



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

17483

Distr.
LIMITED

IPCT.84 (SPEC.)
16 May 1989

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ORIGINAL: ENGLISH

Expert Group Meeting
on the Pesticides Industry -
Follow-up to the Regional Consultation
on the Phosphatic Fertilizers and
Pesticides Industries in Africa.

Balatonalmádi (Hungary), 19-21 April 1989

REPORT *

* This document has not been edited.

V.89-55518

Preface

1. The Second General Conference of the United Nations Industrial Development Organization (UNIDO), held at Lima, Peru, in March 1975, recommended that UNIDO should include among its activities a system of continuing consultations between developed and developing countries with the object of raising the developing countries' share in world industrial output through increased international co-operation. The General Assembly, at its seventh special session in September 1975, endorsed the recommendation and requested UNIDO to implement it under the guidance of the Industrial Development Board.

2. In May 1980, the Industrial Development Board decided to establish the System of Consultations on a permanent basis, and in May 1982 it adopted the rules of procedure (the System of Consultations, PI/84) according to which the System of Consultations was to operate, including its principles, objectives and characteristics, notably:

The System of Consultation shall be an instrument through which the United Nations Industrial Development Organization (UNIDO) is to serve as a forum for developed and developing countries in their contacts and consultations directed towards the industrialization of developing countries;

The System of Consultations would also permit negotiations among interested parties at their request, at the same time as or after consultations;

Participants of each member country should include officials of governments as well as representatives of industry, labour, consumer groups and others, as deemed appropriate by each government;

Each Consultation meeting shall formulate a report which shall include conclusions and recommendations agreed upon by consensus and also include other significant views expressed during the discussions.

3. Thirty-six Consultations have been convened since 1977 covering agriculture machinery, building materials, capital goods, fertilizers, food processing, industrial financing, iron and steel, petrochemicals, pharmaceuticals, leather and leather products, training of industrial manpower, vegetable oils and fats, and wood and wood products.

4. Through Consultations, "UNIDO has set up a forum for developed and developing countries dedicated to the industrialization of developing countries. This forum has served to identify obstacles to industrialization and has considered these obstacles from a policy, economic, financial, social and technical point of view. This forum has also been used to monitor trends in world industry, with the result that a number of action-oriented measures towards increasing the share of developing countries in world industrial production have been identified and in some cases implemented. These measures have included policy changes on the part of developed and developing countries, new forms of international industrial co-operation, new concepts for entry into specific industrial sectors; and in addition, technical assistance projects of an innovatory type have been identified and implemented by the relevant arms of the Secretariat." (ID/B/341).

5. The Industrial Development Board, at its second session in October 1986, decided to include the Regional Consultation on Phosphatic Fertilizers and Pesticides Industries in Africa in the programme of Consultation meeting for the biennium 1988-1989.

CONTENTS

	<u>Paragraphs</u>	<u>Page</u>
Preface	1 - 5	2
INTRODUCTION		4
CONCLUSIONS AND RECOMMENDATIONS		5
<u>CHAPTER</u>		
I. OBJECTIVES OF THE MEETING.....		7
II. SUMMARY OF DISCUSSIONS.....		7
III. TECHNICAL VISITS.....		9
<u>ANNEXES</u>		
I. List of participants		10
II. Agenda		11

Introduction

Pesticides are of primary importance to the solution of the food problem. The use of pesticides in the developing countries is very low, well under that required for reducing the losses caused by pests to an acceptable level. The formulation and manufacturing of the plant protection agents is even more inadequate. The existing facilities in the developing countries face serious safety, environmental, health, technical and economic problems. Capacity underutilization is also plaguing many countries formulation plants.

The rapid development in the field of the new compounds and methods of plant protection, the new researches in the biological protection field demand reassessment of the role and future of the chemical agents. The developing countries need learned guidance in the elaboration of their future development plans, advice on the feasibility of investments in this field.

Legitimate fears of problems arising from environmental, safety and health cast serious doubts on the rationality of the use and manufacturing of pesticides. International co-operation is needed to elaborate and implement world-wide standards for the safe and efficient manufacturing, formulation, handling and application of the pesticides.

The Regional Consultation on the Phosphatic Fertilizers and Pesticides Industries in Africa held at Yamoussoukro, Côte d'Ivoire from 12 to 16 December 1988 reached the following conclusions and recommendations with respect to the pesticides industries:

- There is a need for collection and exchange of information between the countries of the African region. This information system should cover areas like registration procedures, sources of supply, trade usage, technologies available, production, and safety aspects. It was recommended that establishment of an African Regional Network should be considered on the lines of the Fertilizer Advisory Development and Information Network for Asian and the Pacific (FADINAP) and Regional Network for Production, Marketing and Control of Pesticides for Asia and the Pacific (RENPAF) and there must be a close liaison established with these institutions to draw maximum advantages from their experiences.

- UNIDO and other UN specialized agencies may be called upon to assist in the preparation of guidelines on various steps of handling, distribution and advisory services related to pesticide production and quality control based on the experiences gained on the national and regional levels.

- Expert group meetings should be convened by UNIDO to exchange information and experiences in various aspects related to the usage and production of pesticides.

- It was recognized that in order to develop the use and hence the manufacture of pesticides in developing countries the existing infrastructure of marketing, distribution and extension services need to be strengthened. It was also recognized that farmer co-operatives could play an important role in this respect. Policy planners and governments need to review the pricing policies and to introduce subsidies and/or credit facilities for farmers.

- The low capacity utilization of existing plants was mainly on account of low consumption level. It was recommended that conducive government policies, better farmer training and education and promotional schemes were necessary. Steps in this direction need to be initiated.

- National governments should ensure that new production facilities are established based on detailed feasibility studies and taking into account emerging new technologies relevant to their needs. In this regard assistance of UN agencies should be available.

- Sub-regional co-operation should be energetically pursued to improve higher productivity of operating pesticide plants. It was recommended that United Nations Agencies should assist the requesting countries in this regard.

- It was felt that there is a strong need for the development of local manpower in the following areas:

Production and quality control;
Marketing and distribution;
Application and efficient usage and
Safety

- It was recommended that workshops should be organized to facilitate training of manpower. Full advantage of assistance offered by developed countries should be taken. Furthermore, utilization of experts from developing countries with similar experience in development, production and efficient use of pesticides to promote technical co-operation among developing countries (TCDC) should be encouraged.

- It was concluded that registration procedures are the backbone for safe and proper use of pesticides. It was recommended that developing countries should therefore introduce adequate registration procedures along the lines of those of FAO and other pioneering organizations engaged in the development of environmental safety norms. It was further recommended that UNIDO and FAO should assist on specific requests from developing countries in this field.

Conclusions

The Expert Group Meeting concluded that:

1. The foreseeable development pattern of agrochemicals use in general and of pesticides manufacturing, formulation and application technologies in particular will not offer any viable economic alternative to the utilization of chemical pesticides in increasing agricultural productivity.
2. Domestic production of active ingredients, be it generic, under license and particularly based on indigenous research, remain very modest in developing countries.
3. One of the most serious impediments to wider, safer and more efficient use of pesticides in developing countries concerns the inadequacies of registration procedures.
4. Improvements in the scope and quality of training alongside the whole pesticides supply-claim coupled with enhancements in materials and equipment, are prerequisites for the development of the sector.
5. Local packaging and subsequent formulation of imported material often constitutes a realistic entry into the pesticides industry for many developing countries.

6. Pesticides industry is conceived as an integral part of overall agricultural policies. Its efficient contribution can only be assured in conjunction with other vital production factors such as fertilizers, irrigation, seeds, farm management, etc.

7. Environmental and safety hazards of pesticides are not an inherent characteristic of the industry and can be fully avoided by proper training and use of adequate materials and equipment.

Recommendations

The Expert Group Meeting subscribes to the recommendations as formulated by the regional Consultation on phosphatic fertilizers and pesticides industry, held in Yamoussoukro, Côte d'Ivoire, 12-16 October 1988. After judicious consideration of the work accomplished by the regional Consultation the EGM has reached the following recommendations:

1. The potential of pesticides active ingredients derived from plant origin and available in developing countries should be investigated. In view of the generally recognized safety and efficiency of those products, the problems of genetically improving, cultivating, harvesting and processing of the plant substances should be particularly addressed in the above investigation. In this context a regional or country approach might prove the most useful.
2. Similarly an effort should be undertaken to ascertain the impact of biological and bio-engineering techniques of pest-control, currently making impressive progress in industrialized and in a few developing countries.
3. UNIDO and other concerned international agencies should assist the developing countries in the elaboration and implementation of adequate registration, rules and procedures for pesticides.
4. Formation of national, regional and subregional information centers on pesticides production, formulation and consumption should be actively supported.
5. The establishment of an inter-agency arrangement on the pesticides sector such as the FAO/World Bank/UNIDO Working Group on fertilizer statistics should be looked into.
6. An appropriate information system should be instituted by UNIDO in co-operation with other relevant international agencies and regional organizations of GIFAP for the collection, processing and dissemination of data covering agro-technical, production, consumption and trade, formulations and manufacturing technologies and finally, supply sources of products and intermediates.

Objectives of the meeting

The following were the aims set for the Expert Group Meeting on the Pesticides Industry. Foremost among these objectives were the consideration of the recommendations reached at the Regional Consultation on the Phosphatic Fertilizers and Pesticides Industries in Africa with a view to their implementation. More specifically the meeting addressed inter-alia, the issues below:

- (a) Development of manufacturing, formulation and use of pesticides research trends, future directions of development; industrial and agricultural aspects;
- (b) Environmental and safety problems and their effect on the manufacturing plant and process technology concepts as well as on the handling, storage, application and disposal methods and practices;
- (c) Status of the industry in the developing countries, main problems, role of the international organizations in the solution of these problems;
- (d) Cost effectiveness of pesticide production, formulation and application in developing countries;
- (e) Trends and future role of the pesticides in the food production in the light of the above points; policies and strategies to recommend for the developing countries; role and tasks of the international organization.

Summary of discussions

After the introduction of the two UNIDO documents submitted to the meeting, namely PPD.98 entitled "Global Overview of the Pesticides Industry Sub-sector" and ID/WG 475.10 entitled "Cost Effectiveness of Pesticides Production and Application in Developing Countries", discussions among the participants centered mainly around the following issues:

- Exchanging information on, and experience in, the planning, design, construction and operation of pesticide formulation and manufacturing plants in developing countries and particularly in Africa;
- Identifying the problems confronting the pesticide formulation and manufacturing industry and examine possible solutions;
- Contacts with a view to co-operation on the basis of long-term arrangements covering joint ventures, technical assistance, the supply of raw materials and marketing;

To this effect representatives of developing countries in Asia and Africa gave an account of the situation and prospects for the pesticides industry in their respective countries/regions.

Similar account was given by participants from the developed countries. In the ensuing deliberations it became apparent that one of the main obstacles in the development of the sector in both developing regions, although to varying degree, was the unavailability of up-dated information on three accounts, namely data on agronomics of crop-soil systems, on production-consumption and trade data and finally inaccessibility to pertinent information on technological capabilities on a global basis and available sources of supply of intermediate and final pesticides formulation. It was also pointed out that most developing countries and virtually all African countries cover their demand for pesticide products through either import of formulated products or to lesser extent domestic formulation of externally procured active ingredients.

Domestic production of these active ingredients be it generic, under licence or even based on own research capability, remain a rare occurrence in developing countries. In spite of the fact that pesticides are easily available on the world market, their procurement and final application pose a number of serious problems ranging from registration, transport, storage, handling to distribution and marketing.

The participants to the meeting identified lack of comprehensive registration procedures as arguably the most serious impediment to the wider, safer and more efficient use of these agrochemicals in developing countries. The analogy was made to the pharmaceuticals, the other family of fine chemicals with many similarities.

Whereas pharmaceuticals are usually administered by fully qualified medical personnel in hospitals, clinics and through private consultations with doctors, pesticides, in spite of their hazardous nature are handled all along the route from the point of entry to the site of final application by people not always adequately trained or knowledgeable for the purpose. Therefore the solutions to the many problems encountered in the sector in developing countries must necessarily involve improvements in education, training, materials and equipment.

It was recognized that for many developing countries and particularly those in Africa, local packaging of pesticides products, will constitute the first step towards formulation and eventually manufacture of active ingredients. Small packaging plants offer many advantages compared to whole-sale importation of finished products. The next phase for the developing countries would be the import of active ingredients and domestic formulation of pesticides products. The obvious advantages of this option, selected by an increasing number of countries, are lower foreign exchange expenditure, higher domestic value added, lower transportation costs, creation of employment for skilled labour and finally transfer and absorption of basic technologies in a key input industry to agriculture.

Furthermore this approach allows for the consideration of a gradual market development and the characteristics of domestic or regional demand pattern for those agrochemicals. Many developing countries' formulation capacity, however, remain underutilized in view of limitations of national markets for pesticides. Therefore the participants to the meeting stressed the need for a realistic evaluation of market possibilities before taking investment decisions with respect to pesticides formulation plants. As far as domestic production of active ingredients was concerned the meeting was reminded that the pesticides industry was now entering a phase when a major group of products lose their patent protection and become generic.

Although patent owners are engaged in efforts to conserve their proprietary position through modifications and other means, an increasing number of basic pesticides could be produced by new entrants to the industry without patent restrictions. The expert to the meeting, however, warned of the many pitfalls affecting the establishment of manufacturing units in developing countries.

Since active ingredients are basically derived from chemical intermediates by rather complex organic synthesis, the existence of fully-fledged and well-established organic chemistry industry in the country was an absolute prerequisite for the initiation of production of pesticides in developing countries. Another vital and indispensable pre-condition before embarking on pesticides manufacture, is the existence of a well-resourced and operational research organization, inter-alia capable of performing the required tests and experiments for the registration procedures.

Another option open to developing countries consists in manufacturing under license, which inevitably involves arduous negotiations for the procurement of manufacturing rights without prohibitive limitations on technical and commercial conditions.

In this context it was pointed out that UNIDO model forms for licensing agreement in the chemical process industries could render valuable insights to the intricacies involved in such arrangements.

Finally, with respect to pesticides products based on domestic research work, it was agreed by the experts that demand by capital, technology, gestation period, registration procedures etc. for a marketable product would be of such a nature as to effectively preclude this possibility by the overwhelming majority of developing countries and for that matter for many industrialized countries as well.

Technical visits

On Thursday, 20 April 1989, the participants to the EGM were invited by the hosting authorities to visit the following companies and institutions all located in the geographic vicinity of Balatonalmádi, Hungary.

- Nitrokémia Partelepec Chemical Works
- Research and Development Company for Organic Chemical Industry
- Texocological Research Centre of Hungary.

The last mentioned research centre offered its impressive facilities for technical training of nationals of developing countries through UNIDO.

ANNEX I

List of Participants

- INDIA: Ms. S.P. Dua, Hindustan Insecticides Ltd., New Delhi
- IRAN: Mr. M. Nafissy, National Petrochemical Co., Teheran
Mr. N. Mohammadi, National Petrochemical Co., Teheran
- FINLAND: Mr. Pontus Harju-Jeanty, Kemira Oy Vaasa Plants, Vaasa
- ZIMBABWE: Mr. S.J.L. Moyo, Agricultural Chemicals Industry Association,
Industry House, Harare
- HUNGARY: Mr. and Mrs. Endre Simon, Alkaloida Chemical Factory
- Mr. László Likács, Budapest Chemical Works
- Mr. István Bendefy and Mr. György Foris,
Chemolimpex Hungarian Trading Company for Chemicals
- Mr. Sandor Angyán, Chinoin Pharmaceutical and Chemical Works, Ltd.
- Mr. Dénes Máté, Chemical Works of Gedeon Richter Ltd.
- Mr. Ferenc Mogyoródy and Mr. Arpád Nagy,
North-Hungarian Chemical Works
- Mr. Bálint Nagy and Mr. Károly Szerencsés,
Hungarian Association of Chemical Industry
- Mr. Csaba Söptei, Nitrokémia Ipartelepek Chemical Works
- Mr. István Vadász,
Neviki Research Institute for Heavy Chemical Industries
- Mr. Attila Kis-Tamás and Mr. Viktor Andriska,
Research and Development Company for the Organic Chemical Industry
- Messrs. László Dobó, László Szoboszlai, István Romhányi, László Rosta
Vegyterv Hungarian Chemical Industries Engineering Center

ANNEX II

Expert Group Meeting on the Pesticides Industry
Balatonalmádi, Hungary, 19-21 April 1989

AGENDA

Wednesday, 19 April 1989:

- | | |
|---------------|--|
| 10.00 - 10.30 | Registration |
| 11.00 - 13.00 | Opening address, presentation and discussion of country papers |
| 13.00 - 15.00 | Lunch break |
| 15.00 - 16.00 | Introduction to documents presented to the Expert Group Meeting |
| 16.00 - 17.30 | Discussion on the status and prospects of the industry in developing countries |

Thursday, 20 April 1989

Technical visits to pesticides manufacturing and formulation plants organized by the host authorities

Friday, 21 April 1989

- | | |
|---------------|--|
| 09.30 - 10.30 | Environmental and safety aspects in the pesticides industry |
| 11.00 - 12.30 | Consideration of the recommendations of the regional consultation |
| 12.30 - 14.30 | Lunch break |
| 14.30 - 17.30 | Presentation of the Hungarian experience in the sector with emphasis on co-operative arrangements with developing countries, formulation of a framework and specific proposals for technical and commercial co-operation in the pesticides industry. |