consultancy and trouble-shooting to the regional pesticide network.
2. The Eco-toxicology Center, which served as the TCU of the regional programme was developed as the country programme US PAK/90/294 with DANIDA assistance of approximately US $ 0.8 million. The Government of Pakistan provided equal contribution. This served the training, consultancy and trouble-shooting needs of the regional safe pesticide network programme.
3. The Indian Center implemented "Strengthening of Pesticide Development Center" DP/IND/89/128. It has been serving as the TCU in pesticide formulation technology of the pesticide network programme. The second phase had a contribution of US $ 1.5 million from the Indian Government. This continues to provide comprehensive training and consultancy service to the pesticide network programme.
4. Recently the UNDP and the Government of India has sanctioned a project entitled "Technical Support for Development and Cleaner Production of Neem Products as Environmentally Firnedly Pesticides" with the UNDP contribution of US $ 0.497 million and the matching contribution of US $ 0.5 million from the Government of India and the NGOs for implementation of this project.
5. Recently the UNDP and the Government of India has sanctioned a project entitled "Establishment of a National Network for Environment Safety, Plant/ Process Safety and Occupational Health Safety with emphasis on small and medium scale chemical industries" with the UNDP contributon of US $ 0.491 million and the matching contribution of US $ 0.5 million from Government of India.
6. The Republic of Korea and Thailand contributed US $ 150,000 and US $ 100,000 respectively to the current phase of the programme. Other participating countries of the network compiled contribution to the project.

Suming up their observation on the contributions made by the member governments, the Evaluation Mission estimated that about US $ 12 million has been contributed by the member countries which is seven

times the UNDP allocation for programme implementation and this signifies the strong commitment of the member countries towards RENPAP.

4. RENPAP'S ACTIVITIES ADDRESS THE INITIATIVES OF THE UNCED,RIO AGENDA AND OTHER INTERNATIONAL AGREEMENTS

Of the six program areas identified in Chapter 19 of Agenda 21 of the UNCED, RENPAP clearly addresses the following four areas pertinent to environmentally sound management of toxic chemicals:

i) Establishment of Risk Reduction Programs

RENPAP promoted Bt. based pesticides and botanical pesticides to reduce the risk by establishing two TCUs (a TCU in China for Bt development and another TCU in Thailand for the development of neem-based pesticides).

RENPAP made concerted efforts for risk reduction of toxic chemicals through the following measures:

(a) Toxico-vigilance and prevention of pesticide poisoning by establishing a TCU on industrial hygiene and occupational health and safety in Philippines.

(b) Linkages to country programs assisted in the development and promotion of water-based formulations to replace the currently used formulations to replace the currently used formulations which are derived from organic solvents and petroleum based solvents that are unsafe to human health and the environmental safety.

(c) Prohibiting the use of toxic chemicals - banning of BHC by the Government of India and banning of a dozen toxic chemicals in the Philippines.

Life cycle approaches to chemical management - activities through industrial safety and effluent treatment with the support of the Indonesian government.

ii) Strengthening of National capabilities and capacities for Management of Chemicals.

The TCU on eco-toxicology hosted by the Government of Pakistan and the TCU on monitoring of air, water and soil pollution of pesticides hosted by the Republic of Korea are intended primarily to strengthen the national capabilities for the management of chemicals.

iii) Information Exchange on Toxic Chemicals and Chemical Risks

The pesticide data collection network hosted by the technical coordinator units in India and Thailand primarily aims at the exchange of information which will eventually be used for reducing the sue of toxic pesticide chemicals in agriculture.

iv) Expanding and Accelerating International Assessment of Chemical Risks

RENPAP is a participant of the international program on chemical safety of the WHO/UNEP as well as the London Guidelines and Bassel Convention dealing with transboundary movements of banned/restricted pesticides and hazardous chemical wastes.

Organic Solvents on Human Health and the Environment

The older pesticide formulations are mostly based on organic solvents and other volatile substances (such aliphatic and aromatic compounds, some of which are called flavours and fragrances) which are commonly referred to as "volatile organic compounds" (VOCs).

They elicit acute and chronic toxic effects on mammalian species and aquatic organisms. The VOCs affect the safety of the non-target environmental species (wildlife and aquatic organisms) and also human health. This is because:

1) Some of these compounds are reported to bioaccumulate in the fat tissue of the aquatic organisms (fish) which will eventually end up in food chain for human consumption.

2) As a result of the use of large quantities, they increase the load on the environment, thereby affecting the health and the safety of the wildlife and the aquatic organisms. They even pose a serious threat to environmental species (endanagering their lives).

5. RENPAP ACTIVITIES CONFORM TO MONTREAL PROTOCOL

Effect on Ozone in Stratosphere: A few VOCs (mostly halogenated solvents) are reported to deplete the ozone which is concentrated in a layer in the stratosphere which is about 15-30 kilometers above the Earth's surface. The Earth's ozone layer protects all life from the sun's harmful ultraviolet radiation. Loss of ozonefrom stratosphere will lead to higher skin cancers and cataract rates. Several organochlorine compounds which are used in pesticide formulations as solvents and adjuvants are known as ozone depleting substances (ODS). The most commonly used halogenated solvents, in high volume, include methylene, ethylene and propylene dichlorides, chloroform, carbon tetrachloride, trichloroethane, methyl bromide, dichlorodifluoromethane, dichlorotetrafluoroethane and trichlorofluoromethane.

These halogenated solvents tend to breakdown when they enter the statosphere to atomic chlorine which contributes to the destruction of ozone. Because of the increasing concern on the effect of these ODS on ozone, the Vienna Convention in 1985 was adopted to formalize international cooperation on the major concern for ozone layer. As a result of the increased concern for the loss of ozone by ODS, the Montreal Protocol was signed in 1987 by many countries. The parties of the Montreal Protocol decided to completely end production and use of the ODS (Halons and CFCs) by the end of 1996 in developed countries.

RENPAP through linkages to country governments introduced technologies for replacement of the pesticide formulations containing organic solvents with water-based formulations which will contribute to reduction of the toxic solvents on the environment. The benefits derived from this approach would include the protection of human health and also the protection to wildlife and aquatic organisms. Additionally, the approach would contribute to the reduction of ozone from the stratosphere.

In conclusion,the RENPAP approach is completley in accordance with the Montreal Protocol which promotes safer alternatives which will not contribute to ozone depletion; thereby the alternatives save the crops and protect the human health from the deleterious effects of UV radiation.

The output sought and output produced based on the immediate objectives as contained in the project document through the execution/implementation of the project activities are as follows:

	Output sought	Output produced
1.1(a)	Member countries provided with information to produce environment friendly pesticides (technical grade) and TCU on environmental protection throuch Effluent Control / Waste treatment disposal established and training provided for member countires.	Hosted by the Government of Indonesia, RENPAP, TCU on Industrial Safety, Environmental Protection, Effluent Treatment and Disposal established. TCU conducted and completed successfully the workshop on Preservation of Environment through Effluent Control and Waste Management, Indonesia, July 15-19, 1996. Another workshop on subject planned for expert nominees deferred to 2000. The TCU is staffed with well qualified and experienced engineers and technicians in the field of effluent treatment and waste disposal. 14 expert nominees from the network member countries attended the workshop on Preservation of Environment through Effluent Control and Waste Management, Indonesia, July 15-19, 1996. Follow up action on the recommendation of the workshop have been taken by the member countries for strengthening their facilities and expertise. Facilities as planned have been fully developed and made available for training and for trouble shooting needs of the member countries of the RENPAP. All facilities with regard to the plant and equipment are placed at the disposal of RENPAP for meeting the training and consultancy needs of the member countries. Live size effluent treatment plants and hazardous waste disposal plant of PPLI, Indonesia have been added to the facilities of the TCU. Environmental protection agencies,and the pesticide industry are being benefitted by the facilities and expertise of the TCU.
1.1(b)	Member countries provided with information to produce environment friendly pesticide (Technical Grade) and TCU for upgrading of lab facilities for monitoring pollutants in Soil, Air and Water in Republic of Korea.	Through upgradation of laboratory facilities, the TCU on Pesticide Residue Monitoring in Soil, Air and Water has been set up at National Institute of Agricultural Sciences and Technology in Seweon Republic of Korea. Well qualified and experienced scientists and technicians are in position at NIAST to support the TCU. Having successfully completed the regional workshop on Pesticide Monitoring in Soil, Air and Water in Suweon, Republic of Korea, 13-18 May 1996 which was attended by 15 expert nominees, the TCU again hosted another training workshop on Analysis of Pesticide Formulation from October 6-31, 1997 for the analysts of the member countries of the network as a follow up of the recommendations of earlier workshop. NIAST of the Govt. of the Republic of Korea have made available comprehensive laboratory and analytical facilities for use of the RENPAP. NIAST has made available state-of-art equipment like GCMSD, HPLC, GLC, IR, IV Spectra-

		photometer etc. for use in training and workshop for the scientists of the member units of the network. Environment Protection agencies, quality assurance inspectorates, regulatory agencies and pesticide industries of the member countries are the main beneficiaries.
1.1(c)	Member countries provided with information to produce environment friendly pesticide (technical grade) and TCU on Eco-toxicology set up and expert group meeting held to promote the development of the concept of Eco-toxicology in the region for effective protection of environment vis-a-vis use of pesticides.	The TCU on Eco-toxicology has been set up in Pakistan through the financial assistance of DANIDA and the Govt. of Pakistan and its facilities are being utilised for organising workshop / training programme to meet the needs of the member countries of the network. The Eco-toxicology Centre of the Govt. of Pakistan is staffed with highly qualified scientists and technicians to provide technical back-up to the TCU. With the inauguration of the Eco-toxicology facilities by the President of Pakistan, this TCU successfully organised a regional workshop on the subject which was attended by a large number of scientists from various organisations besides 22 expert nominees from the member countries. The recommendations adopted by the workshop are being followed up by member countries. TCU also provided individual indepth training to the nominee of the member country of the network for enhancing the skill of the trainees. Pakistan Agricultural Research Council (PARC), Govt. of Pakistan established and set up a well equipped laboratory for Eco-toxicology Centre which is serving as the TCU of the RENPAP in Islamabad for catering to the needs of the member countries of the RENPAP. Through the assistance of the country project, Eco-toxicology laboratory has been equipped with advanced instruments like HPLC, GLC, IR, UV etc. The environmental protection agencies and the regulatory agencies of the member countries are the main beneficiaries which are assisted to monitor the limits of the chemicals permissible in the eco-system.
1.2	Member countries provided with information on technologies to promote environmentally friendly pesticide formulation production.	The TCU on User and Env. Friendly Pesticide Formulation Technology and Quality Control of the RENPAP, hosted by the Institute of Pesticide Formulation Technology (IPFT), Govt. of India, is the Centre of Excellence for transfer of technology and training on pesticide formulation to the member of the network. IPFT has recently successfully completed the country project Strengthening of Pesticide Development Centre Phase II IND/89/128 of the country programme. This Institute has developed various user and env. friendly formulations namely SC, WG, ME, EW etc. and RENPAP has become a conduit to transfer the technology of these formulations to the member countries. Terminal TPR Meeting of the country

project (IND/89/128) commended the role of IPFT in technology transfer of the pesticide formulation to the pesticide industry not only in India alone but also in other member countries of RENPAP (proceeding of the TPR meeting is placed at **Annexure III**). RENPAP has generated significant spin-off effects and in the process Sustainable Pest Control and Soil Fertility programme in China (CPR/91/120) was conceived on the lines of IND/89/128. This programme has successfully developed and commercialised 6 user and environment friendly pesticide formulations. TPR meeting of CPR/91/120 has commended the role of RENPAP to act as a conduit for transfer of technology (Proceedings of the TPR meeting is placed at **Annexure IV**).

IPFT, the TCU on the subject organised a regional workshop on Production of User and Environment Friendly Pesticide Formulation and Quality Control from April 21-26, 1997 and the next one is being organised in November 1999.

IPFT is staffed with 40 well qualified experienced scientists / engineers to give full technical back up to the RENPAP TCU.

IPFT hosted the Regional Workshop in April 1997. 17 expert nominees from the member countries participated and were trained on development of newer formulations including analysis of pesticide for quality assurances. TCU has provided indepth individual training of duration of about 1 month to various nominees from China, Iran, Sri Lanka.

TCU is fully equipped with formulation development laboratory, analytical laboratory, biological laboratory, scale up facilities, green houses and field facilities for development and testing of new formulations. State of the art laboratory facilities include GCMSD, TLC, HPLC, GLC, IR, UV, Dynomill, Spray Granulator, Accelerated Storage Test facilities, particle size analyser etc.

TCU facilities are being utilised by the network member countries to meet their industrial needs for the production of environment and user friendly pesticides.

The Institute is progressing towards achieving financial self-sustainabilityfor continued servicing of the RENPAP member countries.

1.3 Member countries provided with information technologies to produce botanical pesticides and bio-pesticides and encourage to adopt in national projects.

TCU on Botanical Pesticide hosted by the Royal Govt. of Thailand is fully functional and completed successfully the expert group meeting on policy issues for Bio & Neem based pesticides in 1994. TCU on Biopesticides, hosted by Bt R&D Centre, Wuhan, P.R. China has successfully organised the 2nd regional workshop on Production, Evaluation, Safety and Use of bio-pesticides (*Bascillus thruingiensis*) from Oct 26 - Nov. 3, 1998 for the expert

nominees of network member countries. Based on the experience UNDP/Govt. of India has sanctioned a project entitled "Technical Support for Development and Cleaner Production of Neem Products as Environment Friendly Pesticides" for exploiting neem based products.

Highly qualified scientists specially trained in Bio-botanical pesticides development are in position both at the Bt Research & Development Centre, China and Toxic Substances Laboratory in Bangkok.

Based on the success of the last workshop on Bt in China during 1995 and on request of the member countries 2nd workshop on Production, Evaluation, Safety and Use of Bio-pesticides (*Bascillus thuringiensis*) was organised at the TCU in P.R. China. The workshop was attended by 11 nominees from the member governments. Workshop consisted of technical sessions including lectures and hands on practical training in production and testing of Bt based pesticides. As a follow-up of action, industry and Government research institutes in India have initialised work to carry out work for identification and commercialisation of the identified strain of Bt.

Bt R&D Centre, Hubai Academy of Agri. Science, Wuhan, P.R. China and Division of Agricultural Toxic Substances, Dept. of Agriculture, Govt. of Thailand have excellent facilities with adequate infrastructure backed with trained staff and offered it to the RENPAP to serve as TCU on the subject for catering the need of member countries on training / workshop.

Both TCUs at Bangkok and China are fully equipped with the necessary laboratory and pilot plant facilities for commercial production of neem based and Bt based biopesticides. TCU on China has offered technology transfer to interested member countries.

The end users are the farming communities who would be provided with safer bio-degradable pesticides. As a follow up of EGM on neem, a project has been launched in India with the assistance of UNDP on the cleaner production of neem based pesticides. Industry in India has initiated work to have collaborative work with the Bt R&D Centre for development of Indian strains of Bt for its commercialistion.

2.1(a) Member countries assisted in safe use of pesticide surveying the application technologies being practised in member countries and advice on manufacture & use of appropriate application equipment and technologies.

The Department of Agriculture, Malaysia Plant Protection Society and the University Pertanian, Malaysia jointly host the TCU on Application Technology. This TCU has so far conducted 2 regional training workshops on Application Technology for the benefit of the member countries of the network and provided the technical backup for adopting latest developments in pesticide application technology.

		The TCU is staffed with well qualified and experienced scientists and engineering staff.
		The last workshop on Application Technology was organised by the TCU during Sept. 23-28, 1996 and was attended by 35 participants / nominees from the member countries. The workshop was well received by the nominees which was supplimented by field visit to one of the manufacturing facilities in Johor, Malaysia.
		Comprehensive facilities of Govt. of Malaysia through its University Pertanian, Plant Protection Society and Dept. of Agriculture have been placed at the disposal of the RENPAP.
		Whole range of equipments/ instruments amd spraying machineries with laboratory facilities field faciliteis of the three hosts of Govt. of Malaysia have been made available to cater to the training and trouble shooting need of the member countries.
		Farmers, Extension workers the pesticide manufacturers and the Govt. of the Member Countries.
		Govt.of Malaysia / Agricultural University/ Malaysian Plant Protecton Society, RENPAP
2.1(b)	Member countries assisted in safe use of pesticides, surveying the safe packaging and advise member countries to introduce safe pesticide packaging to prevent pollution and poisoning at user end.	The Institute of Pesticide Formulation Technology has been specially equipped to identify, test and provide locally available packageing material for safe packaging of pesticide formulations. Indian Institute of Packaging (IIP) is fully equipped and conducting regular and trailor made training programmes for the benefit of the member countries.
		Both IPFT and IIP are having well trained qualified staff in position for meeting the need of the RENPAP.
		Expertise of IPFT was utilised to provide consultancy on locally available packaging material member countries especially to Thailand. Indonesia and Afghanistan.
		Excellent facilities in both the Institutes are available to cater the needs of member countries for training etc. under the RENPAP programme.
		Well equipped laboratories & pilot plants have been placed at the disposal of RENPAP for development and testing of newer packaging systems.
		The member governments and the pesticide industry are making use of the services
2.1(c)	Member countries assisted in ensuring Occupational Health Safety and Industrial Hygiene in the pesticide producing units.	The TCU on Occupational Health Safety and Industrial Hygiene continues to be fully functional in Manila,Philippines with Dr. Maramba as the Technical Coordinator. The TCU organised a regional workshop for the member countries from Dec. 5-9, 1994 which was attended by 22 participants

nominated by the member governments. Besides Dr. Maramba who acted as resoruce person UNIDO fielded consultants/ experts from the Canadian agencies for imparting training to the nominees. Another workshop would be implemented in July 1999.

Ten hospitals and staff with Dr. Maramba and four medical scientists are in position in the Philippines.

The workshop was well organised to cover lectures, country reports, case studies, group discussions and a field trip. The workshop placed emphasis on identification of the cases and resolving the problem raised by the participating countries in relation to workers safety in pesticide plants. As a followup of the recommendations of the workshop, 2nd workshop has been planned in Feb. 1998 but deferred to July 1999 on the request of Govt. of Philippines. This workshop is intended to strengthen the capabilities of expert nominees of the member countries concerning handling of industrial hygiene and occupaitonal health safety in pesticide production plants and to train them on the diagnosis and management of pesticide poisoning cases.

Well equipped hospitals with modern gadgets and instruments are in place with trained qualified medical doctors and scientists to carry out the activities.

Required facilities are being made available and training programmes are being organised for the experts of the member countries from the department of health, labour and the environment protection agencies. The trained personnel in the member countries would be equipped to meet the health protection needs of the workers in their respective countries. National workshop/training programmes are being organised in member countries to disseminate the SHE aspects as a follow up of the regional workshop.

2.2 Member countries assisted in safe disposal of pesticides

The TCU in Indonesia is quite active in the sphere of disposal of obsolete pesticide. During the Regional Workshop on Preservation of Environment through Proper Control of Effluent and Disposal of Waste from Pesticide Production Units was held in Indonesia during July 1996 was attended by 19 expert nominees from member countries.

RENPAP organised the workshop on Preservation of Environment through Proper Control of Effluent and Disposal of Waste from Pesticide Production Units hosted by the Government of Indonesia during July 15-19, 1996. The meeting concluded with specific options to deal with obsolete pesticides.

		Creation of minimum inftrastructural facilities for safe disposal of pesticides would be mandatory to deal with obsolete pesticides for each member country and services of the experts / consultants within the region would be utilised in setting up of such facilities. Environmental Protection agencies, regulatory agencies and above all pesticide industries in the member countries are the major beneficiaries.
3.0	At least 6 laboratories from RENPAP region would have participated in international collaboration analysis organised by CIPAC.	RENPAC, the regional analytical council for RENPAP has been set-up with 6 active members. China & India represented the CIPAC meeting held in York, UK during July 1998. Analytical laboratories of the RENPAC in the member states are staffed with well trained qualified personnel and are actively participating n the CIPAC collaborative testing procedures. A number of pesticides have been identified for testing of analytical procedures through collaborative participation of the member countries viz. China, India, Thailand, Indonesia, Philippines, Rep. of Korea, Pakistan, and Iran and the work is in progress. The PMC further decided that the RENPAC members would meet once every year coinciding with the CIPAC meeting for two days to discuss the collaborative testing procedures and reviewing progress of the project but due to financial constraints it has not been possible to organise these meetings. Member countries of the RENPAC have provided their Govt. analytical laboratories with all infrastructure and facilities and are actively engaged in collaborative testing studies. Analytical facilities including latest equipments like HPLC, GC, MSD, GLC, UV, IR, TLC etc of the Govt. analytical laboratories and the member countries have been provided for RENPAC/CIPAC collaborative testing work. Pesticide industry, quality assurance inspectorate in the member countries are the prime users of the facilities.
4.0	Database on Regional Pesticide Market/ Economic Data, input, storage, retrieval and dissemination in the standard formats extended to all member countries and at least two updated RENPAP Gazette published with periodic updating.	A Central Coordinating Unit (CCU) in Delhi, two Regional Database Centres (RDC) in Delhi and Bangkok and one Data Entry Centre (DEC) each in all other member countries have been set up. New formats for Phase I (India Data) and Phase II (Main database i.c economic data) finalised and circulated to data collection experts in all the member countries to facilitate data collection / data entry work. Index data collection / data entry work completed for India, Thailand, Sri Lanka, Myanmar, Malaysia, Philippines, Indonesia, China, Bangladesh, Pakistan and Iran . Pesticide economic data have been collected in the formats finalised by UNIDO international expert Dr. d'Hauteville for the years 1989 through 1994

for India and Thailand. Similarly economic data for Sri Lanka (1991-94), Pakistan (1991-93), Indonesia (1991-93) have been collected on hard copies. Data entry of economic data for India and Thailand have been completed for the period 1989 to 1994. Data entry work in other countires namely Sri Lanka, Indonesia, China, Iran have been initiated with the personal visits of RDCs Sr. Data Collection Experts from Delhi and Bangkok and soon work would be completed. With the completion of Phase I (Index Data) a common platform has been established to integrate RENPAP/UNIDO and ESCAP/ARSAP databases for exploring the funding for a joint programme on database.

Regional Database Coordinators in Delhi and Bangkok are in a position to coordinate the activities in their respective sub-regions. RDC Delhi also functions as coordinator of Central Coordinating Unit (CCU) to coordinate overall activities of the database programme. National Data Collection Experts in all member countries are in position.

A group training cum-workshop was organised in Bangkok from September 9-10, 1994. This training programme was to train the national experts for data collection methodologies, installation and use of computer software for data input and storage. 'Hands-on' training was given to the participants on computer software installation, data entry, processing, storage etc. List of participants and recommendations of the workshop are attached. Experts were provided with manuals of data collection guidelines of phase I and Phase II activities and also data entry software users manuals for Phase I and Phase II activities. As a result of this training programme as many as 11 countries namely India, Thailand, Srilanka, Myanmar, Malaysia, Philippines, Indonesia, China, Bangladesh, Pakistan and Iran have completed Phase I activities. (Index data). As a followup of the recommendations RDC Delhi and Bangkok visited Colombo, Iran, Indonesia and China to review the data collection activities in order to speed up the economic data collection work. RDC Delhi visited Bangkok and Singapore to review the data collection work and to make a comprehensive presentation on the database project of RENPAP. Based on the pesticide economic data collected from member countries, RENPAP Gazette on Pesticide Data Collection System has been published. Copy of the RENPAP Gazette along with the diskette containing pesticide economic data has been provided to CIRAD France.

Data entry centres in member countries , RDC in Delhi and Bangkok are fully equipped with IBM PS2 computers and printers to carry out project activities.

Software for index as well as economic data along with manuals have been provided to all the national

experts of member countries. CCU Delhi, RDC Bangkok and DEC in other member countries have been provided with computers and printers to facilitate the use of sofrtware for building up of database at national level as well as at CCU Delhi.

Index Database for 11 member countries have been carried out and economic database for India and Thailand completed and made available. Economic database for other countries would follow soon.

RENPAP Gazette on Pesticide Data Collection System has been published and distributed to member governments, UNIDO, CIRAD and other agencies involved in the project. Data base is being taken up for upgradation on regular basis.

RDC Delhi (National Expert Delhi) functions as coordinator CCU. Regional Database Coordinator, Delhi & Bangkok are in position and coordinating their job activities in the respective sub-region. For other countries experts have been trained and positioned to function on continuous basis for refining and updating the database and would continue to function under the National Coordinator Unit of the respective countries.

UTILISATION OF RESULTS

As mentioned earlier in this report, the project document (RAS/93/061) contains two immediate objectives and each Immediate Objective has two or more outputs. RENPAP developed several activities (mostly in the form of workshops to groups of expert nominees from member countries as well as the individual traiining at the TCU's. RENPAP also arranged experts and consultancies to support the activities (or to develop and / or strengthen the planned activities). All these activities are considered to be the progress towards achieving the project objectives. Thus, RENPAP network programme has achieved its immediate objectives through successful implementation of activities aimed at :

a) the preservation of the environment (by bringing awareness or providing training and organising workshops on eco-toxicology, introduction of environmental friendly pesticide formulations, pesticide disposal and other initiatives);

b) providing safety to the farming community particularly the women who performed the major crop protection related field activities in the Asia Pacific region which has resulted in lower rate of birth deformities (by advising the counry government for elimination of toxic pesticides and providing training in pesticide packaging and pesticide application and pesticide poisoning); and

c) increasing the agricultural productivity in order to alleviate poverty and progress steadily towards food security (which is achieved by promoting the replacement of toxic pesticides with safer bio-botanical pesticides and proper application of pesticides and other pest control technologies).

Thus, RENPAP has been able to create significant impact in all spheres of its activities and the main beneficiaries of the RENPAP project are the resource poor farming communities of the watershed upland and rainfed low lands. The industry, the regulatory agencies and the farmer are the direct beneficiaries of the various output of the RNEPAP project.

Member countries unanimously felt and expressed during various PMC meetings of the RENPAP that the workshop being organised by the TCUs are of high quality in terms of technical contents and organisation and that these group programmes are more cost effective than individual fellowship. RENPAP brings awareness in the member countries through these trainings and workshops. So far RENPAP has organised 22 group / individual tarining programme for the network member countries and trained 217 expert nominees as trainers. These trainers, in turn, train a large number of trainees in their respective countries through organising series of national workshops / training programmes.

The decentralised implementation arrangements of RENPAP activities through technical coordinator units have been strengthening the RENPAP networking. These TCUs, which have attained the centre of excellence in the respective areas of their specialisation are not only serving national needs but are providing technical backup for member countries through deployment of TCDC concept.

RENPAP has been making steady progress towards the full attainment of the development objectives, and the contributions include -

a) advising member countries in banning the toxic pesticides;

b) bringing in awareness of the problems regarding the pesticide use including safety to human health and the environment

c) realising the need for ecological risk assessment to protect the fish, wildlife and the eco-system from pesticide exposure

d) assisting in the safe use of pesticides including packaging to prevent pollution and poisoning at the user end;

e) intensifying efforts for development and promotion of safer pesticide formulations;

f) increasing the knowledge base concerning the analytical capabilities for pesticides and their formulations;

g) strengthening the capabilities in residue analysis of pesticides and also in the analysis of the pesticides residues in air, wate and soil;

h) providing information on technologies for scientific pesticide application and safe pesticide disposal;

i) providing information on industrilal hygiene to protect the workers in pesticide production facilities from adverse effects of pesticides and

j) initiating the development of a database on Regional Pesticide Marekt/ Economic Data.

Amongst various attainments achieved by the RENPAP programme, the following are the important ones which have shown its impact very clearly:

a) RENPAP has taken strong initiatives, especially by the National Coordinators, to promote collaborative activities and mobilize internal resources.

b) RENPAP provides increased support for national and field-level activities

c) it delivers responsive and timely information and training services.

d) RENPAP built strong linkages and integration with FARM partners, especially agricultural institutions.

e) the result of the RENPAP activities is clearly manifested in significant policy charges in the member countries; banning of the production of BHC in India and banning of a dozen hazardous and polluting pesticides in the Philippines.

f) RENPAP is one of the few network projects which is being implemented in very active and close collaboration with international agencies namely FAO, WHO, ESCAP, DANIDA and CIRAD.

g) RENPAP has productive collaboration with GOs, and NGOs, universities, private sector and international organisations.

h) as against the UNDP allocation of US $ 1.4 million, the project has been able to mobilise about US $ 12 million in terms of contributions from the member countries, the donor agencies and the international agencies.

i) the RENPAP model has been recognised as an effective model of purposeful networking and the Afro-Arab Regional Pesticide Network is being modelled on RENPAP.

j) it delivers responsive and timely information and training services.

k) RENPAP has been instrumental in designing and promoting the following two country programmes for implementation during the Sixth Cycle of the UNDP programme in India. (1) "Establishment of a National Network for Environmental Safety, Plant Process Safety and Occupational Health Safety with Emphasis on Small and Medium Scale Chemical Industries", (2) "Technical Support for Development and Cleaner Production of Neem Products as Environment Friendly Pesticides"- IND/97/958. The RENPAP is possibly the only sub-programme of the FARM Programme which has made significant progress towards achieving the immediate objectives and the development objectives.

l) RENPAP address four programme areas out of the six areas identified in Chapter 19 of Agenda 21 of the UNCED which are related to environmentally sound management of toxic chemicals:

(i) Establishment of risk reduction programmes - RENPAP Promoted B.t. pesticides and botanical pesticides to reduce the risk by establishing two TCUs: RENPAP made concerted efforts for risk reduction of toxic chemicals through the following measures by establishing a TCU on industrial hygiene and occupational health and safety in Philippines; by providing linkages to country programmes assisted in the development and promotion of water based formulations to replace the currently used formulatons; by influencing the Country Governments (India and Philippines) for banning of BHC and a dozen toxic chemicals; and by life cycle approaches to chemical management - activities through industrial safety and effluent treatment with the support of the Indonesian government.

ii) Strengthening of national capabilities and capacities for management of chemicals (a TCUs on eco-toxicology and the TCU on monitoring of air, water and soil pollution of pesticides) to strengthen the national capabilities for the management of chemicals.

iii) Information exchange on toxic chemicals and Chemical Risks through the pesticide data collection network.

iv) Expanding and accelerating international assessment of chemical risks by RENPAP's participation in the international programme on chemical safety on the WHO/UNEP as well as the London Guidelines and Bassel Convention dealing with transboundary movements of banned/ restricted pesticides and hazardous chemcial wastes.

m) RENPAP's approach is completely in accordance with the Montreal Protocol which promotes safer alternatives which will not contribute to ozone depletion; thereby the alternatives save the crops and protect the human health form the deleterious effects of UV radiation.

n) The project emphasis is mostly on human health and protection and regeneration of the environment as well as the transfer of environmentally sound technology. These would undoubtedly contribute to productive employment and sustainable economic growth, which in turn will eliminte poverty.

PROGRESS OF ACTIVITIES : FINDINGS AND RECOMMENDATIONS

Project Evaluation Mission

UNDP/UNIDO commissioned an evaluation mission to assess the overall impact of RENPAP programme. Dr. Bhushan N. Mandava, Mission member carried out an exhaustive indepth evaluation of the programme. His mission included visits to selected TCUs in member countries and personal discussions with the National and Technical Coordinators of the project and with the senior government officials. The evaluation report presented by him contains two parts, the first part dealing with the implementation and achievements of the project and the second part containing various options to be considered by the member countries and the UNDP to take RENPAP beyond the current phase with the countribution from the UNDP and the member countires. The evaluation misison mentioned that RENPAP has been able to create significant impact from all spheres of its activities aimed at regeneration of the environment and providing safety to the farmers and the workers of the production units.

Tripartite Project Review Meeting and Project Management Committee Meeting, Kathmandu, Nepal - February 16-17, 1999

The TPR and the PMC meeting of the Regional Network on Safe Pesticide Production and Information for Asia and the Pacific (RENPAP) was held on the 16th and 17th of February 1999 in Kathmandu, Nepal

The meeting was intended to review the progress of the activities of the RENPAP, consider the draft project document on "Regional Network on Pesticides for Asia and the Pacific : Cleaner Production and Environmentally Sound Management of Pesticides, Promoting Safety, Health and Environmental Protection for Risk Reduction" and the UNDP Trust Fund agreement for the setting up of the proposed

UNDP/UNIDO Trust Fund for the RENPAP in order to establish RENPAP on a sustainable basis with an autonomous management structure.

The senior representatives each from Bangladesh, People's Republic of China, India, Indonesia, Republic of Korea, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Thailand and Vietnam and representatives from UNDP and UNIDO participated in the meeting.

The following recommendations were adopted by the country delegates during the PMC meeting:

1. The TPR meeting approved the PPER for the project period from November 1997 to December 1998.

2. The TPR reiterates the concern expressed in the meeting in New Delhi on 17-19 November 1997 that UNDP resource-base has declined due to reduced contributions from member countries. The member Governments strongly value UNDP assistance not because of its resources but also because of the global opportunity it provides for interaction and networking. The member Governments strongly urge UNDP to support quality programmes like RENPAP. The RENPAP activities conform to various international agreements and global conferences particularly relating to the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, June 1992 and the Montreal Protocol.

3. The TPR meeting notes with concern the economic crisis faced by some of the participating member countries during 1998 and hopes that it would be a temporary phase. The member countries, as agreed at the last TPR meeting, would honour their commitments in a foreseeable future.

4. The TPR meeting reiterates its resolve to establish an independent autonomous body to carry on the activities of RENPAP beyond the current phase of UNDP assistance.

5. The TPR meeting appreciates the UNDP Headquarters concurrence to extend the duration of the project upto December 1999, without additional financial allocation.

6. The meeting thoroughly discussed the draft project document and suggested amendments such as (1) incorporation of provision for multilateral / bilateral funding to support the Network activities; (2) include strategies for income generation; (3) revision of the budget; (4) activities should be in line with the new UNIDO service modules; (5) provision for the Government of Nepal to set up satellite centres for botanical and biopesticides; (6) a vision for RENPAP 2020 and authorised the Regional Coordinator to finalise the document in consultation with UNDP New Delhi and UNIDO Headquarters, for submission to member governments for signature. All arrangements relating to finalisation of the Trust Fund Agreement and the project document should be finalised on a priority basis preferably by 30 June 1999.

Subject to the above the TPR meeting endorses, in principle, the draft Model Trust Fund Agreement and the draft project document attached thereto. The TPR meeting agrees that the National Coordinators will pursue with their Governments for early signature of the documents upon receipt from UNDP. The TPR meeting directs the RENPAP Secretariat to work closely with the UNDP New Delhi for early finalisation of the documents and submission to the member Governments for signature.

7. The TPR meeting resolves that the Trust Fund should be administered by UNDP. The TPR meeting requests UNDP New Delhi to take all administrative and financial actions relating to the operation of the Trust Fund in consultation with the RENPAP Secretariat.

8. The TPR appreciates the gesture of the Government of India to underwrite the operational cost at the present level of the RENPAP Secretariat in addition to its contribution to the Trust Fund. The TPR also appreciates the contribution made by the Government of PR China of US $

110,000 and continued trust fund support of US $ 20,000 - US $ 25,000 annually for four years beginning year 2000.

The Government of Republic of Korea has also indicated that there are good possibilities to contribute to the Trust Fund towards the end of this year as well as next years. The Government of Pakistan has also given similar indication. The National Coordinators of Malaysia and Thailand informed the meeting their Governments are considering their contribution to the Trust Fund and a decision is expected in the near future.

9. The TPR meeting appreciates the contribution of Rs. one million made by United Phosphorous Limited, an Indian private sector company, towards the Trust Fund. Though the contribution in financial terms is small, it underscores the value and confidence RENPAP enjoys among the private sector. The TPR recommends that all the National Coordinators persuade their private sector enterprises receiving services of the RENPAP to extend contribution along the above lines.

10. The TPR meeting appreciates the initiatives of the UNDP, New Delhi and the RENPAP Secretariat for developing a strategy for dissemination of RENPAP capabilities to a wider audience. This is essential in terms of obtaining both human and financial resources for establishing RENPAP on a firmer footing. The meeting urges the RENPAP Secretariat to include the creation of a website / home page in its work-plan for the year 1999-2000.

11. The TPR meeting urges the RENPAP Secretariat to carry out a full-fledged study on the tangible benefits accrued to the member governments from RENPAP and document it before the next meeting.

12. The meeting realised the importance and need of maintaining an up to date data base. Resources should be secured for upgrading the hardware, software, training of personnel in the member countries, etc. The TPR meeting decided that the RENPAP Secretariat should decide on the documents to be priced and sold.

13. The meeting appreciated the gesture of UNDP, New Delhi, to help RENPAP in securing funds from STS and provide advice in connection with possibilities to secure non-core funds from local UNDP offices in the member countries.

14. The TPR strongly endorses the need for replication of RENPAP like activities globally. The meeting therefore urges the UNDP/UNIDO to take necessary steps for creation of similar networks in the African, Arab and the Latin American regions.

15. The TPR meeting decided that henceforth the consultants required for various training programmes, workshops, etc should come from within the region. In case suitable expertise is not available within the region consultants from outside may be recruited.

16. The TPR meeting requested the RENPAP Secretariat to develop a uniform format to quantify the in-kind contribution of the member countries.

17. The TPR meeting noted the offer of some of the countries hosting the Technical Coordinating Units to underwrite the boarding, lodging, transportation, including organisational costs of the workshop. The DSA component will be regulated according to UNDP rules and regulations.

18. The TPR meeting appreciated the gesture of UNDP to transfer Trust Fund allocations received in local currency through the local UNDP office network.

19. The TPR meeting agreed that while a major share of the contribution from a member country will be used to further strengthen its own activities and to support the RENPAP Secretariat in Delhi, some funds will be channelled to assist other member countries, specially LDCs.

20. The TPR meeting approved the work-plan for the year 1999 and 2000 (placed at **Annexure II**). It further decided that the aide memoire for these workshops should clearly define the scope in comprehensive detail of the individual workshops and set minimum qualifications and experience for the nominees of these workshops.

21. Prof. Hong Chuanyi offered to host the next TPR/PMC meeting in China in February 2000 and the TPR agreed to accept his proposal.

Tripartite Project Review Meeting and Project Management Committee Meeting, New Delhi, India - November 17-19, 1997

The TPR and the PMC meeting of the Regional Network on Safe Pesticide Production and Information for Asia and the Pacific (RENPAP) was held on the 17th, 18th and 19th November 1997. The meetings were intended to consider the in-depth evaluation report prepared by Dr. N.B. Mandava appointed by UNDP/UNIDO and to decide upon the future of the programme baded on the findings and recommended steps to make the programme self-sustainable. The senior representatives each from Bangladesh, People's Republic of China, India, Indonesia, Islamic Republic of Iran, Myanmar, Malaysia, Nepal, Philippines, Republic of Korea, Sri Lanka, Thailand and Vietnam and representatives from UNDP and UNIDO participated in the meeting.

The following recommendations were adopted by the country delegates during the PMC meeting:

Having considered in detail the findings and the recommendations of the RENPAP evaluation mission fielded by the UNDP/UNIDO, the TPR/PMC strongly endorses acceptance of the recommendations made in in the Evaluation Report.

The TPR strongly endorsed the recommendations of the Evaluation Mission justifying support to RENPAP beyond this phase -

a) based on the discussion the mission had with the National Coordinators, UNDP/ UNIDO officials leading to the conclusion that the member governments recognise the usefulness of RENPAP for increasing their awareness for developing technology of safer pesticides and protecting the health and the environment and having further noted that there is no organisation other than RENPAP that provides a wealth of information to its members;

b) based on the assessment of the mission on the distinctive accomplishments of RENPAP particularly its support towards the various international agreements with reference to its activities addressing four programme areas out of the six identified in chapter 19 of Agenda 21 of the United Nations Conference on Environment and Development (UNCED) relating to environmentally sound management of toxic chemicals and having noted RENPAP's activities in conformity with Montreal Protocol and further having appreciated RENPAP's contribution to sustainable development.

The meeting noted with concern that UNDP resource base has started declining due to reduced contribution from member countries. Reduction in contribution adversely affects programmes like RENPAP which play an important role in addressing issues relating to sustainable human development. The meeting strongly urged that quality programmes like RENPAP should receive priority attention while allocating resources by UNDP for various regional programmes.

Accepting the recommendations of the Evaluation Mission the TPR decided that RENPAP would have an autonomous management structure which will be put gradually into effect beyond October 1998 during which :

a) India would continue its contribution to RENPAP at the present level and provide host facilities as at present for the RENPAP Secretariat;

b) Lead by the Peoples Republic of China, India, Thailand, the Philippines, Republic of Korea, Iran, Malaysia and Indonesia, except LDC's pledged contribution of at least US$ 20,000 to start the proposed UNDP/ UNIDO Trust Fund to be set up for the RENPAP;

To support the activities in the member countries, the member governments will make budgetary allocations in their respective budgets for supporting the RENPAP activities. Initially the member governments would manage the fund until such time the modalities of establishing the Trust Fund and the autonomy of RENPAP is established. This will avoid transfer of national contribution in local currencies to convertible currencies;

c) The meeting noted that UNDP accorded highest priority in allocating resources to support the developmental activities of the Least Developed and Land-locked Countries. The meeting strongly recommends that the priority consideration should be continued for the next UNDP programme cycle as well and countries falling under this category should be exempted from paying any direct financial contribution;

d) Since the member governments would have to go through the process of providing financial support through budgetary allocations it would be necessary for UNDP to extend the existing arrangements by 14 more months upto December 99 in order to match with the financial years of many of the member countries to enable them to firm up the financing arrangements as well as to implement the committed activities which could not be completed due to slowing down of the release of fund. Thereafter, UNDP may continue to provide matching funds upto end of year 2001 to ensure smooth operation of RENPAP at the current level while UNDP/ UNIDO would actively identify sources for the trust fund for further strengthening of RENPAP operations to meet the identified growing needs of the member countries;

e) The TPR comprised of the National Coordinators, would be designated as the Governing Council of RENPAP and shall be responsible for the management of the RENPAP in all its aspects including the proposed UNDP/UNIDO Trust Fund. The budget would be based on the Workplan to be drawn up and approved by the Governing Council. Since RENPAP management would be under the overall aegis of the UNDP/UNIDO, rules, regulations and procedures applicable in the UN system would be adopted by the RENPAP;

f) The meeting recommended UNIDO/UNDP to approve the visit of the Regional Coordinator, initially to countries hosting the TCUs to tie-up financial contribution arrangements and take all necessary steps to put in place the proposed autonomous management system of the RENPAP in consultation with the National Coordinators of the countries making financial commitments;

g) The meeting felt that the Data Collection activities of RENPAP are very useful as it enables the decision makers in the member countries to take into consideration the various kinds of pesticides manufactured, used and exported in the member countries and also helps in monitoring their progress towards introducing safer and environment friendly pesticides in replacement of the hazardous and polluting ones. The meeting felt that the pesticide poisoning data collection could also be added to the existing programme through appropriate modification of the data collection sheets and the software. It was decided that this activity be strengthened through upgrading of the computer programme as well as improvement in the software. The meeting acknowledged the contribution of the Government of France which enabled RENPAP to strengthen its Data Collection activities through providing computer hardware and software and training of Data Collection Experts and decided that a proposal seeking continued support from the Government of France may be sent for the purpose of the upgradation and strengthening of the Data Collection Activities of RENPAP;

h) In order to strengthen information exchange among the countries relating particularly on the latest developments in the field of safer and environment friendly technologies and products and various other issues being extensively covered by the 8 Technical Coordinator Units (TCUs), it was decided to restart publication of RENPAP gazette.

Meeting also finalised and adopted the Work Plan for 1998 and 1999.

Tripartite Project Review Meeting and Project Management Committee Meeting, Hanoi, Vietnam - December 4-6, 1995

The TPR meeting having considered the Project Performance Evaluation Report expressed their continued commitment to the various RENPAP activities and offered the necessary facilities in order to reap the full benefits of the project outputs through active participation in the workshops and training programmes. The meeting also reiterated greater emphasis on the continued strengthening of the TCUs for effective functioning needed for serving as focal points for the implementation of the various activities of the RENPAP.

The meeting also **endorsed** the focus of the project on the promotion of safety to the workers health and environment by adopting cleaner and safer technologies, user and environment friendly pesticides and their formulations including biological and botanical pesticides and low risk low volume pesticides with compatibility to the IPM programme.

The meeting also noted with great appreciation the continuation of support of donor countries especially Denmark for Eco-toxicology/Environmental monitoring in Pakistan and France for Regional data collection activities of the RENPAP project.

Having taken note of the importance of the Eco-toxicology and Environmental monitoring of chemicals of concern to the member countries, the meeting **concluded** that UNIDO should seek continued support from donors for strengthening this field in the member countries taking Pakistan Centre as an example.

Having appreciated the importance of a comprehensive data base on pesticide production import and usage and the good work done under the "Development and Use of Computer Software for Pesticide Market Data, Input, Storage, Retrieval and Dissemination" - US/RAS/90/148 - the meeting **decided** to continue the activities of data collection for updating the data base on a continuous basis. While the member countries committed all assistance for continuing the data collection activities, it was suggested that further assistance required for this activity may be sought from suitable donor agencies. While India and Thailand did collect full economic data, many countries informed about the reluctance by many companies to give away too much of the production details, the meeting **concluded** that the respective Government should keep any such confidential information and release to RENPAP only such information that is deemed to be of non-confidential in nature.

The meeting having acknowledged with regret the problems encountered due to the temporary freezing of the project funds and also increased expenditure due to coordination with the FARM programme, the meeting concluded that UNIDO should approach the UNDP to seek additional funding to cover the cost of various activities envisaged in the sub-programme document. The meeting also expressed its appreciation for the offer from GIFAP for possible assistance to Workshops.

The following recommendations were adopted by the country delegates during the PMC meeting held in Vietnam in December 1995 :

* having taken note of the importance of bio-pesticides to the member countries in their aim to promote IPM,
* having acknowledged the successful organisation of the recently held workshop on Production and Quality Control of Bio-pesticides (Bacillus thuringiensis) in China which displayed keen interest of the member countries, the meeting **recommends** that the member countries should consider cost sharing in organising the workshops,
* having noted the keen interest of the member countries in the development and usage of BT based Bio-pesticides, the meeting **recommends** that special efforts be made for linking up the BT Research Centre, Hubai, with the intending member countries for expediting transfer of technology for BT production, quality control, formulation, bio-assay and usage.

* having taken note of the effective role being played by the TCUs and also taking into consideration the expertise and facilities available with the TCUs, the meeting **recommends** that greater stress be given in the workplan on the organisation of workshops for the development of human resources and capacity building, which yields better values in the regional context when compared with individual fellowships,
* the meeting having discussed various topics of interest and after having selected specific areas **recommends** that plant safety, workers health and environment protection, eco-toxicology and environment & environment protection, application of user and environment friendly, low risk/low volume pesticides with compatibility to IPM is a right blend of activities for meeting the needs of the member countries.
* having discussed the importance of data collection and its linkage with ESCAP/ARSAP database the meeting **recommends** that following the evaluation of the project, UNIDO/ESCAP should make necessary arrangements for seeking further assistance from suitable donor/organisations,
* having noted the need for promoting safety in the production and usage of pesticides the meeting **recommends** that the concerned TCUs organise workshops on Upgrading of Laboratory Facilities, for Monitoring Pollutant in Air, Soil and Water, Safe Disposal of Pesticide Wastes/Safe Management of Effluents and Application Technology.

Tripartite Project Review Meeting and Project Management Committee Meeting, New Delhi, India - October 6-8, 1993

During the course of Tripartite Project Review Meeting, the member countries expressed their full satisfaction on the overall performance of the Network and explained the view that this has been possible mainly due to the excellent cooperation of the member countries and strong linkages established with the 8 Technical Coordinator Units serving as focal point as well as the effective adoption of TCDC in the implementation of the activities.

The project has succeeded in making significant impact and all the member countries have greatly benefitted in this important area vital for increasing agricultural production and ensuring environment protection. The project has also succeeded in bringing the member countries closer together to solve the various problems and in sharing experiences of each other countries for mutual benefits.

The increase in the membership from 8 to 15 during the last 5 years is a measure of degree of effectiveness, therefore, success of the project.

The project has also succeeded in breaking the political barriers for ensuring equal and sharing benefits from the various activities and outputs.

The project has made distinct contribution towards attainment of the objectives through appropriate implementation of the activities with the support of 8 TCUs. Singificant support has also been derived from the hosting member countries in furthering the various objectives of the project activities. The workshops and training programmes organised during the period under review have all been rated high by the experts from the member countries in terms of organisation and technical deliberation. The TCDC concept has been extensively deployed through organisation of training programme within the region and utilising the facilities and expertise of the TCUs within the region. The Country Project Sustainable Pest Control and Soil Fertility Management Programme CPR/91/120 is being monitored by the Regional Coordinator as a good model of deployment of TCDC concept. Also the various outputs of this project are converging to support the various sub-programmes activities of the sub-programme.

Findings and Recommendations

i) The Tripartite Project Review Meeting considered the Project Performance Evaluation Report and based on the report of the Regional Coordinator on the various outputs, the member countries expressed their full satisfaction on the overall performance of the Network and which was possible only with the excellent cooperation of the member Govts. and the strong linkage established with the 8 TCUs serving as focal points as well as effective adoption of TCDC in the implementation of the activities.

ii) TPR noted that the project having satisfactorily completed all the activities during 1990 to 1993 expressed its appreciation to UNDP for including RENPAP as one of the 7 sub-programmes of the FARM programme.

iii) With the acceptance of Nepal, the member countries have grown to 15. TPR also appreciated the fact that UNDP accepted UNIDO proposal for including all the 15 member countries to make full use of the activities and outputs of the Pesticide Production and Information sub-programme. The main focus of this sub-programme would be on the following areas pertaining to the implementation of this project.

i) Promotion of cleaner and safer technologies and environment and user friendly pesticides and their formulations;

ii) Development of biological and botanical pesticides;

iii) Disposal of discarded outdated pesticides and toxic wastes emanating from the production process;

iv) Occupational safety and industrial hygiene;

v) Pesticide container disposal;

vi) Use of pesticide which would complement the IPM strategy through replacement of high volume low value persistent products with low volume high active safer pesticides.

In the Project Management Committee, meeting held in October, 1993 in New Delhi, all the member countries agreed to provide necessary effective linkages through the National Coordinating Committees of the FARM programme to facilitate implementation of the pesticides sub-programme activities within the overall ambit of the FARM programme. Keeping in view the objectives and output of the sub-programme, the PMC finalised and approved the workplan containing the project activities to be implemented during the course of the sub-programme. The recommendations made by the PMC are reproduced as under:

1. **Having taken into account the successful completion of the third phase of the Network.**

   Having noted the inclusion of the RENPAP sub-programme in the FARM programme.

   The meeting recommended that all the National Coordinators in association with the Regional Coordinator and UNIDO should facilitate implementation of the various activities of the safe pesticides production and information sub-programme for the benefit of the resources poor farmers of the watershed upland and rainfed low land farming systems.

2. **Having taken into account the importance of safety aspects both at the production and the user ends,**

   Also recognising the inadequacy of facilities available in the member countries in the development of environment and user friendly pesticides and their formulations in support of IPM,

   The meeting recommended promotion of cleaner and safer technologies with emphasis on the development of biological and botanical pesticides.

3. **Having recognised the importance of application technology and safe use of pesticides,**

   And also having recognised their importance to the resources poor farmers of the watershed upland and rainfed low land agricultural systems,

The meeting recommended coordinating among UN agencies to assist in the group training in application technology occupational safety and industrial hygiene and safe use of pesticides in the field.

4. **With the problems associated with accumulated pesticides both at the industries and in the farm ends,**

And having considered the lack of experience in handling such toxic chemicals in the region,

And also taking into account the lack of expertise and infrastructural facilities,

The meeting strongly recommended fullfledged assistance and cooperation in taking measures according to international standards in the safe disposal of these pesticides and containers.

5. **Having considered the importance of data collection and its usefulness to the member countries and to other international bodies,**

And having realised the problems associated with the collection of certain data due to their sensitive nature,

And also having acknowledged the development of necessary expertise and mechanism to collect the data in a standard format,

The meeting recommended continuation of the data collection and further training to all the member countries in data collection and finally in harmonisation of the data and establishing links with data collection and carried out at ESCAP/ARSAP.

6. **Taking into account the budgetary constraints, the meeting recommended to**

concentrate on group training on all areas relevant to the safe development of pesticides making use of the facilities of the Technical Coordinator Units and also extending the group training into individual training wherever considered necessary since this would enhance the utilisation of the consultants in a most economical way.

7. **Having taken note of the existence of considerable volume of literature available and work done on the use of neem as pesticide and the absence of commensurate commercial utilisation of this valuable product,**

The meeting recommended consultation with the policy makers towards formulating policies needed for enhancing production of the neem based pesticides and their formulations through suitable registration and market intervention methods.

A series of programmes have been undertaken through organisation of workshops, training programmes, consultancy services, etc. as per the approved workplan of project activities. From the status of progress of complimentation of the project activities, it is revealed that the progress of implementation is satisfactory.

PROGRESS OF REGIONAL WORKSHOPS

Workshop on Eco-Toxicology, Islamabad, Pakistan from March 27-31, 1994

The Workshop on Eco-Toxicology was organised by the Technical Coordinator Unit on Eco-Toxicology, Pakistan from March 27-31,1994 to provide a platform and promote North-South interaction to discuss various aspects related to environmental monitoring and studying fate of Xenobiotics with emphasis on pesticides. The Workshop was attended by participants from all member countries except Afghanistan and China. While inaugurating the Workshop on Eco-Toxicology, the President of Pakistan warned against indiscriminating use of agro-chemicals (pesticides, fertilizers, etc) as these are damaging crops and simultaneously degrades soil and pollutes the environment. He underscored the need for strong scientific system to back up the modern agro-chemical technology that could help in curbing the indiscriminate use of agro-chemicals. He stated that user awareness concerning safe use of agro-chemicals particularly pesticides was amongst his top priority issues as it concerns human being, environment and wildlife. This is also important to wage a war against insects, diseases and weeds.

The participants discussed the following topics under separate panels:

Panel 1: Ecotoxicology related to water (acquatic toxicoogy, ground water contamination).

Panel 2: Terrestrial ecology and soil contamination.

Panel 3: Need for assistance to Asia and the Pacific countries in monitoring movement and fate of Xenobiotics in the eco-system.

Having identified the elements of discussions, the panel took up problems faced by member countries. It was mentioned that the countries are generally aware of the problems but many do not have the legislative measures, standards and guidelines. The panel also pointed lack of awareness and capability in understanding risk assessment procedures and also the lack of availability of data on eco-toxicology for chemicals of concerns. This panel concluded that the goal should be to promote research on eco-toxicology and to formulate/implement laws and regulations and measures to prevent environmental problems associated with Xenobiotics in the eco-system. To achieve these goals, the panel concluded that the needs are:

* To understand practical way of "risk assessment".
* Access to data on toxicology including communication system on "risk" and survey data.
* Provision of technical capability for eco-toxicology monitoring with facilities and skilled staff.

Panel No.2 raised the point of harmonised legislation measures for RENPAP member countries with standardised guidelines on eco-toxicology. It also stressed for proper waste disposal of pesticides at production and users ends with greater attention given to public awareness. The panel recommended setting up of a working group to develop test guidelines for evaluation of the effects of local non-target organism and as in regional harmonisation of legislative measures and to recommend ways and views of implementation.

Based on the findings of the above two panels, the third panel formulated and drew out the following conclusions and recommendations:

The Workshop as intended, gave an excellent opportunity to member countries of the region to discuss among themselves and with experts the importance of ecotoxicology monitoring of chemicals of concern. The Workshop recognised the problems the region is likely to face with increase in the consumption of chemicals especially pesticides and fertilizers. The Workshop also concluded that eco-toxicology being multifaceted field would need interministerial coordination and also inputs from international agencies and non-governmental organisations to assist the member countries in hazard identification, risk assess-

ment/reduction and management of risks associated with the large use of agrochemicals and then extend the experience gained to other industrial pollutants. The Workshop also noted that persistence of pesticides in the environment in the temperate region would be different from the tropical region especially for organo-chlorine pesticides and each member country as far as possible should make use of data on eco-toxicology already available. The meeting also concluded that member countries should have capability to conduct laboratory assays to monitor eco-toxicology of pesticides with the technical assistance from Eco-toxicology Research Centre in Pakistan. Also monitoring environment matrices so as to make early warning systems to avoid any catastrophic incidents was considered important. While the meeting dealt at length on occupational safety of workers in working place (during production and application), it was concluded that this topic was covered elsewhere and was outside the scope of the workshop. The meeting also concluded that Pakistan should play a lead role in the establishment of facilities, training and dissemination of information for member countries of the region by virtue of taking lead in establishing Eco-toxicology Research Centre with UNIDO and Danish Government assistance. Access to information available on eco-toxicology for chemicals of concern should be made available to member countries.

Recommendations

1. Having taken into account generally the lack of legislative measures governing environmental aspects relating to chemicals of concern, the Workshop recommends:

2. Support be given through RENPAP, International Agencies and respective governments to establish or strengthen environmental aspects of legislative measures to member countries.

3. The Workshop having noted the existing variations in legislative measures and regulatory standard and having taken into account problems resulting from these differences recommends:

4. RENPAP should assist in providing a mechanism to work towards their harmonization of legislation and regulatory standards and a working group be established to consider appropriate means to achieve this goal. To facilitate such harmonization Governments of member countries be encouraged to promote inter-ministerial coordination/communication.

5. Having realized the importance of "risk assessment" pertaining to ecotoxicology for the member countries of RENPAP, the Workshop recommends:

   * assistance be provided to governments in order that they might improve their capability to conduct "risk assessment" relevant to the conditions in their respective countries.
   * The meeting having discussed the importance of the availability of reliable data pertaining to eco-toxicology to member countries recommends:
   * the selection and prioritization of chemicals and to assess the availability of information from various sources such as UNEP/IRPTC, IPCS/EHC etc. and use of the RENPAP data base for dissemination of this information.

In order to assist the region in such a prioritization the Workshop recommends that individual member countries submit to Ecotoxicology Research Centre/RENPAP a list of chemicals of concern.

6. The Workshop having taken into consideration the existence of extension service in most countries recommends:

   * the countries should work towards ensuring that in addition to information on the safe and efficient use of pesticides information on their environmental impact and effects should also be provided to the end users e.g. farmers.

7. The Workshop having realized the importance of effective use of limited resources in the region strongly recommends:

* formation of a working group to consider and advise on priorities for work on ecotoxicology in the region and that RENPAP should prepare terms of reference for such a working group as soon as possible. Industry representatives should be included in such a working group.

8. Having realised the significance and importance attached to the Ecotoxicological Research needs of the Asian Region, the Workshop recommends:

* the international agencies to support strengthening of facilities/capabilities of Ecotoxicology Centre in Pakistan to be able to provide needed leadership to the Region.

9. Having considered that all member countries sooner or later should have facilities for ecotoxicology/environmental monitoring the workshop recommends:

* each country identify the necessary resources (financial and skilled personnel)to initiate/strengthen such activities.

UNIDO made the following comments on the Workshop:

The UNDP/UNIDO system for the first time organized a major Workshop on "Ecotoxicology" which is now becoming more and more important in view of man's dependence on chemicals for his survival. In this agrochemicals which are intentionally introduced into the environment need to be monitored so as to avoid any long term side effects to the ecosystem and also in averting major catastrophes.

While the awareness to ecotoxicology is already taken a strong concern in developed countries, the topic has been rather new to developing countries. In that the Workshop turned out to be an eye opener to the member countries on the importance of ecotoxicology and environmental monitoring.

The Workshop itself dealt with many topics dealing with establishment of suitable laboratories, type of work to be carried out under national/international standards and above all proper information collection and dissemination to the member countries on eco-toxicology of chemicals of concern that enter into the environment due to normal production/ use or during accidents.

The three panels gave the opportunity to discuss different problems in the area and the recommendations would lead to a better management of ecotoxicology aspects related to toxic chemicals in the environment. The experience of the Asian network would eventually benefit agricultural resource management in a sustainable way.

Workshop on Application Technology in Malaysia from 20-25 September, 1993.

The Workshop was organised by the Government of Malaysia in collaboration with the Malaysia Plant Protection Society, University Pertanian and Mardi Research Centre and the Malaysia Deptt. of Agriculture from 20-25 September, 1993. The Workshop was attended by delegates from all the member countries of Asia and the Pacific region. The Workshop was intended to inculcate safety and efficient use of pesticides and the need to protect the environment. The knowledge gained through the course should be disseminated to the farmers so that pesticides are used judiciously in the manner for which they are intended resulting in enhancement of agricultural production made in the more economically viable ways. The basic objectives of holding the Workshops were:

1. To lay the foundation for a training centre of excellence in Pesticide Application Technology to serve to the needs of RENPAP area.

2. To provide an opportunity for closer cooperation among countries in this region.

3. To help increase the level of knowledge on appropriate pesticide application technologies.

4. To create greater awareness on the need for safer and more efficient application of pesticides.

5. To stimulate interests and sustain efforts towards further improvement on the technologies.

6. To promote wider acceptance of user and environment friendly techniques.

The recommendations adopted by the delegates at the conclusion of the Workshop are as under:

1. There is a continuing need for safe and effective application of pesticides.

2. A Centre of Excellence should be established to provide and coordinate activity in the RENPAP region.

3. Malaysia can serve such a role as a Centre of Excellence in Pesticide Application Technology. The Department of Agriculture could be the leading administrative organisation. MARDI and UPM, with the cooperation of MAPPS could provide technical support, equipment and lecturers/ trainers.

4. A venue dedicated to training could be scheduled for this activity i.e. ILPP Agricultural Extension Training Institute, Deptt. of Agriculture, Serdang, Selangor, Malaysia.

5. Existing external links with the International Pesticide Application Research Centre at the Imperial College of Science, Technology & Medicine, Silwood Park, Ascot, UK are strong at present and would need continuing UNIDO support to be maintained.

6. Training formats need to be harmonised and standards used by all extension services involved in farmer training.

7. Industry has an important role to play in promoting safe and effective use of pesticides. Areas that need to be addressed are:

   a) Minimum standards for application equipment should be agreed and adopted. This would involve the standardisation of areas such as nozzle interchangeability, screw thread compatibility and availability of spare parts.

      Durability and safety should be major factors in equipment design standards.

   b) The present training programmes in use by industry's product stewardship schemes should be studied and included in the harmonisation of standard training formats. Some existing industrial training formats could form an excellent basis for this.

   c) Some input to the training could be made by industry's support and cooperation. Industry could be invited to submit training suggestions/equipment.

8. Future workshops or courses that are planned should be attended by staff who are actively involved in pesticide application or its training and not by those in administrative roles.

9. An advisory service could be set up to that member countries of RENPAP can share new information on safe application of pesticides to ex-participants and others. Refresher courses to update users would also be beneficial for continuity.

10. External international agencies be called on to provide training expertise on the safe effective use of pesticides i.e. GTZ, NORAID, FAO, WHO, IPARC, GIFAP. UNIDO made the following observations on this Workshop :

    "The report of the Consultant gives a comprehensive information on the proceedings of the Workshop carried out in Malaysia mainly with the help of local counterpart acting as resource persons while UNIDO consultant gave all the required elements to make it come upto international standards. As the Workshop was fully supported by the local industry and organisations, many field experiments could be organised.

The Application Technology is now well accepted as an important means to take the pesticides to the target and preventing unnecessary damage to the environment. In addition, safety of the applicator is an essential factor that should be taken into account. Efficient use of pesticides will automatically bring down the volume of pesticides used and also in getting maximum benefit from the expensive chemicals.

The Workshop paved the way for bringing Malaysia as the Centre of Excellence for the Asia region in Application Technology for safe development of pesticides. The evaluation of the course conducted clearly indicates that the training/ workshops had the desired effect on the participants in their learning process".

Expert Group Meeting on Policy Issues in the Region on Bio and Neem based Pesticides Development from 1-3 September, 1994 in Bangkok, Thailand.

The Technical Coordinator Unit on Bio-Botanical Pesticides Development set up in Bangkok, Thailand organised an Expert Group Meeting on "Policy Issues in the region on Bio and Neem based Pesticides Development" from 1-3 September, 1994. The meeting was attended by experts from 12 member countries of the RENPAP region. Experts from Afghanistan, Indonesia and Sri Lanka could not attend the meeting. The collaboration agencies of this Expert Group Meeting included the FAO, the ESCAP and the GTZ of Germany. The meeting was inaugurated by Dr. Montari Rumakom, Director General, Deptt. of Agriculture, Royal Govt. of Thailand. The meeting was also attended by Mr. Michael Klees, Programme Officer, UNDP, Bangkok and Dr. John Dixon, FARM Coordinator, FAO/RAPA. Policy matters concerning the potentialities of Bio pesticides and Neem based pesticides, technical proposal and commercialisation in the participating countries have been considered. The expert group meeting covered the following:

i) To appraise the policy makers of the member countries of the potentialities of bio pesticides and botanical pesticides (Neem only) in the management and control of pests on the one hand and reducing the environmental pollution associated with the application of chemical pesticides on the other.

ii) Introduction and proper use of environmentally safe pesticides management and varietal intercultural technology at the grassroot level to increase productivity and to provide comprehensive environmental and health protection.

iii) To provide national programmes with up-to-date information on prospects and procedures for commercialisation of bio-botanical pesticides for insects, weeds and plant diseases and to develop with them national strategic plans for bio-botanical pesticide development and commercialisation.

iv) Technical prospects for bio-botanical pesticides, what is the status of R&D and commercialisation for the bio-botanical pesticides for the major Asian pest species and what are the future prospects.

v) Safety health and quarantine issues relating to the development, production, use and distribution of bio-pesticides.

vi) Case studies from national commercial development of bio-pesticides and Neem based pesticides inside and outside Asia.

vii) The role of multinationals and licensing agreements in the development of bio-pesticides and Neem based pesticides.

viii) Follow up of the recommendations made in the Workshop held on the same subject in Bangkok in December, 1991.

The problems brought out by the participants through the presentation of country papers were discussed amongst the participants during the technical sessions. The meeting was organised and there was very

lively discussions on topics i.e. Bio pesticides development and botanical pesticides development during all the three day meeting. On Bio pesticides development work, Prof. Xie Tian Jian of Hubei Academy of Agri. Sciences, P.R. China informed regarding the setting up of commercial scale production facility of *Bacillus thuringiensis* and launching a joint venture with Ciba Geigy of Switzerland for the production and export of the products to United States and other Western countries. This was for the first time that the rest of the member countries of the Network could have a full view of the excellent work that has been done in the People's Republic of China over many years. Prof. Tian Jian's presentation with slides showed the perfection that he and his team have achieved in his plant enabling to meet the most stringent specifications and standards for registration and sale of the products in the United States. Prof. Tian Jian offered joint ventures to the interested member countries of the Network and also offered to organise training programmes for the expert nominees of the Network member countries. At his instance, it was agreed to organise a visit of delegates of the Project Management Committee (PMC) to his institution in Hubei, immediately following the Project Management Committee meeting scheduled in October, 1994 in China.

Regarding Neem pesticide development,the experts from the member countries were very happy to note the good work done in Myanmar, Thailand, India and some other member countries for the commercial scale production of Neem based pesticides. The expert delegate from Myanmar made an excellent slide presentation showing the various stages of production and the perfection that they have achieved in the commercial production of "Neem" pesticides. The expert members noted that while some of the "Neem" pesticides products have been officially registered in the United States of America, India and others, these products are being sold without registration in Thailand and Myanmar. Taking note of this fact, the Expert Group felt that the registration procedure for Neem based products in the member countries need to be simplified to enable its quick registration and commercial scale production for the larger interest of the farming community.

The conclusion drawn and recommendations adopted by the delegates are reproduced as under:

Workshop Conclusion and Recommendations

Conclusion

Having discussed the recommendations made in the last Bio and Botanical pesticide meeting held in 1991 at Bangkok, the meeting concluded that significant progress has been made in the region with regard to the development, registration, production and usage of bio-pesticide *Bacillus thuringiensis*(Bt) and botanical pesticide based on neem.

The expert group meeting having taken into consideration the various types of interpretation given to Integrated Pest Management (IPM) and in order to avoid confusion, deliberated on the issue. Thereafter the meeting adopted the commonly accepted philosophy of IPM as that being an integration of all available pest regulating (insects, pathogens, weeds, nematodes, vertebrates, etc.) strategies including the judicious use of low risk/low volume pesticides into sustainable production systems in a way that there would be minimal or no effect on humans and the environment while providing economically sound means of managing pests.

Recommendations

Bio pesticides

Having taken into consideration the need for establishing Bt production facilities in the region and realizing the need for trained manpower and having taken into account the lack of expertise in the region the meeting recommended:

manufacturing facilities should be undertaken only after providing adequate training and developing necessary expertise and getting financial support.

Having realized the need to increase the farmers confidence on the use of bio-pesticides and having considered the necessity for adequate quality control of Bt products, the expert group recommended that

* Protocol for demonstration of effectiveness of Bt at the field level and on techniques for quality control of Bt products should be developed in the region.
* The group further recommend establishment of collaborative arrangements in the network to obtain and exchange better strains of Bt.
* The network having been offered facilities for training, quality control and transfer of technology recommends
* Interested Network member countries to establish contact with Prof. Xie Tianjian of the Bt Research Development Centre at Hubei Academy of Agricultural Sciences, Wuhan, People's Republic of China.

The Group further recommended UNIDO/RENPAP Secretariat to play the linking role for this purpose and seek assistance for this purpose from the International Agencies.

Having realized the importance of initial assistance for technology transfer to the member countries the Group recommended

That UNIDO may provide the assistance for setting up joint ventures through their investment promotion scheme.

Having noted the need for information collection and exchange on the development, registration, production and usage of bio and botanical pesticides and production and usage recommends

That UNIDO/RENPAP should publish a bi-annual bulletin for distribution among the member countries of the Network.

Botanical Pesticide

The expert group meeting having agreed that from the available information the neem based pesticides are environmentally friendly and having noted that the neem plant has been in use in the region for decades and also having considered that the registration of the product in the United States of America and India and realizing the fact that neem is being produced and used as a pesticide in Thailand, Myanmar and China without registration the meeting recommended that the countries having raw materials undertake commercial scale production and promotion; the meeting further recommended that the RENPAP member countries should have simplified registration procedure without insisting on a full-fledged toxicological data in view of extensive testing carried out in USA, India and Germany, however, to ensure quality and performance, bioefficacy tests and azadirachtin content and confirmatory tests for absence of aflatoxins should be included in the registration procedure.

The meeting having noted that registration of pesticides is within the mandate of FAO, the group requested the FAO Representative for approval by the FAO meeting to be held on the subject in October, 1994 in Bangkok.

Having realized the various difficulties experienced by the different groups working on neem, the group recommended that UNIDO/RENPAP collaborating laboratories be identified on the pattern of CIPAC/RENPAC procedure of collaborative testing for quality control. The Group further recommended that UNIDO/RENPAP/UNDP/FAO extend necessary technical assistance for upgradation and maintenance of the facilities in such identified laboratories.

Having taken into account the absence of standard criteria for the quality and bio-efficacy of neem pesticides, the group recommended that the UNIDO/RENPAP/FAO establish a standardized criteria for the member countries in this regard. The group further recommended that the collaborating laboratories extend help and assistance to the industries and scientific laboratories engaged in the bio-assay and chemical assay for neem pesticides.

The Group having noted the need for commercial viability of the neem producing units recommended that integrated production of neem based products including oil, medicinal, fertilizer, etc. products be pursued. The group further recommended that UNIDO/FAO/UNDP and other agencies may be approached to assist the member countries in the development and production of neem based products by providing pilot plant, laboratory equipment and the training of personnel.

Having considered the need for bringing together producers, processing companies and traders and having taken note of existence of Pyrethrum boards operating in many pyrethrum producing countries the group recommended that a Neem Board in the pattern of Pyrethrum boards be established in the region. The Group further recommended that a central data bank on botanical pesticides may be established and for this necessary computer facilities may be provided to Prof. G A Miana, Deptt. of Chemistry, Gomal University, D.I. Khan, Pakistan.

Workshop on Pesticide Data Collection System - 9-10 September, 1994, ESCAP, Bangkok.

A Training Programme for the Data Collection Experts of the RENPAP was organised on the 9th and 10th of September, 1994 utilising the excellent computer facilities of the ESCAP Secretariat. The training programme was attended by Data Collection Experts from Pakistan, India, Thailand, China, Philippines, South Korea, Sri Lanka, Malaysia, Bangladesh, Myanmar, Vietnam, Iran, Nepal and Indonesia. This was the first training programme organised under this project and was very well received by the participants when the software for Phase I was introduced and that of the Phase II made available and explained for the purpose of undertaking economic data entry. It was agreed in this meeting that both UNIDO and the respective Governments would make available additional computer facilities, extend travel facilities and the Regional Database Centre of RENPAP in Delhi and Thailand would provide direct assistance for expediting data collection and entry. It was further agreed that the economic data for the years 1991, 1992 and 1993 would be entered into the RENPAP formats for early publication.

The recommendations adopted by the delegates are as under:

1. Having taken into consideration on the importance of ESCAP / EU and UNIDO/ RENPAP database, having noted the deliberations and recommendations of the ESCAP / EU meeting of the data collection, and further taking into consideration the large number of countries in RENPAP and different levels of their competence and facilities the workshop recommended to divide the RENPAP member countries to meet the deadline of December 15, 1994.

Group 1 (Index & Economic Data)	Group 2 (Index Data)	Group 3
INDIA	(MALAYSIA)	VIETNAM
THAILAND	BANGLADESH	NEPAL
S.KOREA	MYANMAR	(IRAN)
PHILIPPINES	CHINA	AFGHANISTAN
INDONESIA	SRI LANKA	
PAKISTAN		

2. Having recognised the complexities, difficulties and problems associated with economic data collection and noted additional hardware, human and financial resources that are needed, the meeting recommended that both UNIDO and the respective governments to provide :

* additional computer facilities,
* travel facilities,
* direct assistance from RENPAP/RDC in Delhi and

Thailand to the participating countries according to priority needs.

3. Having discussed the ready availability of information in various countries for 1991,1992 and 1993, the meeting recommended using the existing data and adopting it to the RENPAP formats of index and economic data.

4. The meeting recommended that National expert to collect the data as required by UNIDO/RENPAP and do not release those sensitive data to UNIDO/RENPAP until such time the clearance is obtained from the respective governments.

Workshop on Industrial Hygiene and Occupational Health and Safety, Philippines from December 5 - 9, 1994.

The workshop was organised by the Fertilizer and Pesticide Authority, Department of Agriculture in Davao City and in Manila from December 5 - 9, 1994 and was attended by 22 expert nominees from the member countries. The objective of the workshop were

1. To assist the member countries of the network through a harmonised approach towards occupational health safety and industrial hygiene for ensuring safety to the workers.

2. To assist the member countries in ensuring maintenance of a material safety data sheet for each chemical being handled by the pesticide production unit including active ingredients, formulation ingredients and the formulated products.

3. To assist the member countries in developing emergency safety procedures and a contingency plan covering pre-emergency measures to identify and control hazards and actions to be taken to contain and minimise hazards during emergency.

4. To assist the member countries to develop and implement an occupational health monitoring programme appropriate to the products and processes including maintenance of upto date medical records.

5. To Assist the member countries to provide the workers with appropriate personal protective equipment (PPE) suited to the climatic conditions where the plant is located.

6. To assist the member countries in designing plants, laboratories and warehouses for ensuring proper ventilations to minimise the effects of dangerous fumes, vapours and odours.

7. To attend the member countries for providing adequate medical facilities to the workers in the factories which is normally a legal requirement stipulating minimum acceptable standards to ensure health and safety of the workers.

8. To help the member countries in the establishment and maintenance of systematic accident reporting in accordance with the national or international standards.

9. To review the various follow-up actions taken by the member countries in respect of the various recommendations made by the workshop in April 1991.

10. To take stock of new innovations made in the field of industrial hygiene and occupational health safety for adoption in the region.

The following recommendations were adopted :

1. 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 programmes (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 i 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/RENPAP 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/RENPAP prepare the final forms of the guidelines for pesticides formulating plant inspections and have these 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 finalised in the Brussels meeting and made available to all participants i 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

Recognising 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/ RENPAP 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

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

Noting that networking of communities 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; ad such communication be channeled through the technical coordinating unit (TCU) or directly through the regional coordination unit (RCU)..

Workshop on Development and Production and User and Environment Friendly Pesticide Formulation and Quality Control, New Delhi, India from Feb. 20 - 25, 1995.

The Workshop was hosted by the Institute of Pesticide Formulation Technology (IPFT) of the Govt. of India, which is the TCU of RENPAP on User and Environment Friendly Pesticide Formulation Technology. The objective of this Workshop was to assist the member countries in strengthening capabilities of their pesticide formulation industry and the quality control inspectorate. This meeting was attended by 18 expert nominees of all the member countries of the Network and were provided "hands on" training on the development of new generation formulation, new technologies for size reduction and blending needed by the formulation industry and quality control of pesticides including instrumental analysis and specifications. The Workshop was rated very successful and timely as the member countries are still not aware of changes taking place in pesticide formulations which contribute in safety improvement and risk reduction.

The Workshop covered :

1. development of new generation formulations like suspension concentrates, water dispersible granules, concentrated and micro-emulsions, controlled release formulations including encapsulations etc.
2. adoption of new technologies for size reduction and blending needed by the formulation industry.
3. scientific utilisation of surfactants and adjuvants
4. quality Control of Pesticides including instrumental analysis and specifications
5. review of follow up actions taken by the member countries in respect of the various recommendations made by the previous workshop on the subject.

Workshop recommendations

The Workshop

Recognising the need for replacing the hazardous and persistent pesticide formulation with user and environmentally friendly water based formulations, the workshop

recommends UNDP/UNIDO/ RENPAP extends all technical assistance to the member countries to produce hazardous and environmentally friendly pesticide formulations in replacement of the conventional hazardous ones.

The Workshop

Recognising the need for quality assurance of pesticide formulations

recommends UNDP/ UNIDO/ RENPAP extends assistance for creation of a regional centre for depository of reference standard materials in the region. It further **recommends** that all technical support is extended to the member countries for harmonising the toxicity procedures including analytical techniques in line with the CIPAC collaborative studies by extending the RENPAP membership to those countries of the network which are yet to join.

The Workshop

Recognising the value of exchange of information strengthening of network for promoting technological development in the member countries

recommends UNDP/ UNIDO/ RENPAP to formulate strategies in order to strengthen the exchange of information on production and quality control of new generation pesticide formulations.

Workshop on Production and Quality Control of Biopesticides (*Bacillus thuringiensis*), Wuhan, People's Republic of China, from October 31 - November 9, 1995.

The Bt Research and Development Centre offered to host this workshop on Production and Quality Control of *Bacillus thuringiensis* from October 31 - November 10, 1995 for the delegates of the member countries of the RENPAP.

The main objective of workshop was to assist the member countries for developing the capabilities of bio-pesticides. The workshop was intended to cover :

1. Production development of Biopesticides at laboratory, pilot plant and at the commercial level.

2. Quality control methods & standardisation procedures for bio-pesticides.

3. Tailor made formulation development for biocidal material (Bt) and its application methods / technology.

4. Occupational health, safety and hygiene relating to development, production, use and distribution of Bt bio-pesticides.

The delegates from the member countries of the network appreciated well the proceedings of the Workshop on Production and Quality Control of Bio-pesticides (*Bacillus thuringiensis*) covering practically all aspects including biological properties, molecular biology, management of insect resistance to Bt, fermentation technology, quality control of Bt products, industrial production, application of Bt for control of agriculture, forest and public health pests, mechanisms of action of Bt etc. The delegates particularly appreciated the excellent mix of lectures and laboratory practical and field testing which gave them an opportunity to understand the intricacies involved in the production and quality control of Bt based pesticides. The significant role that Bt can play in the Integrated Pest Management Programme in the member countries of the network was endorsed by the delegates.

The workshop adopted the following recommendations:

1. Having discussed at length the various aspects of Bt development, production and usage and recognising the need for pilot scale production and quality control of Biopesticides (*Bacillus thuringiensis*) the workshop

   recommends UNDP/ UNIDO/ RENPAP through Bt R&D Center, Wuhan extend all technical assistance to member countries to create pilot scale & industrial scale facilities for the commercial production of biopesticides in the member countries.

2. Having been offered excellent facilities and expertise of Bt Research & Development Centre, Hubei Academy of Agricultural Sciences, Wuhan, the workshop

   recommends that interested network member countries may set up joint venture with the Hubei Academy of Agricultural Sciences for transfer of technology for commercial scale production of Bt and its usage in IPM programme through the assistance of UNDP/ UNIDO/ RENPAP.

3. Having recognised the need for improved formulations of Bt based pesticides for the better efficacy and shelf life and having considered the offer of Govt. of P.R. China through country project "Sustainable Pest Control & Soil Fertility Programme" and National Coordinating Unit of RENPAP, the workshop

   recommends that newer formulations of Bt based formulations may be developed and made available to the member countries to improve the field performance of biopesticides.

4. Recognising the need of protocols and guidelines for testing the bioeffectiveness and data generation for registration purposes of Biopesticides, the workshop

recommends that UNIDO/ RENPAP extend assistance and develop protocols and guidelines for large scale field demonstration of Bt pesticides for the member countries of the network.

5. Having noted the availability of different strains of Bt in the member countries and the need for collection and exchange of information for promoting Bt based pesticides, the workshop

recommends that UNDP/UNIDO/ RENPAP extend assistance in screening of various strains of Bt and strengthen exchange of information on production and quality control of Biopesticides through establishment of a Databank and regular publication of bulletins for the benefit of the member countries of the network.

Workshop on Pesticide Residue Monitoring in Soil, Air and Water, Suweon, Republic of Korea, May 13-18, 1996

The Workshop on Pesticide Residue Monitoring in Soil, Air and Water was organised by the National Agricultural Science and Technology Institute, which is the Technical Coordinator Unit of RENPAP in South Korea.

The workshop was designed to assist the member countries in strengthening their capabilities in the monitoring of residues in air, soil and water utilising the state-of-art equipments. The workshop covered:

1. a review of the hazards arising out of the pesticides residues in the food and in the ecosystem.
2. development of harmonised approach for reducing the health and environmental risks following the use of pesticides through environmental monitoring of residues.
3. to review the data bank concerning threshold levels of toxic chemicals commonly used as pesticides both in the ecosystem as well as in the food crops.
4. use of advanced instrumental analysis of residues including GC-MSD, HPLC, GLC etc.
5. providing "hands-on training" in sampling and analysis of residues using the state-of-art analytical techniques.
6. To consider adoption of the Brussels Guidelines i.e. Integrated International Safety Guidelines for Pesticide Formulation in Developing Countries" as an aid to reduce environmental contamination in consonance with residue studies of the concerned pesticides in the environment and food samples.

The workshop concluded that this workshop gave an excellent opportunity to the delegates from the member countries of the network to discuss and exchange use on various aspects related to the preservation of environment through proper monitoring of pesticide residues. The workshop provided an extensive knowledge and skill on pesticide residue monitoring by means of intensive lectures and indepth hands-on exercises. The workshop concluded that facilities be strengthened in the member countries to take up monitoring work more confidently and UNIDO/RENPAP should assist in standardising MRL's for its member countries and the following recommendations were made:

1. In view of the environmental protection requirements and increasing pesticide use coupled with lack of awareness in most regional countries, it is recommended to strengthen national pesticide residue monitoring capabilities on priority basis.
2. Most member countries lack facilities for pesticide residue monitoring. It is recommended to strengthen the analytical facilities particularly for instrumentation and standard reference materials.

3. The trained manpower in the member countries is limited / scarce. It is recommended that member countries and RENPAP should allocate more resources for training in monitoring pesticide residue.

4. Recognising the need for guidelines for SOP/GLP, the workshop recommends that RENPAP / UNIDO should make available, guidelines for laboratory accreditation and also circulate SOP/ GLP (AOAC/CIPAC/ FAO/ ISO/ EP, etc.)

5. Recognising the inadequacy of MRLs in some of the member countries, it is recommended that FAO/WHO MRL Guidelines be adopted till they can standardise their own MRL.

6. Having appreciated the significance of pesticide residue monitoring for ensuring environmental safety, the group recommended that four to six weeks in-depth training be organised in pesticide residue monitoring.

7. To increase capability of member countries in pesticide residue monitoring, it is strongly recommended that a project on pesticide residue monitoring be formulated by RENPAP/ UNIDO for seeking donor assistance.

8. The workshop recommends that every member countries having problems with residue monitoring and data confirmation may seek assistance from Korea (NASTI) and / or India (IPFT).

Workshop on Effluent Control and Waste Disposal, Jakarta, Indonesia, July 15 - 19, 1996

This Workshop was hosted by the Directorate General, Machinery and Chemical Industry, Ministry of Industry and Trade, Government of Indonesia in Jakarta. The workshop was designed to assist the member countries towards strengthening their capabilities for achieving integrated safety at the production level and ensuring safe disposal of the effluents emanating from the production units. The workshop was intended to cover -

* the current status of the implementation of the government promulgated rules and regulations concerning treatment of effluents emanating from the production units and their safe disposal
* the new innovations in the field of effluent treatment and pollution control and progress made in these directions in the developed countries and in the member countries of the network
* to review the progress made towards categorisation of the wastes emanating from the pesticide producing units and steps taken to recycle / reuse the effluents
* progress made towards developing laboratory capabilities for waste identification and quantification, and training of skilled analysts / technicians
* to consider the question of maintaining a data base on effluents and their disposal at the regional level
* to consider progress made towards development of practical guidelines on waste minimisation, containment, waste inventory monitoring and treatment and disposal systems in the developed and in the member countries of the network.
* the progress made towards implementation of the Brussels Guidelines

The workshop made the following recommendations :

1. Having visited the Hazardous Waste Management Center located near Bogor and having seen their facilities for hazardous chemical waste treatment covering analysis of chemical waste, preparation of mixed chemfuel, its use as cofuel in a well operated cement plant, encapsulation, use of specially engineered and monitored landfill and having noted the collaboration established

between the private enterprise and the government, the meeting strongly recommends similar approach be promoted in those countries where chemical production is high and needed systematic handling of hazardous and toxic waste. UNIDO/RENPAP could assist in bringing the necessary arrangements for such a collaboration.

2. Having realised the complex nature of the requirements for treatment and disposal of hazardous waste and also having noted the facilities developed in Hazardous Waste Management Center located near Bogor, Indonesia and having further noted the need for setting parameters for deciding upon the disposal options, the meeting strongly recommended the Indonesian facility could be used as a Regional Center for providing group and individual training both for the personnel from industry and the government. The meeting further requested UNIDO/ RENPAP to approach the appropriate authorities in Indonesia and the UN system for initiating necessary measures.

3. The meeting having realised the importance of waste minimisation as against the end of pipe treatment strongly recommends that the countries give priority to the waste minimization methods, in this, the meeting requested the member countries to make use of the cleaner production centers established by UNIDO/UNEP.

Workshop on Safe Application of Pesticide : Pesticide Application Technology, Serdang, Salangor, Malaysia, September 23-28, 1996

The workshop was organised at the Technical Coordinator Unit of the RENPAP in Selangur, Malaysia for the second time and was hosted by the Government of Malaysia during September 23-28, 1996.

The workshop was primarily designed to assist the member countries in strengthening their capabilities in safe handling and application of pesticide through adopting latest application technologies. The workshop programme included :

* review of the work on safe handling and application of pesticides through adoption of proper application technologies.
* increase in the level of knowledge on appropriate pesticide application technologies suitable to the region.
* provide hands on training on selection, calibration, spray coverage, sampling techniques, maintenance, safety, personal protection devices etc. of application equipment.
* broadening of acceptance of user and environment friendly technologies
* exchanging views and enhance exchange of pesticide application technologies among member countries.
* review international / national standards on pesticide application equipments and harmonise standards for adoption in the RENPAP region.

A total of 35 expert nominees from the member government of the network attended the workshop. Besides the government nominees there were participants from the industry, multinational companies, agricultural departments, pesticide associations, agricultural authorities, etc. who took active participation in the workshop.

Workshop conclusion

The meeting noted with considerable concern that due to unscientific and inappropriate application technologies practised in the member countries of the Asia Pacific region there is considerable wastage of pesticides as it does not specifically reach the target organisms and as a result it not only pollutes the

environment but also endangers the farmers with avoidable exposure to the toxic effects of pesticides. The workshop noted that farmers still have access to the most toxic pesticides which are unsuitable for use in manually liver operated knapsack sprayers that are predominantly used by the farmers of this region. Having noted this critical situation the meeting concluded that urgent attention be given to upgrade the overall pesticide application technology in the Asia Pacific Region with the assistance of REN-PAP/UNIDO.

The meeting also noted with concern that due to non-availability of appropriate personal protective clothing and the refusal of the farmers to use the existing protective clothing there is a steady increase in the pesticide poisoning cases of the farmers on the field. The meeting concluded that urgent steps are necessary to improve the design of equipment to incorporate engineering controls to reduce operator contamination. The design of personal protective equipments should also be improved so that it can be comfortably worn by the farmers in hot and humid conditions and that RENPAP/UNIDO extends necessary assistance in the matter.

The meeting also noted that due to inadequate application technology being used in the Asia Pacific Region the environment, particularly in the fragile agro ecosystems, is continuously worsening and concluded that urgent attention be paid to upgrade the application technology to reduce the load of the chemicals on the environment on the one hand and avoid exposure to the farmers on the other. The meeting concluded that UNIDO/RENPAP may be urged to extend suitable support in this regard to improve the incorporation of more selective and safe pesticide use when required in IPM programmes.

The meeting also noted that there is room for improving the performance of liver operated knapsack sprayers by incorporating Pressure Management Valve (PMV) to regulate the pressure for ensuring generation of narrow range of droplets thereby increasing the efficiency of the system. Also the workshop noted that newer technologies like controlled droplet applicators, Very Low Volume (VLV) systems are available in other parts of the world and concluded that the member countries take to the use of the improved application systems to increase application efficiency, reduce environmental pollution and limit poisoning of the farmers and the UNIDO/RENPAP may extend necessary assistance in the matter.

Workshop Recommendations

The expert nominess from the member countries made the following recommendations:

1. Having discussed the need for overall improvement of pesticide application technology and further having noted that in most of the member countries no standards have been adopted for controlling the quality of the application equipment, the meeting recommends -

   * that RENPAP/UNIDO initiate the adoption and implementation of standards for improving quality of plant protection equipments such as those developed by FAO for its member countries and assist in the improvement in the design engineering of the applicators for prevention of leakage, spillage from tanks, cut off valves. nozzles etc for ensuring appropriate protection to the farmers.

2. Having realised that the major source of wastage of pesticides resulting in the pollution of the environment and potential exposure of the farmers emanates from the use of liver operated knapsack sprayers by the small and marginal farmers in the member countries and further having appreciated the usefulness of Pressure Management Valves (PMV) for regulating the pressure thereby increasing the efficiency of the application system recommends -

   * that RENPAP/UNIDO provide assistance to the member countries to improve the design of safer equipments and to make available PMV technology for incorporation in the most commonly used liver operated knapsack sprayers.

3. Having noted with deep concern the non-availability of appropriate personal protective clothing and the refusal of the farmers to use the existing protective clothing under adverse hot and humid climatic conditions the meeting recommends -

   * that appropriate steps be taken by the RENPAP/UNIDO to improve the packaging of pesticides to facilitate transfer to sprayer and reduce operator exposure as well as the fabric and design of personal protective clothing specially suited to the hot and tropical climatic conditions of the member countries.

4. Having noted that improved application technologies are being practiced in the developed countries namely Controlled Droplet Application (CDA), Very Low Volume (VLV) systems etc. and having further noted that these technologies significantly improve the application efficiency, reduce environmental pollution and limit exposure of the farmers, recommends -

   * that RENPAP/ UNIDO assist the member countries to adopt the CDA and the VLV systems along with the development of appropriate pesticide formulations.

5. Having noted the need for strengthening the pesticide application systems for the plantation crops in the member countries of the network the meeting recommends

   * that RENPAP/UNIDO assist the member countries in adopting improved application systems suited specifically to arable and plantation crops.

Workshop on Production of User and Environment Friendly Pesticide Formulations and Quality Control, Delhi, India - April 21-26, 1997

The Govt. of India offered the facilities created in the Institute of Pesticide Formulation Technology, which is serving as the Technical Coordinator Unit on Development of Environment Friendly Pesticide Formulation and Quality Control of the RENPAP, to host the Workshop on Production of User & Environment-Friendly Pesticide Formulation and Quality Control from April 21-26, 1997.A total of 19 expert nominees from the member Governments of the Network attended the Workshop. Besides the Govt. nominees, there were participants from the pesticide industry, pesticide Associations, etc.

The Workshop was designed to assist the member countries for strengthening capabilities of their pesticide formulation industry and the quality control inspectorate. The Workshop programme included:

* review the conventional formulations - wettable powders, emulsifiable concentrates and granules.
* development and production of new generation formulations - suspension concentrates, concentrated emulsions, micro-emulsions, wettable granules and capsulated suspensions at laboratory, pilot plant and at commercial level.
* processing techniques and need for safe packaging.
* quality assurance of pesticides through appropriate instrumental analysis.
* occupational health safety and hygiene relating to development, production and use of eco-friendly pesticide formulations.
* consideration of the question of maintaining database on information relating to production and quality control of new generation pesticide formulation.
* progress made towards implementation of the Brussels Guidelines.
* review of follow up actions taken by the member countries in respect of the various recommendations made by the previous workshops on the subject.

Workshop conclusion

The workshop provided to the delegates from member countries of the network a platform to discuss and exchange views on the latest development in the field of user and environment friendly pesticide formulations and their quality control. The workshop provided extensive knowledge and skill on the development of new generation formulations namely aqueous suspension concentrate, concentrated emulsion, micro-emulsion, water dispersible granules, micro-encapsulation etc. for ensuring safety to the worker/operators and preservation of the farmer and the environment. Having discussed the importance of bio-botanical pesticides in the context of IPM programme the meeting concluded that more emphasis be given on the development and formulation of bio-botanical pesticides for overall safety and protection of the eco-system.

Conclusion of Workshop recommendations

The delegates adopted the following recommendations to the workshop:

1. The workshop contents were fairly comprehensive and covered all aspects of formulation development, production, quality control, waste management, packaging and registration.

2. The participants expressed the desirability of longer duration of the workshop to enable them to have more time for "hands on" exercises.

3. Some of the delegates suggested that more emphasis be given on bio-pesticides and their formulations.

4. The need for a residential programme was expressed by almost all the delegates.

5. The participants felt that the future workshops may include plant visit as part of the workshop content.

6. The participants in such workshops should have adequate qualification & experience keeping in line with the content of the Workshop so that it could be gainfully utilised by the member countries.

7. Participants found the workshop very useful and they recommended that such workshops should be conducted on regular basis.

Training Workshop on Pesticide Formulation Analysis, Suweon, Republic of Korea, October 6-31, 1997.

This Training Workshop on Pesticide Formulation Analysis, jointly organised with IAEA, FAO, SIDA, was aimed to provide an introduction to the application of analytical quality control and assurance concerned with pesticide formulation analysis. The National Institute of Agricultural Science and Technology in Republic of Korea , Technical Coordinator Unit of RENPAP on this subject offered their facilities to host this IAEA / FAO / SIDA / UNIDO-RENPAP Training Workshop on Pesticide Formulation Analysis during October 6-31, 1997 in Suweon, Republic of Korea.

The Workshop was primarily designed to assist the member countries in strengthening their capabilities in pesticide formulation analysis in compliance with the principles of ISO Guide 25 by introducing related quality control and quality assurance measures and internationally acceptable analytical methodology.

The subjects discussed were : sampling, sample preparation and extraction, gas and liquid chromatography, check and calibration procedures, validation of methods, internal quality control, and proficiency tests.

Eleven nominees from member countries of the network participated in the training programme and were given hands on training during the course of the workshop.

Workshop on Production, Evaluation, Safety and Use of Bio-pesticides(*Bacillus thuringiensis*), Wuhan, P.R.China, October 26-November 3,1998.

This Workshop was the follow up of the first workshop of RENPAP on the subject to discuss issues on research and development on bio-pesticides including biotechnology, evaluation, toxicity, safety and regulatory procedures for microbial pesticides. Bt Research & Development Centre at Hubei Academy of Agricultural Sciences, Wuhan, P.R.China, hosted this Regional Workshop from October 26-November 3,1998 with the following objectives:

a. To discuss the latest advances in research and development on bio-pesticides including biotechnology.

b. To discuss about commercial production and the facilities existing / needed in the participating countries for large scale application.

c. To identify the constraints facing the increased utilisation of biopesticides

d. To apprise technologies available / needed for newer formulations of Bt based biopesticides

e. Consideration of toxicity of Bt-based pesticides and the safety measures require.

f. To discuss issues relating to harmonisation of regulatory procedures for Bt based bio-pesticides

g. To provide 'hands-on' training on various aspects of development of biopesticides.

h. To organise a sub-network among the countries for developing bio-pesticides.

i. To review the follow-up actions of the various recommendations made by the workshop in October 1995.

Eleven expert nominees from member Governments attended the Workshop and were exposed to both lectures(theory) and practicals ("hands on" training) during the course of Workshop and were trained on the various aspects of bio-pesticides production, evaluation, safety and use. As a follow up of this, India is in the process of finalising a collaborative arrangement with Bt Research & Development Centre for developing and promoting Bt based pesticides in India with the involvement of a Public Sector Enterprise and the Council of Scientific Industrial Research.

Farmer Centered Agricultural Resource Management (FARM) Programme

The Regional Coordinator, RENPAP has been instrumental in organising the successful launching of the FARM programme in September, 1993. His efforts has so far resulted in the formation of the Country Coordination Committees in India, People's Republic of China and Sri Lanka.

The FARM CTA's meeting in the Philippines particularly took note of the innovative modalities of implementation of the various activities of RENPAP through the 8 Technical Coordinator Units specialising in the various fields of importance which are :

* India - Environment and User Friendly Pesticide Formulation Technology Development/Quality Control.
* India - Data Collection and Dissemination.
* Islamic Republic of Iran - Prospecting of Raw materials.
* Indonesia - Environmental Protection through Effluent Treatment/Waste Disposal/Pollution Control.
* Malaysia - User Friendly Pesticide Application Technology Development.
* Philippines - Industrial Hygiene and Occupational Health Safety.
* Pakistan - Eco-Toxicology.
* Republic of Korea - Development of Pesticide Specifications for impurities in Active Ingredients at the manufacturing level.
* Thailand - Development of Environment Friendly Bio-pesticides and Botanical Pesticides.

This model was considered very appropriate as it not only utilises the existing infrastructural facilities of the member countries but at the same time ensures their full involvement in the various activities of the Network programme and offers an opportunity to the member countries to contribute to the Network through these Technical Coordinator Units which are being hosted by them. The other sub-programmes showed keen interest in the adoption of similar decentralised implementation of activities as it has produced good results in the RENPAP project implementation.

RENPAP has been actively participating in all the country coordination committee meeting (CCC) of the network member countries and at the demonstration sites of the FARM programme, RENPAP is providing inputs in the form of training farmers on safe use and safe handling of pesticides and also advising of availability of safer pesticide products for pest control including bio-pesticides and botanical pesticides.

The Regional Coordinator also continues to function as the Convenor/Coordinator of the Country Coordination Committee of the FARM Programme in India. This effort has resulted significant contribution from the Govt. of India for the effective implementation of the 7 sub-programme activities at 4 selected sites and has brought in close linkage between the 7 sub-programmes of FARM programmes thereby bringing in greater benefits to the watershed farming community.

TCDC CONCEPT IN ACTION

RENPAP has been an ardent follower of the TCDC concept and had been recruiting majority of experts from within the region for various workshops/ training programmes. The spin off effects of the RENPAP have given birth to a number of country programmes in the People's Republic of China, India and Pakistan and are a good example to express TCDC concept in action. The Country Project - Sustainable Pest Control and Fertility Management Programme - CPR/91/120 has been successfully monitored by the Regional Coordinator, RENPAP in his capacity as Programme Management and Technical Adviser for ensuring transfer of technology within the region while utilising the RENPAP as the conduit and has been recognised by the UNDP authorities as a good model of deployment of TCDC concept.

END OF THE PROGRAMME SITUATION

As outlined in the programme the main beneficiaries would be the resource poor farming communities of the watershed upland and rainfed low lands.The pesticide industries and the member governments would be benefitted from the various outputs of the projects aimed at providing safety and for protecting the environment. The farming community would be provided with user and environmentally friendly crop protection products.

At the end of the programme, the followings are being benefitted from the programme:

i)The farmers are benefitting from the availability of safer, low volume user and environmentally friendly pesticides including the bio-pesticides and botanical pesticides.

ii)The industry is benefitting through the adoption of cleaner and less hazardous technologies and products.

iii)The regulatory agencies are benefitting from the norms of permissible limits of toxic chemicals in the environment being developed and harmonised for enforcement for the purpose of environmental protection.

iv)The member countries are being assisted in their programmes of environmental protection while increasing agricultural production at the same time through appropriate protection of crops.

CONCLUSION

The RENPAP programme with its largest network covering 15 member countries of the Asia Pacific region namely Afghanistan, Bangladesh, People's Republic of China, India, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Republic of Korea, Islamic Republic of Iran, Sri lanka, Thailand and Vietnam, has succeeded in creating perceptible inpact towards the regeneration of the environment, providing safety to the farmers and the workers of the production centres and at the same time enhancing food security. Through its decentralised activities at the TCUs, RENPAP has been able to achieve its targets with the feeling of "ownership of the programmes" by the member countries. The spin off effects of the RENPAP has resulted in generation of country programmes in P.R.China, India and Pakistan. A new country project in India entitled "Technical Support fot Production and Development of Neem Products as Environemnt Friendly Pesticides" has been developed and promoted by the RENPAP programme during the sixth cycle of UNDP.

The overall status of the RENPAP programme can be summarised as follows:

i)The importance and the vital role of RENPAP Network has been fully recognised by member countries, the UN agencies and other international organisations and the NGOs including the pesticide industry. The RENPAP Network is aimed to bring cooperation among the developing nations and especially it encourages sharing of the scarce resources.

ii)To achieve the objectives of the programme RENPAP conducted 13 regional workshops organised at various TCU hosted by the member countries.

iii)The project also completed activities relating to imparting individual training to 8 expert nominees from the Network member countries.

iv)There are 18 published reports all related to RENPAP activities. Copies of these reports were distributed to member countries and UN associate agencies and in special cases sent to other agencies which have interest in RENPAP activities.

v)The Network helps to instil a fruitful collaboration between the member countries, with the poorest of the developing countries (LDC Group) benefitting the most from the more technologically advanced countries of the Network (WDC Group).

WORKPLAN AS AGREED FOR RAS/93/061 - RENPAP
SAFE PESTICIDE PRODUCTION AND INFORMATION FOR ASIA AND THE PACIFIC
1998 - 1999

GROUP TRAINING (All Countries)			INDIVIDUAL CONSULTANCY (In support of Group Training		GROUP MEETING		INDIVIDUAL TRAINING/STUDY TOUR	
Subject	Provision	Venue	Subject	Provision	Subject	Venue/Year	Requesting Country	Times/ Number
Application Technology	Aug. 98 Sept 99	Malaysia	Application Technology	1 mm 1998	CIPAC-Srilanka Philippines CIPAC	1998 1999	Iran China Indonesia Vietnam Nepal Bangladesh	Aug. 98 4/5
Workshop on User and Environment Friendly IPM Compatible Pesticide Formulation and Quality Control	Dec. 98 Nov. 99	India	User and Environment Friendly Pesticide Formulation and Quality Control	1 mm 1998	PMC Meetings PMC Meeting	Nepal Sep. 1998 Sri Lanka 1999	Iran Indonesia Korea Malaysia Thailand	Dec. 98 5
Workshop on Eco-toxicology	1999	Pakistan	Eco-Toxicology	1 mm 1999				
Workshop on Upgrading of Laboratory Facilities for monitoring pollutant in air, soil and water	May 99	South Korea	Upgrading of Laboratory Facilities for monitoring pollutant in air, soil and water	1 mm 1999			Malaysia Thailand Bangladesh	May 99 4
Workshop on Occupational Safety and Industrial Hygiene	April/May 2nd Qr. 1998 2nd Qr. 1999	Philippines	Occupational Safety and Industrial Hygiene	1 mm 2nd Qr. 1998			India China Korea Indonesia	April/ May 98 4

ANNEXURE I

GROUP TRAINING (All Countries)			INDIVIDUAL CONSULTANCY (In support of Group Training		GROUP MEETING		INDIVIDUAL TRAINING/STUDY TOUR*	
Subject	Provision	Venue	Subject	Provision	Subject	Venue/Year	Requesting Country	Time/Number
Workshop on Safe Disposal of Pesticide Waste and Safe Management of Effluents	Nov. 1998 1999	Indonesia	Safe Disposal of Pesticide Waste and Safe Management of Effluents	1 mm 1998			Korea India Philippines	Nov. 98 4
Botanical Pesticides	March 1999	Thailand	Botanical Pesticides	1 mm 1999			Sri Lanka Nepal Iran Bangladesh Vietnam Indonesia	Dec. 98 4
Biopesticides	Oct. 1998 Oct. 1999	China	Biopesticides	1 mm 1998 1 mm 1999			Philippines Indonesia Vietnam Korea Bangaldesh Malaysia India Nepal	Oct. 98 4 Oct. 99 4

WORK PLAN FOR RENPAP PROJECT

Regional Network on Pesticide for Asia and the Pacific : Cleaner Production and Environmentally Sound Management of Pesticides, Promoting Safety, Health and Environmental Protection for Risk Reduction

1999 - 2000

Group Training (All Countries)

Subject	Provision	Venu
Application Technology	May 2000	Malaysia
Workshop on User and Environment Friendly IPM Compatible Pesticide Formulation and Quality Control	2nd Week Nov. 1999 Nov. 2000	India
Workshop on Eco Toxicology	1st week Dec. 1999 Dec. 2000	Pakistan
Workshop on Upgrading of Laboratory Facilities for monitoring pollutant in air, soil and water	2nd Week Oct. 1999 Oct. 2000	Rep of Korea
Workshop on Occupational Safety and Industrial Hygiene	2nd Week April 1999 April 2000	Philippines

Individual Consultancy (In support of Group Training)

Subject	Provision

Group Meeting

Subject	Venue/ Year
CIPAC	1999
PMC Meeting PMC Meeting	Nepal Feb 99 China 2000

Individual Training / Study Tour

Requesting Country	Times/ Number
Iran China Vietnam Nepal Bangladesh Pakistan	May 2000
Iran Indonesia Korea Thailand China	Nov. 1999
India Korea Nepal	Dec. 1999
India Thailand Nepal China Vietnam	Oct. 1999
India China Nepal Pakistan	2000

ANNEXURE II

Group Training (All Countries)			Individual Consultancy (In support of Group Training)		Group Meeting		Individual Training / Study Tour	
Subject	Provision	Venu	Subject	Provision	Subject	Venue/ Year	Requesting Country	Times/ Number
Workshop on Safe Disposal of Pesticide Waste and Safe Management of Effluents	June 1999	Thailand					Sri Lanka Nepal India Iran Bangaldesh Vietnam Indonesia Philippines	June 1999
Botanical Pesticides	June 2000							
Biopesticides	Oct. 2000	China					Philippines Indonesia Vietnam Korea Bangladesh India Nepal Thailand Pakistan	Oct. 2000

Annexure III

PROCEEDINGS OF THE TRIPARTITE REVIEW MEETING - REVIEW MEETING FOR THE STRENGTHENING OF PESTICIDE DEVELOPMENT CENTRE - PHASE II - DP/IND/89/128 HELD ON 17 SEPTEMBER 1998 AT IPFT GURGAON

Present

Government of India

1. Mr. Dipak Chatterjee, Secretary (C&PC), Min. of Chemicals & Fertilizers

2. Mr. Shantanu Consul, Jt. Secy. (Chem.), Min. of Chemicals & Fertilizers

3. Mr. Sanjiv Saran, Director Chem Min of Chemicals & Fertilizers

UNDP

4. Mr. Richard Conroy, Senior Dy. Resident Representative, UNDP, New Delhi

5. Mr. Vinod Gupta, Project Officer, UNDP, New Delhi

UNIDO

6 Mr. W.S. Mamiyakkara, UNIDO Field Representative, UNIDO, New Delhi

7. Dr. S.P. Dhua, Regional Coordinator (REMPAP) & Chairman Institute of Pesticide Formulation Technology (IPFT)

CSIR

8. Dr. S. Iyengar, Scientist G, Indian Institute of Chemical Technology, Hyderabad

Hindustan Insecticides Ltd.

9. Mr. Rajinder Mohan, Chairman & Managing Director, Hindustan Insecticides Ltd., New Delhi

10. Mr. C.C. Abraham, Director Marketing, Hindustan Insecticides Ltd. New Delhi.

Pesticide Industry Representatives

11. Mr. P.P. Dave, Pesticide Manufacturers & Formulators Association of India

12. Mr. Rajkumar Singh, Pesticide Manufacturers & Formulators Association of India

13. Mr. Deepak Shah, Managing Director, Sulphur Mills, Mumbai

14. Mr. P.M. Jadhav, United Phosphorus Ltd., Mumbai

15. Mr. K. K. Sharma, Managing Director, M/s. Gayatri Industries, New Delhi

16. Mr. Anil Rakhar, Excel Industries, New Delhi

IPFT

17. Dr. D. Sengupta, Director, Institute of Pesticide Formulation Technology (IPFT)

18. Dr. M. R. Bhateshwar, Chief, Product Development, IPFT

19. Dr. P. N. Ramdas, Manager R&D, IPFT

20. Mr. R. S. Sinha, Technical Manager, IPFT

21. Mr. V. N. Dutta, Consultant, IPFT

22. Dr. T. P. Ramdev, Assistant Regional Coordinator REMPAP

23. Dr. P. K. Patanjali, SS & CC, IPFT

The IPF meeting was preceded by the inauguration of the International trainees hostel facilities set up with the assistance of Rs. 6.00 million provided by the Government of India. This facility would meet the much needed requirements of providing residential facilities to the domestic as well as international participants of workshops training programmes hosted by the Centre. The facility also provides

for two self-contained faculty suites besides comprehensive conference facilities.

Following the inauguration of the hostel building the members of the TPR meeting visited the site identified for the construction of a state of the art laboratory building meant to house the equipment and instruments provided by the UNDP under this project primarily aimed at meeting the GLP, ISO and the NABL standards.

The members thereafter visited the formulation development laboratory to see the new technologies developed for the production of water based formulations which are user and environment friendly utilising extensively the instrumentation, the consultancy, and the training facilities provided under the project. The pilot plant demonstrated the capabilities developed by the Centre to scale up the technologies for the production of suspension concentrates and water dispersible granules upto semi-commercial level. The state of the art pilot plant facilities are enabling the Institute to transfer the technology to the industries practically on a turn-key basis. The members then visited the well equipped analytical laboratories where the analysts demonstrated the operation of the GC-MSD, HPLC, TLC, GLC etc. and explained about their actual utilisation in quality assurance, new method development for the analysis of pesticides as well as for

participation in the Round Robin Tests organised by the CIPAC, GTZ, BIS and the OPCW. The members noted that this laboratory has been accredited by the Bureau of Indian Standards and the Central Insecticides Board as a reference laboratory.

The operation of comprehensive effluent treatment plant was demonstrated by the operational staff of the Institute. This plant is being adopted as a model by the Indian pesticide industry for the treatment of effluent as an essential measure for protecting the environment. The visit was followed by TPR meeting.

TPR meeting

Initiating the TPR meeting Shri Chatterjee, Secretary, Ministry of Chemicals & Fertilizers briefly highlighted the achievements of the Institute in developing the user and environment friendly varieties of pesticide formulations. He said that the Indian pesticide industry has been sponsoring projects to develop water dispersible granule and suspension concentrates formulations both for the domestic and the export markets. He said that backed with these new formulations, the Indian pesticide industry is now in the fore-front of the exporting countries of the developing world. He said that the analytical facilities developed are helping BIS and the Indian pesticide industry towards quality assurance of the pesticide products being marketed. In this context he said that the government has decided to

provide financial assistance to set up a state of the art laboratory building meeting all international standards.

Dr. S.P. Dhua also highlighted the importance of the international and national training programmes being conducted by the centre for the training of the industry personnel, analysts and the quality control personnel for propagation of the latest know-how amongst the pesticide industries and the regulatory agencies both in India and in the 14 member countries of the Regional Network on Safe Pesticide Production and Information for the Asia and the Pacific Region (RENPAP). He mentioned that recently the Indian Institute of Technology, Delhi has approached the IPFT to jointly organise an M.Tech programme in pesticide formulation technology and that this symbolises the high standards of capabilities achieved by the centre in the field of pesticide formulation technology and quality assurance.

Mr. Richard Conroy, agreeing with the views of Mr.Chatterjee and Dr. Dhua appreciated the catalytic role being played by this centre and emphasised the need of attaining self-sustainability of this institute. He noted that with the infrastructural facilities already developed and the various services being rendered to the pesticide industry, the Centre should be able to achieve self-sufficiency in terms of meeting of the recurring costs

internationally in the field of pesticide production and export. The Managing Director of Sulphur Mills, and the senior representatives of M/s. Hindustan Insecticides Limited, M/s. All India Medical Corporation, M/s. United Phosphorus Ltd., M/s. Gayatri Industries Ltd., and M/s. Excel Industries Ltd. who have been very actively participating in the utilisation of the various outputs of the project particularly through sponsoring specific projects for development of tailor made formulations also appreciated the services being provided by the Institute.

Thereafter, the meeting discussed in detail the various observations and the recommendations made by the Evaluation Mission. The meeting noted that the project has succeeded in completing the planned activities and produced the stipulated outputs. The meeting further noted that in order to involve the project output recipient industries in the management of the Institute, the government has registered it under the Societies Act with an autonomous management structure comprising amongst others the eminent industry representatives. This step in turn has enabled the project to move steadily towards attaining self-sustainability. The meeting agreed with the observations of the evaluation mission that the linkage of this country programme with that of the Regional Network on Safe Pesticide Production and Information for Asia and the Pacific (RENPAP) has been mutually beneficial since the outputs not only benefitted India but also the other member countries of the network

institute having high potential of undertaking applied research for developing state of the art user and environment friendly pesticide formulation technologies must develop a business plan for the future, keeping in view the financial self-sustainability through the various services being offered to the industry and to the governmental agencies. He expressed his satisfaction on the standard of technological services being provided by the centre.

Mr. Nanayakkara, UNIDO Field Representative appreciated the very active participation of the private sector pesticide industry which has enhanced the utilisation of the various outputs of the Institute relating to the user and environment friendly varieties of pesticide formulation, quality control, effluent treatment etc. In this context he suggested that the Institute takes up the work of developing alternatives to nine pesticide identified by the UNEP as Persistent Organic Pollutants (POPs). He mentioned that UNIDO is pleased to be associated with this very successful project and it symbolises cooperation of the Government of India which has resulted in effective implementation of the various activities of the project.

The president of the Pesticide Manufacturers and Formulators Association of India complemented the Centre for its various achievements and the excellent services being rendered to the industry which he felt has been a big boon to the Indian pesticide industry and has enabled it to compete

having similar agro climatic conditions. In this context the meeting further noted that the UNDP's country project in China has been primarily developed on the basis of success of the country project in India. Therefore, it was observed that the India project has become the role model for developing similar projects in RENPAP member countries.

The meeting considered in-depth the various observations and recommendations made by the evaluation mission. The meeting recommended that the Institute may immediately take up with the Ministry of Agriculture for getting accredition of the Institute for the development of the required data for registration of the formulation so that it could offer a comprehensive formulation processing package to the industry which would include the formulation know-how, scale up of the formulation in the pilot plant and laboratory and field studies to develop the data required for the registration. This would enable the Institute to generate more income as the industry would benefit significantly by getting a comprehensive package of pesticide formulation including the registration.

Conclusion

Having noted the significant support being given by the Govt. of India to the project for the construction of a state of the art building and having further noted that the project has been converted into a society with an autonomous management structure involving the recipient industry [illegible] and further having

of the Evaluation Mission to replace the old and out dated equipment with the new ones, the meeting decided to accept this recommendation. The Secretary (C&PC), Government of India suggested that keeping in view the fact that the Government of India would be contributing funds for the construction of the new laboratory building it would be appropriate if the UNDP could consider bearing the entire cost of the equipment component. It was agreed that the Director of the Institute would furnish full list of equipment along with the spedifications and that necessary project revision will be carried out to include an amount of US $ 600,000 as well as to extend the project upto March 1999 to enable completion of the procurement and commissioning of the identified equipment to replace the old and out-dated equipment.

SUMMARY OF TERMINAL TRIPARTITE REVIEW REPORT	Bring-up date November 1998

PART A:

Date and Place of Review:
November 6, 1998 at CICETE

1. Programme No & Title

CPR/91/120 - Sustainable Pest Control and Soil Fertility Programme
(This programme consists of 3 projects)

2. Agenda of Review

- Report by Project NPDs and CTA's and review of the achievements of the immediate objectives and outputs of each project produced;
- Report by the Programme NPD and PMTA and review of the achievement of the programme objectives;
- Report of the Evaluation Mission;
- Comments of the UNDP/UNIDO and FAO;
- Summary by the programme executing agency CICETE.

3. Conclusions of the Review Concerning

(a) Follow-up of previous review

According to the decision made by the fifth TPR meeting on 20 October 1997, all the activities of the three projects should be completed by the end of December 1998. The minutes of previous review were confirmed.

(b) Programme and Project Design

The TPR meeting considered the design of the programme including three projects and concluded that these remain as appropriate now at the termination of the programme as it was at the time of the approval since the attainment of the outputs meet China's Agenda 21 priority framework, namely capacity building for sustainable development, agriculture and cleaner production and environment protection. The programme also meets the UNDP's priority areas of

rural economic development, industrial productivity and quality of life: self-reliance in terms of indigenous technological development and increased self-sufficiency for agro-chemical products and; the transfer of technology in agro-chemicals normally closely held for commercial reasons.

(c) Attainment of project outputs and objectives

The respective National Project Directors, CTAs and the PMTA of the three projects reported the progress of the various activities and the achievements of the objectives and the outputs. The Terminal Evaluation Mission, which was carried out during 18 October and 6 November, was required to present their assessments for the programme. All parties considered that the programme as successful as it has achieved all the objectives and the outputs.

The programme has resulted in developing of the new technologies based on concepts clearly understood and appreciated with incremental working capital equipment ensuring positive results. In a short span of time the programme has addressed both food security and income generation at the household level alleviating the labour demands based upon women members of the household. In the process, the programme, has effectively addressed the environmental concerns. The new pesticide formulation development and registered for commercial production were water based substitutes for toxic, organic solvents and petroleum based formulations. The programme developed mechanically strong catalyst carriers containing significantly less heavy metals namely nickle and cadmium resulting in reduced environmental pollution. The programme developed balanced fertilizer packages and providing these to the farmer for maximizing crop yield with minimum use of N, P&K and reducing the nitrate pollution of ground water which was rampant prior to the implementation of the programme. The programme has effectively addressed public health with the development of user friendly water based pesticide formulations which are far safer to the farmers to handle and would lead to significant reduction in deaths attributed to pesticide poisoning.

The richness of the programme approach adopted for the first time in China through this programme which has also effectively harnessed the TCDC concept with the integrated involvement of the regional programme RENPAP. Through this programme, China was acting as an initiator of the RENPAP and playing the role as a conduit for the transfer of technology and training to strengthen the regional programme activities and with the attainment of the programme objectives, helping to spread the products and technologies to the participating member countries of the network in the Asia Pacific region. This is a good model developed in the UN system. The programme as a whole has propelled an integrated development model encompassing social, economic and environmental with concomitant capacity building which is the core of the UNDP objectives. All parties also appreciated the excellent linkages built up between the UNDP, FAO and the UNIDO as well as the project authorities of the three projects for successfully inter-linking the activities at the field level.

The evaluation mission has assessed the programme as successful as it has achieved all the objectives and the outputs. The results achieved by the three projects under the programme would indicate that the approach adopted in the programme document has been successful and that the resource allocated have been well utilized. The programme has benefited the recipient

organizations namely NSCC, TRICI and the NATC in MOA as it has enhanced the capability of the R&D facilities of these three organizations with the focus on skill development and related specialized equipment. The programme has benefited the producers with the development of more effective and safer agro-chemicals resulting in improved production and lower crop loss. The pesticide and fertilizer manufacturing industry has benefited from technology advances that provided expanded market opportunities and lowered production costs for nitrogenous fertilizers and new pesticide formulations. Industrial workers especially in the pesticides sector, also benefited from less hazardous pesticides. The mission opined that the general public has benefitted under the programme from increased food production, a safer work place and a better environment.

For dailed information see the three PPER prepared by NPDs and the draft evaluation report prepared by the evaluation mission.

(d) Follow – up of the programme

All parties considered that the three recipient organizations have increased the level and scope of their technical abilities. All three have instituted research and development programme that should continue beyond the project's time frame. The Evaluation Mission recommended a second phase either through unilateral/bilateral funding and/or the FAO/UNIDO Trust Funding with UNDP administrative support. The second phase should be the consolidation phase which would identify appropriate structure under which the products developed by the programme could be disseminated nationally.

(e) Decisions and Management Actions to be taken when and by whom?

1. The TPR concluded that the programme has been successful in achieving -

- increased efficiency of pesticide formulation to improve crop protection, reduced pesticide wastage, public health protection and alleviating environmental damage;
- enhanced technological capability for development of catalyst carriers to improve productivity of nitrogenous fertilizer production;
- establishment of models of balanced fertilization to improve crop production and reduce ground water pollution from excessive use of nitrogenous fertilizers.

The programme has, therefore, successfully addressed a few key problems in food security largely benefiting the farming community and reducing environmental damage.

2. The TPR further concluded that

- the programme approach adopted for the first time in China through this programme has been successful;

- the programme design based on practical field experience of the UNDP inhouse personnel has turned out to be appropriate;

- the programme has extensively availed TCDC through the comprehensive involvement of the Regional Programme RENPAP with its facilities and expert resource base in India thereby making it a reality of developing a country programme with the total involvement of experts from two largest countries of Asia - India and China and is a good example to emulate for similar programmes in the future;

- The TPR also concluded that a programme of this magnitude and nature necessitates comprehensive monitoring through a Programme Steering Committee with active involvement of NPDS, CTAs and the programme NPD and programme CTA and the success achieved in this programme is a pointer of the appropriateness of the system adopted.

3. The TPR observed that having developed skilled personnel backed by the state of the art laboratories and pilot plants and successfully producing water based pesticide formulations, industrially acceptable quality catalyst carriers and economically sound balanced fertilization models, a follow-up phase is essential to take advantage of the momentum gained in the programme. Accordingly it recommended that a programme document may be worked out by the PMTA for seeking funding from donor agencies / countries jointly by the UNDP, UNIDO, FAO and CICETE for the much needed follow-up phase. An alternative document may also be simultaneously prepared as a standby facility in the event of non-availability of adequate funds from the donor sources.

4. The TPR concluded that the success of the programme should be attributed to the excellent team work between experts and project authorities, to the good cooperation between project authorities and UN agencies.

4. In-depth evaluation needed	5. Performance evaluation report available	6. Comments received on it before review from		
		Ex. Agency	Govt.	Reg. Bureau
Yes/No*	Yes/No*	Yes/No*	Yes/No*	Yes/No*

List of Participants

Name	Title	Agency
Government/Project		
Mr. Hong Chuanyi	NPD of CPR/91/120 & CPR/91/121	NSCC
Mr. Zhou Lianjiang	NPD of CPR/91/122	TRICI
Ms. Ji Wenfan	Asst. NPD of CPR/91/122	TRICI
Mr. Xue Quanshan	Project Officer, CPR/91/122	TRICI
Ms. Xing Wenying	NPD of CPR/91/123	MOA
Mr. Chen Shoulun	Project Officer, CPR/91/123	MOA
Mr. Xu Fangjun	Dept. of Intl. Coop-	MOA
Ms. Zheng Youzhu	Division Chief	MCI (former)
Mr. Li Fengshan	Dy. Chief, Foreign Aff. Dept.	SAPCI
Ms. Mei Hongjin	Officer, Foreign Aff. Dept.	SAPCI
CICETE		
Mr. Ming Yalin	Division Chief	CICETE
Ms. Tan Huiqin	Programme Officer	CICETE
UNDP		
Mr. He Jin	Asst. Res. Rep.	UNDP
Ms. Guo Ruixiang	Senior Programme Officer	UNDP
UNIDO		
Dr. Ulstan Calzer	Director, SES/PEM	UNIDO
Mr. B. Sugavanam	UNIDO Country Director	UNIDO
FAO		
Mr. Sun Yinghong	Programme Officer	FAO
Consultants		
Dr. S.P. Dhua PMTA	UNIDO	
Mr. D.A. Knowles	CTA of CPR/96/121	UNIDO
Mr. J.A. Moulijn	CTA of CPR/91/122	UNIDO
Mr. Xu Xiaoding	Dept. CTA of CPR/91/122	UNIDO
Mr. Chuah Hong Hee	Consultant, CPR/91/122	FAO
Mr. Doug Penny	CTA of CPR/91/123	FAO
Mr. Roger Lough	Evaluation Mission	UNDP
Ms. Zhao Yufen	Evaluation Mission	CICETE
Mr. Y.J. Wehelie	Evaluation Mission	FAO

Annexure V

Status of activities

Activities scheduled in the project document*	Original scheduled starting date	Original scheduled completion date	Actual or current estimated starting date	Actual or current estimated completion date	Comments (explain reasons for any major delays)
A. WORKSHOPS					
1. Workshop on Application Technology, Malaysia	20-9-93	25-9-93	20-9-93	25-9-93	Completed
2. Workshop on Ecotoxicology Pakistan	26-3-94	31-3-94	26-3-94	31-3-94	Complted
3. Workshop on Biobotanical Pesticides, Thailand	1-9-94	3-9-94	1-9-94	3-9-94	Completed
4. Workshop on Data Collection System, Thailand	9-9-94	10-9-94	9-9-94	10-9-94	Completed
5. Workshop on Industrial Hygeine and Occupational Health and Safety Philippines	5-12-94	9-12-94	5-12-94	9-12-94	Completed
6. Workshop on User and Environment Friendly IPM Compatible Pesticides Formulation & Quality Control India	20-2-95	25-2-95	20-2-95	25-2-95	Completed
7. Workshop on Upgrading of Laboratory Facilities for Monitoring Pollutants in Air, Soil and Water South Korea	13.5.96	13.5.96	-	-	Completed
8. Workshop on Preservation of Environment through Proper Control of Effluent & Disposal of Wastes from the Pesticide Production Units, Indonesia	15-7-96	19-7-96	15-7-96	19-7-96	Completed
9. Workshop on Safe Application of Pesticide : Pesticide Application Technology, Malaysia	23-9-96	28-9-96	23-9-96	28-9-96	Completed
10. Workshop on Production of User & Environment Friendly Pesticide Formulation & Quality Control	21-4-97	26-4-97	21-4-97	26-4-97	Completed
11. Training Workshop on Analysis of Pesticide Formulation	6-10-97	31-10-97	6-10-97	31-10-97	Completed
12. Workshop on Production, Evaluation Safety & Use of Bio-pesticides (*Bascillus thuringiensis*)	25-10-98	3-11-98	25-10-98	3-11-98	Completed
13. Workshop on Safe Use of Pesticides by FAO, India	1999	1999	-	-	To be decided
14. Workshop on Industrial Hygeine and Occupational Health and Safety Philippines	Feb.99	Feb. 99			To be completed
15. Workshop on Upgrading of Laboratory Facilities for Monitoring Pollutants in Air, Solid and Water South Korea	1999	1999			To be decided by UNIDO in consultation with Govt. of Korea
16. Workshop on User and Environment Friendly IPM Compatible Pesticides Formulation & Quality Control India	March 99	March 99			To be held in March 1999
17. Workshop on Eco-toxicology Pakistan	1999	1999			To be decided by UNIDO in consultation with Govt. of Pakistan
18. Pesticides Waste & Safe Management of Effluent, Indonesia	1999	1999			-do- with Govt. of Indonesia
19. Workshop on Bio-botanical Pesticides, Thailand	2000	2000			-do- with Govt. of Thailand

Status of activities

Activities scheduled in the project document*	Original scheduled starting date	Original scheduled completion date	Actual or current estimated completion date	Actual or current estimated completion date	Comments (explain reasons for any major delays)
B. PROJECT MANAGEMENT					
20. Meeting					
21. PMC Meeting in India	6-10-93	8-10-93	6-10-93	8-10-93	Completed
22. PMC Meeting in China	27-10-94	29-10-94	27-10-94	29-10-94	Completed
23. PMC Meeting in Vietnam	4-12-95	6-12-95	4-12-95	6-12-95	Completed
24. PMC Meeting in Nepal	18-1-99	20-1-99	18-1-99	20-1-99	To be completed
25. PMC Meeting	2000	2000			
C. CIPAC MEETINGS					
26. CIPAC Meeting in Baltimore, USA	July 94	July 1994	July 1994	July 1994	Completed
27. CIPAC Meeting in Cyprus	May 1995	May 1995	May 1995	May 1995	Completed
28. CIPAC Meeting in P.R.China	May 1996	May 1996	May 1996	May 1996	Completed
29. CIPAC Meeting in York, UK	July 1998	July 1998	July 1998	July 1998	Completed
D. EXPERTS/CONSULTANTS					
30. Expert on Application Technology Malaysia	13-9-93	6-10-93	13-9-93	6-10-93	Completed
31. Expert on Eco-Toxicology, Pakistan	25-3-94	31-3-94	25-3-94	31-3-94	Completed
32. Expert on Bio-Botanical Pesticides	1-9-94	3-9-94	1-9-94	3-9-94	Completed
33. Expert on Pesticide Poisoning Philippines	5-12-94	9-12-94	5-12-94	9-12-94	Completed
34. Expert on Occupational Safety and Industrial Hygiene, Philippines	5-12-94	5-12-94	5-12-94	5-12-94	Completed
35. Expert on Formulation Technology, India	20-2-95	25-2-95	20-2-95	25-2-95	Completed
36. Expert on Analytical Chemistry South Korea	13-5-96	18-5-96	13-5-96	18-5-96	Completed
37. Expert on Analytical Chemistry South Korea	9-5-96	18-5-96	9-5-96	18-5-96	Completed
38. Expert on Waste Disposal Indonesia	15-7-96	19-7-96	15-7-96	19-7-96	Completed
39. Workshop on Waste Disposal Indonesia	10-7-96	19-7-96	10-7-96	19-7-96	Completed
40. Expert on Application Technology, Malaysia	23-9-91	28-9-96	23-9-96	28-9-96	Completed
41. Expert on Application Technology Malaysia	18-9-96	28-9-96	18-9-96	28-9-96	Completed
42. Expert on Formulation Technology India	21-4-98	26-4-98	21-4-98	26-4-98	Completed
43. Expert on Formulation Technology India	21-4-98	26-4-98	21-4-98	26-4-98	Completed
44. Expert on bio-pesticides	25-10-98	3-11-98	25-10-98	3-11-98	Completed
45. Expert on Ecotoxicology Pakistan	1999	1999			

Status of activities

Activities scheduled in the project document*	Original scheduled starting date	Original scheduled completion date	Actual or current estimated starting date	Actual or current estimated completion date	Comments (explain reasons for any major delays)
46. Expert on Waste Disposal Indonesia	1999	1999			
47. Expert on Pest Control Operations, Sri Lanka	1999	1999			
E. INDIVIDUAL TRAINING/STUDY TOUR					
48. Residue Analysis					
49. Virus Insecticides for Vietnam at Thailand	1-7-93	30-7-93	1-7-93	30-7-93	Comp
50. Fungus and Bacterial insecticides for Vietnam at Thailand	1-7-93	30-7-93	1-7-93	30-7-93	Completed
51. Training on Registration and Post Registration of Pesticides for Experts from Sri Lanka at Malaysia	27-9-93	9-10-93	27-9-93	9-10-93	Completed
52. Training on Residue Analysis from Vietnam at Thailand	Nov. 93	Dec. 93	Nov. 93	Dec. 93	Completed
53. Training on Formulation Technology for two experts from China at IPFT India	Dec. 93	Dec. 93	Dec. 93	Dec. 93	Completed
54. Training on Formulation Technology for two experts from Iran at IPFT India	5-7-94	16-7-94	5-7-94	16-7-94	Completed
55. Training on Residue Analysis for two experts from Iran at Thailand	17-7-94	18-8-94	17-7-94	18-8-94	Completed
56. Training on Formulation Technology for two experts from China at IPFT India	13-2-95	12-3-95	13-2-95	12-3-95	Completed
57. Training on Safe Use of Pesticides for Afghanistan					
58. Training on**					
i) Residue Analysis	13-5-96	18-5-96	13-5-96	18-5-96	Completed
ii) Quality Control	13-5-96	18-5-96	13-5-96	18-5-96	Completed
iii) Safe Use of Pesticides for Bangladesh	13-5-96	18-5-96	13-5-96	18-5-96	Completed
59. Training on Disposal of pesticides for Myanmar	15-7-96	19-7-96	15-7-96	19-7-96	Completed
60. Training on Disposal of Pesticide for Sri Lanka	-	-	-	-	-
61. Training on the following for Pakistan a) Ecotoxicology b) Waste Disposal	13-5-96	18-5-96	13-5-96	18-5-96	Completed
62. Training on Environment Toxicology for South Korea	13-5-96	18-5-96	13-5-96	18-5-96	Completed
63. Training on formulation of Biological & Botanical Pesticides for Thailand	31-10-95	9-11-95	31-10-95	9-11-95	Completed
64. Training on Formulation Analysis for Vietnam	20-2-95	25-2-95	20-2-95	25-2-95	Completed
65. Individual Training on Biological & Botanical Pesticides for Vietnam	31-10-95	9-11-95	31-10-95	9-11-95	Completed

Status of activities

Activities scheduled in the project document*	Original scheduled starting date	Original scheduled completion date	Actual or current estimated starting date	Actual or current estimated completion date	Comments (explain reasons for any major delays)
66. Training on Application & User Environment Friendly formulation for Vietnam	20-2-95	25-2-95	20-2-95	25-2-95	Completed
637 Training on Effluent Treatment System for Vietnam	15-7-96	19-7-96	15-7-96	19-7-96	Completed
68. Training on Workers Occupational Safety & Air Monitoring for Malaysia	5-12-94	9-12-94	5-12-94	9-12-94	Completed
69. Training in Pesticide Poisoning & Workers' Exposure for Sri Lanka	5-12-94	9-12-94	5-12-94	9-12-94	Completed
70. Training on Use of PPE/Safety for Sri Lanka	23-9-96	28-9-96	23-9-96	28-9-96	Completedleted

Annexure VI

Technical co-operation personnel

National recruited professional project personnel

Post No.	Post title	Name, sex and nationality of incumbent	Entry on duty (date) Sched.	Actual	Departure(date) Sched.	Actual (est)

Not Applicable

Internationally recruited professional project personnel*

Post No.	Post title	Name, sex and nationality of incumbent	Entry on duty (date) Sched.	Actual	Departure(date) Sched.	Actual (est)
1.	Expert on Application Technology Malaysia	Mr. Evan Thornhill (Male)British	13-9-93	13-9-93	6-10-93	6-10-93
2.	Expert on Data Collection(India)	Mr. D.Jourdain (Male) French	11-1-94	13-1-94	11-1-94	13-1-94
3.	Expert on Eco-Toxicology Pakistan	Mr.Erik K. Kirknel (Male)	24-3-94	24-3-94	31-3-94	31-3-94
4.	Expert on Biological Pesticide	Mr. R.Edward (Male) USA	1-9-94	1-9-94	3-9-94	3-9-94
5.	Expert on Biological Pesticide	Dr. Xie Tian Jian (Male) China	-do-	-do-	-do-	-do-
6.	Expert on Botanical Pesticides	Dr. Hellpap (Male)Germany	-do-	-do-	-do-	-do-
7.	Expert on Phermone	Dr. David Hall (Male) UK	-do-	-do-	-do-	-do-
8.	Expert on Formulation of Biopesticides	Mr. Guillon (Male)	-do-	-do-	-do-	-do-

Post No.	Post title	Name, sex and nationality of incumbent	Entry on duty (date) Sched.	Actual	Departure(date) Sched.	Actual (est)
9.	Expert on Data Collection	Mr.D. Jourdain (M) Franch	9-9-94	9-9-94	10-9-94	10-9-94
10.	Expert on Pesticide Poisoning	Prof.NC. Maramba (F) Philippines	5-12-94	5-12-94	10-12-94	10-12-94
11.	Expert on Pesticide Formulation, India	Mr. Roger Weckensdorf (M) Austrian	20-2-95	20-2-95	25-2-95	25-2-95
12.	Expert on Biopesticides China	Prof. Xie Tianjian (M) Chinese	31-10-95	31-10-95	9-11-95	9-11-95
13.	Expert of Analytical Chemistry	Dr. S.Y. Pandey (M) India	9-5-96	9-5-96	18-5-96	18-5-96
14.	Expert of Analytical Chemistry	Dr. B.Y.Oh (M) Rep. of Korea	13-5-96	13-5-96	18-5-96	18-5-96
15.	Expert on Effluent Treatment & Waste Disposal	Mr. Keith Johnson (M) British	15-7-96	15-7-96	19-7-96	19-7-96
16.	Expert on Effluent Treatment & Waste Disposal	Mr. A. Wahyudi (M)	15-7-96	15-7-96	19-7-96	19-7-96
17.	Expert on Pesticide App. Technology	Prof. G.A. Matthews (M) British	23-9-96	23-9-96	28-9-96	28-9-96
18.	Expert on Formulationtion Technology	Mr. W. Zsifkovits (M) Austrian	21-4-97	21-4-97	26-4-97	26-4-97
19	.Expert on Formulation Technology	Mr. Keith Johnson (M) British	21-4-97	21-4-97	26-4-97	26-4-97
20	Expert on Bio-pesticides	Prof. Xie Tianjian (M) Chinese	26.10.98	26.10.98	3.11.98	3.11.98

Annexure VII

Training

List of trainees

Fellowship training course, study tour or in-service training	Duration (months)	Name and sex of fellow If training undertaken abroad indicate country and institution of study	Started (date) Sched.	Started (date) Actual (est)	Completed (date) Sched.	Completed (date) Actual (Est)
1. Viral Insecticides (Thailand)	1 Month	Mr. Nguyen Van Hoa. (M) Vietnam	1-7-93	1-7-93	30-7-93	30-7-93
2. Fungus and Bacterial, Insecticides, Thailand	1 Month	Mr.Dinh Thi Thanh(M) Vietnam	1-7-93	1-7-93	30-7-93	30-7-93
3. Residue Analysis, Thailand	1 Month	Ms. Nguyen Thieme(F) Vietnam	Nov. 93	Dec. 93	Nov. 93	Dec. 93
4.Registration and post registration of Pesticides Malaysia	1/2 Month	Mr.G.L.M.Aponso(M) Sri Lanka	27-9-93	27-9-93	9-10-93	9-10-93
5. Formulation Technology India	1/2 Month	Mr. H. Jalali Bidgole(M) Iran	5-7-94	5-7-94	16-7-94	16-7-94
5. -do-	1/2 Month	Mr. Abdullah Sarheil(M) Iran	5-7-94	5-7-94	16-7-94	16-7-94
6. Residue Analysis,Thailand	1 Month	Mr. H. Jalali Bidgole(M) Iran	17-7-94	17-7-94	18-7-94	18-7-94
		Mr.Abdullal Sarheil(M) Iran	-do-	-do-	-do-	-do-
7. Workshop on Application Technology, Malaysia	1 Week	Mr.Pablito R. Tolenio(M) Philippines	20-9-93	20-9-93	25-9-93	25-9-93
		Paison Ratansatien(M) Thailand	-do-	-do-	-do-	-do-
		Stephen Chan(M) Singapore -do-	-do-	-do-	-do-	
		GLM A Ponso (M) Sri Lanka	-do-	-do-	-do-	-do-
		R.H.Shukla (M) India	-do-	-do-	-do-	-do-
		Teo Soon Hock(M) Singapore	-do-	-do-	-do-	-do-
		Mohd. Ali Chowdhury (M) Bangladesh	-do-	-do-	-do-	-do-
		Shahidul Islam(M) Bangladesh	-do-	-do-	-do-	-do-
		U. Myinthtay (M)Myanmar	-do-	-do-	-do-	-do-
		Jiangwui(M),China	-do-	-do-	-do-	-do-
		IK HWA Hyun (M) South Korea	-do-	-do-	-do-	-do-
		Henry M. Fronda(M) Philippines	-do-	-do-	-do-	-do-
		NGU Vinh Vien(M) Vietnam	-do-	-do-	-do-	-do-
		Sri Hadiati (M)Indonesia	-do-	-do-	-do-	-do-
		Ali Sangelaji(M) Iran	-do-	-do-	-do-	-do-

Training

Fellowship training course, study tour or in-service rtraining	Duration (months)	Name and sex of fellow If training undertaken abroad indicate country and institution of study	Started (date) Sched.	Started (date) Actual (est)	Completed (date) Sched.	Completed (date) Actual (Est)
8. Workshop on Eco-Toxi cology in Pakistan	1 Week	M.M. Srivastava(M) India	28-3-94	28-3-94	31-3-94	31-3-94
		Dr.Kawaldhari(M) India	-do-	-do-	-do-	-do-
		Md. Luqman Hakim(M) Bangladesh	26-3-94	26-3-94	31-3-94	31-3-94
		Mohd. Sayedul Haque(M) Bangladesh				
		Li Zhongchene(M)China				
		Chen Zongmao (M) China				
		Dewi Ratna Wulan(M) Indonesia				
		Abdullah Nawawi R.(M) Indonesia				
		B.Mesgaran Karimi (M) Iran				
		Naser Ojani(M) Iran				
		Yong-Hwa KIM(M) South Korea				
		Yang Won KIM(M) South Korea				
		Mohd. Yusoffbin Adon(M) Malaysia	-do-	-do-	-do-	-do-
		Ms. Nursiah Tajol Aros(F) Malaysia				
		U. Kyaw Sein(M)Myanmar				
		U. Myint Swe's (M) Myanmar				
		K.C. Bhimsen, (M) Nepal				
		Ms. R. Badan Pradhan(F) Nepal				
		Francisco Cornejo(M) Philippines				
		Elpidio Rimando(M) Philippines				
		Dr. G.K. Manuweera(M)				
		K.H. Muthikuddaarachchi (M) Sri Lanka				
		Ms. Wilawan Juengprasert (F), Thailand				
		Ms. S.Lardwerasirikul(F) Thailand				
		Nguyen Duc Trone(M) Vietnam				
9. Exper Group Meeting on Bio-Botanical Pesticides Bangkok	3 days	Dr. Miana, Pakistan(M)	1-9-94	1-9-94	3-9-94	3-9-94
		Kulip Gurtu, India(M)				
		Xie Tian Jian,China(M)				
		Ms.Aida V. Ordas, (M) Philippines				
		Yong-Chul Choi, Korea(M)				

Training

Fellowship training course, study tour or in-service rtraining	Duration (months)	Name and sex of fellow If training undertaken abroad indicate country and institution of study	Started (date) Sched.	Started (date) Actual (est)	Completed (date) Sched.	Completed (date) Actual (Est)
		Ms. Kamaliah By.(F) Hashim, Malaysia(M) M.A.Malek, Bangladesh(M) Saw Say Paw,(M) Myanmar M.M.Poosti, Iran (M)	1-9-94	1-9-94	3-9-94	3-9-94
10. Workshop on Data Collection System, Bangkok	2 days	Byung Youl Oh, Korea(M) Md. Mushtaque,Pakistan(M) Dr. V.Dinh Phu, Vientam(M) Md. S. Rahman,B'desh(M) A.K.M. Azad, B'desh(M) Ms. Huang Yunxian,China(F) Dr.Y.P.Ramdev, India(M) H.B. Mahmud,Malaysia(M) Han Yinbao,China(M) B.R.Shrestha,Nepal(M) Ms.B.Azurin-Quimpo,(F) Philippines Dr.G.K.Manuweera,(M) Sri Lanka, S.Shirzadi,Iran(M)	9-9-94	9-9-94	10-9-94	10-9-94
11. Workshop on Industrial Hygiene & Occupational Health & Safety,Philippines	5 days	Md. Abdul Malek (M) Bangladesh Md. Hasamul Haque (M) Bangladesh Yinbao Han (M) China P.N. Maji (M), India A.K. Rathi, (M), India A. Gumanti (M),Indonesia Md Mhayam (M),Indonesia Hae-Keum Lee(M)Korea Un-Whoan Park(M)Korea M.F.B.Yunus,(M)Malaysia MBA Rahman,(M),Malaysia Z.M.Win,(M) Myanmar S.W.Sein,(M) Myanmar Ch. Inayatullah(M)Pakistan LC Panganiban(M)Phl. WR De Alwis(M)Srilanka H.S.R. Perera(F)Srilanka S.Chanacharnmongkol,(F) Thailand C.Ratnasatien(F)Thailand P.T.Phong, (M)Vietnam N.V. Hau(M) Vietnam	5-12-94	5-12-94	9-12-94	9-12-94

Training

Fellowship training course, study tour or in-service rtraining	Duration (months)	Name and sex of fellow If training undertaken abroad indicate country and institution of study	Started (date) Sched.	Started (date) Actual (est)	Completed (date) Sched.	Completed (date) Actual (Est)
12. Workshop on Development and Production of User and Environment Friendly Pesticide Formulations and Quality Control, India	6 days	Qian Wei (M),China S. Huizhong,(M)China Md.F. Yunus(M)Malaysia B.Fe D Carmona(F)Phil A.L.D.Ugalino(F) Phil S. Visetson (M) Thailand B.H.Dien(M),Vietnam T. Rahayu(F),Indonesia R.Pangemanan(F)Indonesia U Saw Win,(M)Myanmar G.De Silva(M)Srilanka S.S.Park,(M), Korea K.C.Bhimsen,(M),Nepal M.S.Malek,(M),Bangladesh J.Akhtar,(M)Pakistan P. Hinger,(M)Udaipur P.K.Garg,(M)India S.S.Arora(M) India	20-2-95	20-2-95	25-2-95	25-2-95
13. Formulation Technology, India	1 month	Qian Wei (M),PR China	13-2-95	13-2-95	12-3-95	12-3-95
14. Formulation Technology, India	1 month	S.Huizhong(M),PR China	13-2-95	13-2-95	12-3-95	12-3-95
15. Workshop on Production & Quality Control of Bio-pesticides (Bascillus thuringiensis), China	10 days	Wu Zhixiong,(M)P.R.China Ye Zhengchu(M)P.R.China Zhou Wenke(M)P.R.China P.C. Rawal(M)India Taufieq M.B.(M)Indonesia Mehdi Moslem(M)Iran K.K.Seok Oh (M) Korea Monida Mohid(F)Malaysia Than Htay(F)Myanmar N.S.Upadhyaya(F)Nepal K. Ahmed(M) Pakistan M. Lumaban,(M)Philippines R.Reyes,(M)Philippines V.Wongkiatkhajorn(M)Thailand S.Kwanchai(M) Thailand T.D.Pha,(M) Vietnam	31-10-95	31-10-95	9-11-95	9-11-95
16. Workshop on Pesticide Residue Monitoring in Soil, Air & Water, Suweon,Korea	6 days	M.S.Rahman(M)Bangladesh Zhong Sulin,(M)P.R.China M.M.Srivastava(M)India Md.Natsir (F) Indonesia W.Budiono, (M) Indonesia H.J.Hidgoli (M) Iran C.J.Hyeon, (M) Korea Sawiyal Alias(M)Malaysia	13-5-96	13-5-96	18-5-96	18-5-96

Training

Fellowship training course, study tour or in-service rtraining	Duration (months)	Name and sex of fellow If training undertaken abroad indicate country and institution of study	Started (date) Sched.	Started (date) Actual (est)	Completed (date) Sched.	Completed (date) Actual (Est)
		K.M.Latt, (M) Myanmar Karan Ahad,(M)Pakistan A.Mohammad(M) Pakistan U.K.Baloch,(M) Pakistan G.T.Yatco, (M) Philippines J.M. Romualdez(F)Philippines S.Sakulthiengtrong(F)Thailand				
17. Workshop on Preservation of Environment through Proper Control Effluents and Disposal of Wastes from Pesticide Production Units, Indonesia	5 days	M.D.Hossain(M)Bangladesh A.V.N. Swamy(M) India Ananya Ray(F) India J.M.Jadhav,(M) India Abdul Rochim(M)Indonesia Y.H.Kim, (M) Korea J.H.Park, (M) Korea Saw Mooler,(M)Myanmar P.P.Manandhar(M)Nepal L.A.Salting(F) Philippines Zhang Qiming (M)P.R.China C.Ratnasatien(F)Thailand N.T.Nhung, (F) Vietnam N.C. Dinh (M) Vietnam	15-7-96	15-7-96	19-7-96	19-7-96
18. Workshop on Safe Application of Pesticide : Pesticide Application Technology, Malaysia	6 days	W. Rahman, (M)Bangladesh Han Yin Bao, (M) China Wei Jin Wang,(M) China Arun Kumar, (M)India Y.P. Ramdev, (M)India Anton Awusi, (M)Indonesia K. P. Simanjuntak(M)Indonesia Md Reza Afshari, (M)Iran Lee, Sang-Guei, (M) Korea Nam, Chang-Woo, (M) Korea Park, Unwhoan, (M)Korea Omar Muhamad (M)Malaysia S. David, (M)Malaysia K.M. Than, (M)Myanmar G.P. Valerio, (M)Philippines J.I. Calderon, (M) Phil. R. M. Babaan, (M)Phil H.R.J.T. Peiris, (M)Sri Lanka. Nguven Van Van, (M)Vietnam Pham Van Vinh, (M)Vietnam H. M. Tuan, (M)Vietnam. N.Tow Yea, (M)Malaysia Mahmood Ishak, (M)Malaysia. R. A G.Ahmad, (M)Malaysia Mokhtar Indrus, (M)Malaysia. Z.A. Tarmudi, (M)Malaysia. K. Kumaran, (M)Malaysia P. Jayaraman, (M)Malaysia Ayub Din, (M)Malaysia Md. Wahab, (M)Malaysia. Lim Chon Seng, (M)Malaysia. Tan Boon Kien, (M)Malaysia. Yap Meo, (M)Malaysia. N. Mustaffa, (F)Malaysia. Y. Bazlan Ismail, (M)Malaysia	23-9-96	23-9-96	28-9-96	28-9-96

Training

Fellowship training course, study tour or in-service rtraining	Duration (months)	Name and sex of fellow If training undertaken abroad indicate country and institution of study	Started (date) Sched.	Started (date) Actual (est)	Completed (date) Sched.	Completed (date) Actual (Est)
19 Workshop on Production of User & Environment Friendly Pesticide Formulation & Quality Control	6 days	AKM Azad(M),Bangladesh Song Jianrong(M),PR China Suresh Mohan(M), India H.Pranawa(M), Indonesia Agussetyanto(M),Indonesia Hardoyo, B.D.(M), Indonesia G.Daneshvari(M), Iran Tin Win(M), Myanmar I.P.Rijal(M), Nepal Hee-Dong Lee,(M) Korea UN-Whoan Park(M),Korea Sang-Hack Cho(M) Korea Hae-Yung Park,(M) Korea Kyew-Wanyang(M), Korea RPR Malkanthi(M) Srilanka N.Leutrakool(F),Thailand N.D. Trang(M)Vietnam	21-4-97	21-4-97	26-4-97	26-4-97
20. Training workshop on Analysis of Pesticide Formulation	26 days	W. Rahman(M),Bangladesh. Liu Shaoren(M),P.R.China. N C Goel(M), India. Abdul Rochin(M),Indonesia. Fereshteh Fazel(M),Iran. Monaida Mohid(M),Malaysia. Daw Htay Htay San(M),Myanmar. Gopa Prasad Siwakoti(M), Nepal. S.Thennakoon(F), Srilanka. Jirapan Thongyord(M),Thailand. Lai Thi Lan Huong(F), Vietnam.	6-10-97	6-10-97	31-10-97	31-10-97
21. Workshop on Production Evaluation, Safety & Use of Bio-pesticides (Bascillus thuringiensis)	10 days	M.S.Rahman(M), Bangladesh. Shantnu Consul(M), India C.S.Nautiyal(M) India T.Chellathurai(M), India P K Dabral(M), India Aung Thwins(M) Myanmar Jay Kumar(M), Nepal Sang Bum Lee(M),Korea Werner Bautista(M), Philippines Itsares Tiantad(M), Thailand N.Van Van,(M) Vietnam	26-10-98	26-10-98	3-11-98	3-11-98

Annexure VIII

Equipment

List of items with a value of more than $ US 5,000 separately

Equipment item* (Give country or origin, if already Known)	Cost Budget	Actual	Delivery date Sched	Actual(est)	Remarks
		US $			
1. IBM Computr PS/2 Model 80-386 with Accessories		9747		April 91	In good condition
2. RICOH FT-5070 Plain Papercopier		7000		March 87	-do-
3. Rank Xerox Electronic Memory Typewriter Model-645		5388		March 88	-do-
4. Ricoh Model FT-4490 Plain Paper copier		3530		June 1992	-do-
5. IBM PS/2, 77-ONA Computer with accessories		5048		July 1993	-do-
6. Computer Software with accessories		3799		July 1993	-do-
7. Calculator Casio PB 2000C PC Built in with accessories		405		July 1993	-do-
8. 1+P 2001A Laserjet series IV Printer with accessories		1790		July 1993	-do-
9. Slide Projector with Accessories		1560		Dec. 1993	-do-
10. Personal Computer(Notbook Type)		2310		Dec. 1993	-do-
11. Overhead Projector with Accessories		2080		May 1994	-do-
12. Tata Estate Car Model TATA 4830 with fittings		9500		Jan. 1994	-do-
13. IBM PS/2 Personal Computer		4024		Dec. 1994	-do-
14. UPS (2 Units)		2250		Dec. 1995	-do-

Annexure IX

Reports

Title of Report, Paper etc.	Remarks
1. Workshop on Application Technology in Malaysia	Copies of the report sent to member countries and UN Associate Agency
2. Tripartite and Project Management Committee meeting in New Delhi, India	Copies of the report sent to member countries and UN Associate Agency.
3. Workshop on Ecotoxicology	Copies of the report sent to member countries and UN Associate Agency
4. Expert Group Meeting on Policy Issues in the Region on Bio-and Neem (Azadirchita Indica) based Pesticide Development	Copies of the report sent to member countries and UN Associate Agency
5. Workshop on Pesticide Data Collection System	Copies of the report sent to member countries and UN Associate Agency
6. Tripartite and Project Management Committee meeting in P.R.China	Copies of the report sent to member countries and UN Associate Agency
7. Workshop on Industrial Hygiene & Occupational Health and Safety	Copies of the report sent to member countries and UN Associate Agency
8. Workshop on Development & Production of User and Environment Friendly Pesticide Formulations and Quality Control	Copies of the report sent to member countries and UN Associate Agency
9. Progress Report for the Safe Pesticide Production and Information Sub Programme (RAS/93/061) of the FARM programme for the period September 1993 to December 1993	Submitted to PPRR, UNDP Bangkok in connection with the Programme Steering Board Meeting.
10. The impact of the RENPAP on the policy changes and institutional development in the member countries of the network.	Provided to Dr. John Dixon, Programme Coordinator FARM
11. Workshop on Production & Quality Control of Biopesticides (Bacillus thuringiensis)	Copies of the report sent to member countries and UN Associate Agency
12. Tripartite & Project Management Committee Meeting in Hanoi, Vietnam	Copies of the report sent to member countries and UN Associate Agency
13. Progress Report for the Network on Safe Pesticide Production & Information - RAS/93/061 for the year 1995.	Provided to Dr. John Dixon, Programme Coordinator, FARM
14. Workshop on Pesticide Residue Monitoring in Soil, Air and Water.	Copies of the report sent to member countries and UN Associate Agency
15. Workshop on Preservation of Environment through Proper control of Effluent & Disposal of Wastes from Pesticide Production Units.	Copies of the report sent to member countries and UN Associate Agency
16. Workshop on Safe Application of Pesticide : Pesticide Application Technology	Copies of the report sent to member countries and UN Associate Agency
17. RENPAPGazette	Copies sent to UN agency & CIRAD & other related agencies.
18. Workshop on Production of User and Environment Friendly-Pesticide Formulation and Quality Control,	Copies of the report sent to member countries and UN Associate Agency
19. Report on Training workshop on Analysis of Pesticide Formulation	Copies of the report sent to member countries and UN Associate Agency
20. Tripartite and Project Management Committee Meeting in New Delhi, India	Submitted to UNIDO Vienna
21. Progress Report IV of RENPAP	Copies of the report sent to member countries and UN Associate Agency
22. Published RENPAP Gazette.	Copies of the report sent to member countries and UN Associate Agency
23. Workshop on Production, Evaluation, Safety and Use of Bio-pesticides (Bascillus thuringiensis)	Submitted to UNIDO Vienna
24. Progress Report V of RENPAP.(As per para 2.09 (e) of Contract No. 94/065)	Copies of the report sent to member countries and UN Associate Agency
25. Tripartite and Project Management Committee Meeting in Kathmandu, Nepal	