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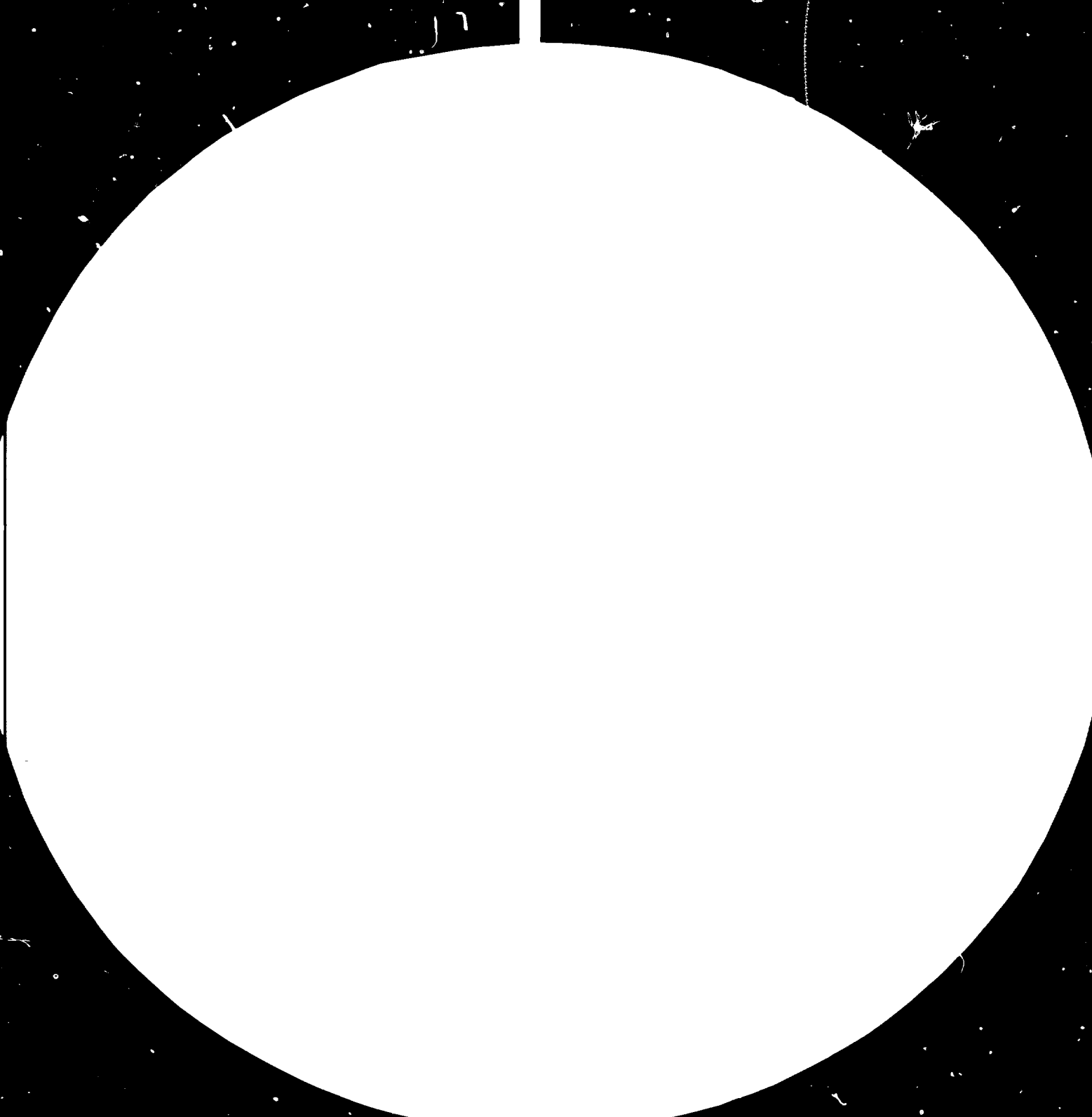
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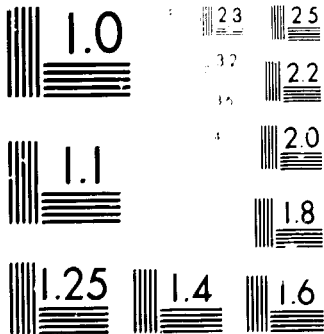
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UNDP/UNIDO Preparatory Meeting  
for the Regional Programme for Development  
and Control of Pesticides for Asia and the Pacific  
Jakarta, Indonesia, 21-26 April 1980

Report

80-39057

### Explanatory notes

Reference to dollars (\$) are to United States dollars, unless otherwise stated.

References to "tons" are to metric tons.

References to "gallons" are to British imperial gallons; one British imperial gallon equals 4.545 litres.

Besides the common abbreviations, symbols and terms, the following have been used:

DDT Dichlorodiphenyltrichloroethane

ESCAP Economic and Social Commission for Asia and the Pacific

RNAM Regional Network for Agricultural Machinery

TCDC Technical co-operation between developing countries

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Part One. Report of the Meeting

I. ORGANIZATION OF THE MEETING

The Meeting was opened by the Minister of Industry for Indonesia in the presence of the Ambassadors of the participating countries and participants.

Election of officers

The following officers were elected:

|               |                                   |
|---------------|-----------------------------------|
| Chairman      | Nico Kansil (Indonesia)           |
| Vice-chairman | R.S. Hamsagar (India)             |
| Rapporteur    | George Chan Kheng Huat (Malaysia) |

Adoption of the agenda

The Meeting adopted the following agenda:

1. Opening of the Meeting
2. Presentation of summaries of country documents
3. Consideration of the scope of a potential intercountry programme
4. Identification of the components and mechanism of an intercountry co-operative network programme
5. Recommendations

Establishment of working groups

The Meeting decided that, after listening to the country reports, it should break up into two groups:

1. To consider questions related to production and formulation
2. To deal with aspects of the marketing and control of pesticides

## II. JUSTIFICATION OF AND SCOPE FOR A REGIONAL PROGRAMME FOR THE DEVELOPMENT AND CONTROL OF PESTICIDES

The Meeting considered the feasibility of, and the need for, an intercountry approach to the development and control of pesticides in the region and found such a co-operative effort highly desirable.

It was stated that the planning and operation of pesticide production industries and the control of pesticides were complex fields. Thus, each country would gain from close regional co-operation and exchange of information. Such co-operation could also alleviate constraints, such as low production (no economies of scale), imposed by present limited markets and difficulties in long-range planning in most of the countries of the region.

Variations existed among the countries with regard to their stage of industrial development, and particularly the development of their pesticide industries but that should be an asset not a hindrance to a co-operative scheme. A free flow of information, experience, and know-how should be promoted in order to strengthen the pesticides manufacturing base in participating countries. It was felt that the programme for technical co-operation now under consideration would supplement and complement present intercountry efforts by subregional economic groupings by providing flexible and informal channels for co-ordination at the technical level.

It was generally agreed that the multidisciplinary control of developing and marketing of pesticides was an essential part of a regional network for pesticide development. Consequently, national co-ordination mechanisms were needed to ensure co-operation between the several ministries concerned.

In most countries, such mechanisms already existed although they did not always work smoothly. Those mechanisms must be reviewed on a national basis to permit any intercountry network to be effective.

The Meeting noted with interest the successful operation of the Regional Network for Agricultural Machinery (RNAAM) located at Los Banos, Philippines. It was agreed that pesticide control was much more complex and would require careful consideration of the network system to be established. It was considered that harmonization of national registration requirements would fall within the scope of the network.



Considering the scope of a potential intercountry programme, the Meeting identified the following important areas where co-operation was considered feasible and necessary although that was not intended to limit the scope of further co-operation in the field:

(a) There was a need for some countries to consider basic manufacture of certain pesticides to make them less dependent on imports, and also to utilize some of their existing resources. Since some of the countries of the region had already established technical grade pesticide production units, their experience could be made available and shared with the other countries of the region on a co-operative basis;

(b) Direct or indirect incentives that were available to industry in certain countries of the region might be studied in order to encourage the establishment of manufacturing or formulating facilities in the countries that wished to install them;

(c) In some of the countries, demand for certain individual products was not adequate to justify a full-scale manufacturing plant. Such countries could benefit from the experience and expertise of countries that successfully and safely operated multi-product plants in the region that manufactured more than one product in the same unit with better economy of scale. (Special attention was required to avoid cross-contamination in such units.) Multi-product plants offered greater flexibility in adapting them to produce other products when needed and in phasing out those not required;

(d) Intraregional co-operation was highly desirable for strengthening local skills and the technological capabilities of institutions of the participating countries in the following areas:

- (i) Preparing market surveys, feasibility studies and detailed project reports;
- (ii) Preparing, examining and evaluating basic engineering designs and tenders and related services pertaining to pesticide production;
- (iii) Providing training in quality control both for local raw materials and finished products;
- (iv) Identifying, processing, and properly utilizing locally available raw materials, carriers, and adjuvants used in formulations;
- (v) Studying and improving the safety aspects of the workers engaged in pesticide manufacture and distribution, and implementing the required safety measures;
- (vi) Preventing and minimizing environmental hazards connected with pesticide production and handling;
- (vii) Developing special formulations and combinations particularly suited to local needs of agriculture and public health and promoting maximum utilization of local materials;

(e) Scope existed for introducing recently developed formulations such as ultra-low volume concentrates, suspension concentrates (flowables) and controlled release formulations that could be promoted by co-operation and exchange of information;

(f) The harmonization of certain aspects of national registration requirements was considered necessary. International publications, such as specifications for pesticides issued by FAO and WHO, the WHO Recommended Classification of Pesticides by Hazard and publications of the Codex Alimentarius Commission, could represent valuable first steps towards harmonization. To facilitate national decision-making processes, harmonization of data presentation requirements should be considered by the network to avoid unnecessary duplication of testing;

(g) To promote uniform quality standards within the region, the network should link existing national quality control facilities based on uniform methods of analysis;

(h) The network should devote efforts to testing products using an agreed data collection system in order to prevent unnecessary duplication of efforts on a national basis;

(i) The network should establish information subnetworks covering all aspects of pesticide control and marketing such as information on registered pesticides, use patterns, prices, market surveys, poisoning incidents, hazard assessments, environmental impact studies etc.;

(j) The network should play an important role in training on aspects of the safe and effective use of pesticides, their control, and manufacture. Two types of training are indicated:

(i) Individual activities of technical experts both within a fellowship programme and within the context of a TCDC programme;

(ii) Group activities such as workshops, seminars etc. Such activities could be directed at the licensing of distributors and retailers and upgrading technological skills.

### III. IDENTIFICATION OF COMPONENTS AND MECHANISM OF AN INTERCOUNTRY CO-OPERATIVE PROGRAMME

#### Co-ordination

The Meeting concluded that the regional programme could be best implemented by the co-operation of national institutions of participating countries co-ordinated by a small United Nations expert team preferably attached to one of the leading national institutions participating in the network. The regional co-ordinating unit would have an essentially supporting role in helping national institutes or organizations to forge links with relevant national bodies and with institutions of other countries participating in the scheme. Most of the assistance to national institutions should be rendered through consultants and training designed to meet specific needs.

The regional nucleus would monitor the activities of the network and act as a clearing house for information on the development, manufacture and control of pesticides and should collect and disseminate relevant material. The regional unit should be adequately staffed to cover in the field of pesticides:

- Development and production
- Marketing and control of pesticides
- Documentation and information services

#### National institutions and organizations

Each participating country should nominate one of its existing national institutions or organizations as the focal point to be directly associated with the network and co-ordinate the activities of the programme at national level. Preferably these institutions would be engaged in industrial development or in the control of pesticides. The national focal point should involve other relevant national institutions and organizations in the programme.

The representatives of the countries participating in the Meeting suggested tentatively that the following institutions or organizations could co-ordinate the programme nationally if the respective Governments decided to participate:

- |            |   |
|------------|---|
| Bangladesh | Ministry of Agriculture, Dacca          |
| India      | Hindustani Insecticides Ltd., New Delhi |
| Indonesia  | Ministries of Industry and Agriculture  |

|                   |  |
|-------------------|--|
| Iran              | Plant Protection Organization, Ministry of Agriculture; Plant Pests and Diseases Research Institute, Ministry of Agriculture; Ministry of Industry; Iran Pesticide Production Company, Ministry of Agriculture |
| Malaysia          | Malaysian Industrial Development Authority; Pesticides Unit, Ministry of Agriculture   |
| Philippines       | Fertilizer and Pesticide Authority   |
| Republic of Korea | Institute of Agriculture Sciences, Office of Rural Development; National Agriculture Materials Inspection Office, Ministry of Agriculture  |
| Thailand          | Department of Agriculture and Co-operatives  |

#### Technical Advisory Committee

The Technical Advisory Committee would formulate the work programme and evaluate the progress of the network's work, and could advise on all technical matters concerning the project. It would be a committee of experts holding senior positions in the national institutions of the network or experts directly connected with the production, development and control of pesticides.

The committee should meet at least once a year under a chairperson elected for the session. United Nations agencies having extensive programmes and interest in the development, production and control of pesticides will also be represented on the committee.

#### United Nations support

It was felt appropriate that the programme be supported both technically and financially by UNDP in a five-year project.

#### Government follow-up

Governments in the region were fully aware of the importance of pesticides in agriculture and public health. Practically every country had assigned a special place to crop protection and vector control in their respective development plans and made budget allocations. The countries were trying to identify their most urgent needs and deficiencies in pesticide supplies. In certain countries United Nations technical assistance missions studied these problems and advised the Government. In other countries programmes for strengthening the national institutions concerned were in progress.

The Governments deciding to participate in the regional programme under consideration would expect that their participation should lead to the strengthening of their institutions to the mutual benefit of all participants.

In support of the programme the participating Governments should be ready to establish or strengthen organizations to implement project activities and appoint capable technical staff as counterpart experts, make provisions for adequate budget allocations and initiate programmes for training the necessary technical experts.

The participating Governments were also expected to allow and assure easy movement of experts, skills, know-how, technical information (e.g. specification and registration data) from one country to another on mutually acceptable terms. They would also make arrangements, in accordance with their national goals.

Part Two. Summary of country and regional reports

Bangladesh

With the creation of the separate Directorate of Plant Protection there are lots of changes in its functions especially in the field of pesticides. The pesticide trade has been handed over to the private sector. For the registration and quality control of pesticides the "Agriculture Pesticide Act" has been passed for immediate implementation. In order to carry out this responsibility, qualified technical personnel and well equipped laboratories are essential. As regards production plants, there is a DD<sup>m</sup> factory with a rated capacity of 1,500 tons of technical material and two formulation plants: the optimum annual capacity of one plant is 0.6 million gallons of liquid formulation and of the other it is 1 million gallons of liquid, 1,500 tons of wettable powder, 3,000 tons of dust and 3,000 tons of granular formulations. The procurement target at the end of the next five-year plan (1981-1985) is 22,68 tons of pesticide to cover 9 million acres of crop land, total area being 22.5 million acres.

All pesticides including technical materials, solvents, emulsifiers etc. are imported from abroad involving huge amounts of foreign exchange. Complete reliance on imported pesticides should be discouraged, and exploration and use of indigenous raw materials for manufacture and formulation of pesticides should be enhanced for the greater benefit of the country.

At the outset of the national programmes on agriculture, the Government of Bangladesh is pleased to take part in intercountry collaboration in the development and control of pesticides and requires assistance with the:

- (a) Establishment of formulation facilities using indigenous carriers;
- (b) Promotion of co-operative manufacturing programmes based on locally available botanicals, microbials etc.;
- (c) Training of personnel in respect of formulation, residue analysis, quality control, pesticide legislation etc.;
- (d) Strengthening of the present national pesticide laboratory by the installation of modern facilities.

India

Efforts have been made in India, during the last 33 years of independence, towards improving agriculture and public health through various measures including the manufacture and use of pesticides. The trend in India is to

have a balanced approach to use commodity pesticides rather than speciality pesticides. India today uses over 100 pesticides, about half being manufactured in India.

Only 40 per cent of the farming community are known to be aware of the benefit of pesticides and to use these products regularly in their agriculture. Government-sponsored programmes for the use of pesticides cover selected crop pests of national significance and include a health programme.

India requires assistance with the:

(a) Strengthening of industry based research and development (R and D) facilities with special pilot-plant formulation studies, utilizing locally available dilutents and auxiliaries.

A specific pesticides development programme has been proposed with estimated costs as follows:

|                      |                         |
|----------------------|-------------------------|
| Country contribution | \$ 72 <sup>0</sup> ,000 |
| UNDP contribution    | \$1,944,700             |

The executing government agency for the project would be Hindustan Insecticides Ltd. who would also act as the focal point for the proposed intercountry co-operation network;

(b) Strengthening of agricultural extension, training and pest surveillance-forecasting networks.

India whole-heartedly supports UNDP efforts towards intercountry co-operation and looks forward to realizing the objectives through implementation of the above schemes for India.

#### Indonesia

In the current Third Five-Year National Development Plan (PELITA III), the development priority has remained in the agricultural sector. In line with the above, priority has been given to the development of agro-supporting industries such as the fertilizer and pesticides industries.

The pesticide industry is still mostly limited to the formulation of active ingredients. The pesticide formulation industry has grown in recent years in terms of both installed capacity and the number of formulating plants and formulated products. The present installed capacity is already in excess of domestic consumption.

The Government is now promoting the backward integration of the pesticide industry, i.e. the production of active ingredients within the framework of both domestic and foreign investment, because of the growing domestic pesticide market and chemical industry. A study conducted by UNIDO in 1977 recommended the manufacture of DDT and some organophosphorus insecticides.

During the last five years, the average annual increase of pesticide consumption has been 21.2 per cent; more than 50 per cent was used in the BIMAS/INMAS Intensification Programmes.

Insecticides constitute more than 50 per cent of the pesticides consumed in Indonesia; herbicides is the second major group.

Only registered, tested and approved pesticides are allowed for production and application.

Possible areas for co-operation include the manufacture and supply of raw materials and active ingredients, exchange of information on pesticide registration, testing and application, pest management, training and quality control.

#### Iran

The pesticide industry in Iran is confined to the formulation of imported active ingredients. However, market requirements are met more by imported than locally formulated products. In view of this situation, there appears to be scope for new formulation units and new product development.

Exchange of information on production, consultation and quality standards is needed for future development.

#### Malaysia

The present situation of the pesticides industry in Malaysia is mainly one of formulation and blending. In this situation, the prerequisites to ensure successful development of this industry would have to include backward integration activities in the context of market constraints, new product development and formulation to suit local needs and assessment of impact on the environment due to these chemicals.

Consistent with the industrialization policy of Malaysia, the Government would certainly welcome an exchange of information, consultation and possible exchange of personnel regarding in-plant training with other countries. In



this respect, UNIDO and other international organizations could be the prime movers to provide the framework for co-operation.

### Philippines

Although the pesticide industry in the Philippines is entirely in the hands of the private sector, the Government has shown great interest and concern in the regulation and development of the industry. Several agencies have been created and organized to co-ordinate the different aspects of pest management and crop protection.

The Fertilizer and Pesticide Authority (FPA) is the sole agency charged with the regulation and development of the pesticide industry, with emphasis on the regulation of the import, manufacture, formulation, distribution and sale of pesticides and the registration of all pesticide formulations and active ingredients. Since 1977, FPA has licensed the following:

3,036 dealers, 22 formulators, 27 repackers, 103 importers, 53 distributors, 4 suppliers, 21 household pesticide companies and 256 certified pest control applicators as well as 491 agricultural and 90 household pesticide products.

The other government agencies involved in crop protection are:

National Crop Protection Center - responsible for research and training in pest management

Bureau of Plant Industry - through the surveillance and Early Warning Systems BPI forecasts pest incidences and through its pesticide residue laboratory it monitors pesticide residues in crops and maintains environmental quality

National Food and Agriculture Council - manages the food intensification programmes

Bureau of Agricultural Extension - implements the pest managements procedures at farm level

The total domestic supply of pesticides is estimated at \$45 million in 1977, \$55 million in 1978, and \$75 million in 1979, showing a growth rate of 10-15 per cent. Although all technical materials, except for 2, 4-D are imported, 60 per cent of the total supply comes from the local formulations.

The market has also increased at a rate of 15 per cent annually with 55-60 per cent of total turnover going to insecticides, 20-25 per cent to fungicides and 15-16 per cent to herbicides.

The Philippine pesticide industry is still in the process of development and would welcome any assistance especially in technology, raw materials, such as emulsifiers, surfactants and solvents, and training that a proposed network of intercountry resources may be able to provide in the near future.

#### Republic of Korea

The consumption of pesticides has been increasing every year because of intensive pest control causing the pesticide manufacturing industry to develop rapidly.

In particular, the facilities of local production of technical materials have been developed remarkably from the 1970s and to date there are 15 manufacturers of technical material. They produced 6,821 tons of pesticide active ingredients in 1978. There are also 17 domestic companies formulating pesticides. They produced 129,558 tons of finished product in 1978, all of which were consumed.

On the other hand, there are some problems (chemical resistance, increased product cost and pollution of environment etc.) caused by extensive use of pesticides.

Although studies on pest management have been carried out, including breeding varieties resistant to pests, the Republic of Korea still has to study many other fields, including control of pesticides, continuously and widely.

#### Thailand

Pesticides have been used extensively in Thailand mainly for crop protection and vector control. The demand has increased rapidly. These pesticides have been imported from various industrial countries therefore the money being spent for them has also increased tremendously.

In view of the present situation of pesticide use and sale in Thailand, emphasis should be on the strengthening of research to support the registration of pesticides, and the pesticide industry should be set up in the country or in the region in order to reduce the cost of importation. This can be assisted by international agencies, such as UNIDO, and the co-operation of the countries in the region.

Agricultural Requisite Scheme for Asia and the  
Pacific (ARSAP)

ARSAP is a regional programme of the Agriculture Division of ESCAP, mainly financed by the Government of the Netherlands. Its two main activities are:

(a) The setting up of a regional information service on agro-pesticides. This includes the production of country reports and ultimately a regional comparative study on agro-pesticides covering aspects such as agro-pesticides imports, local formulation, distribution system, prices at retail level, distribution of major pests, use of pesticides on major crops, existing legislation and regulations and their implementation. National studies have been initiated in almost all ESCAP countries to collect the information needed; publication is expected early in 1981;

(b) A regional training programme for pesticide dealers and retailers; this aims at developing training modules and materials based on regional needs and experiences and at training a national team of instructors in the ESCAP countries. The first training workshop will be held in Thailand (May 1980) then Bangladesh, Burma, Indonesia, Nepal, Pakistan, the Philippines and Sri Lanka will follow. Project will be completed in mid 1981.

The ARSAP/agro-pesticides activities will be carried out in close association with FAO and UNIDO. Right from the start of the programme, consideration has been given to a possible transfer (by 1981) of the economic information functions under ARSAP/agro-pesticides to a proposed regional programme for development and control of pesticides to be set up under the auspices of UNIDO in collaboration with FAO and ESCAP.

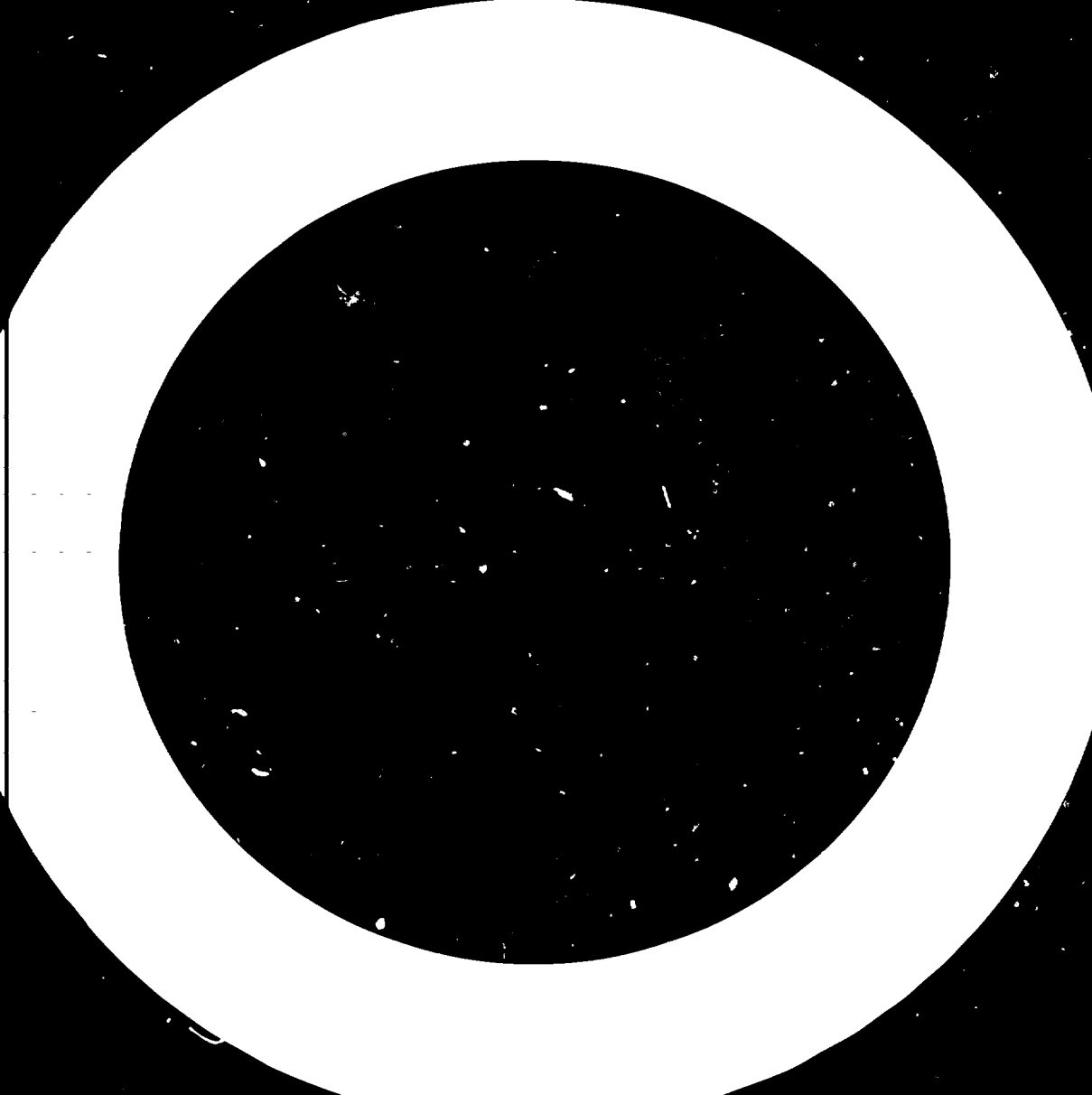
It is expected that the regional comparative study on agro-pesticides supply, distribution and use, as under preparation by ARSAP, will provide a sound data basis for the proposed regional programme.

ESCAP

The representative of ESCAP recalled the long-standing interest and involvement of ESCAP in the development of the pesticide industry in the region, as was evidenced by the survey mission organized in 1974 in accordance with the recommendation of the then Asia Industrial Development Council, and subsequently the UNIDO symposium convened at ESCAP headquarters at Bangkok in 1977 which laid the foundation for the establishment of a regional pesticides development programme.

With reference to the objectives of the present Meeting and more particularly to the network concept of national institutions, the representative pointed out as an example the successful operation of the ESCAP Regional Network for Agricultural Machinery (RNAM) located in the Philippines. Unlike past experience of activities of the regional projects, which reflected the views of the technical agencies designated as executing agencies, the ESCAP/RNAM Project had been designed to strengthen the technological and manufacturing capabilities of the participating countries. The subnetwork activities, supply of prototypes and designs, information dissemination, seminars and workshops and training programmes of RNAM have had tremendous impact on the participating countries. The feasibility of a network concept that promotes collective technological self-reliance and technical and economic co-operation had been successfully demonstrated.

ESCAP would be most interested in participating in the establishment of a similar network for pesticide development in the ESCAP region and in its successful operation.



Annex

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