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# PANEL OF INDUSTRIAL EXPERTS ON THE PHARMACEUTICAL INDUSTRY

Vienna, 30 June and 1 July 1977

## REPORT OF THE MEETING 1/

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## PREFACE

The Second General Conference of UNIDO held at Lima, Peru in March 1975 recommended that UNIDO should include among its activities a system of continuing consultations at global, regional and sectoral levels. UNIDO should be prepared to serve as a forum for negotiation of agreements in the field of industry between developed and developing countries and among developing countries themselves at the request of the countries concerned.

The General Assembly, at its seventh special session in September, 1975, decided that the system of consultations as provided for in the Lima Declaration and Plan of Action should be established; its purpose should be to facilitate the achievement of the goals set forth in industrialization, including the redeployment of existing capacities in developed countries and the creation of new capacities in developing countries.

The evolution of the system of continuing consultations takes place under the guidelines of the Industrial Development Board, UNIDO's governing body. It has decided that consultations should be organized first on industrial sectors and that participants from interested countries should inolude officials of Governments as well as representatives of industry, labour, consumer groups etc.

In January and February 1977, first consultation meetings were convened by UNIDO on the fertilizer industry and on the iron and steel industry. Later in 1977, first consultation meetings will be convened on the leather and leather products industry and the vegetable oils and fats industry.

The Industrial Development Board decided in May 1977 that it would oonsider at its next meeting in May 1978 on whioh two additional seotors consultation meetings would be convened. In the meantime, UNIDO was asked to continue its preparations for convening consultation meetings on the following seotors of industry:

- Petrochemicals
- Pharmaceuticals
- Capital Goods
- Agricultural Machinery
- Agro-based Industries

UNIDO convened the panel of industrial experts in Vienna on 30 June and 1 July 1977 as a first step in making preparations for a consultation meeting on the pharmaceutical industry. The meeting was attended by the 19 participants listed in Annex B.

The experts were invited to consider 16 topics which might be chosen as issues to be discussed at the First Consultation Meeting on the Pharmaceutical Industry. These 16 topics are listed in Annex A. The Panel was also given certain background documents relating to UNIDO's activities in the pharmaceutical industry which are listed in Annex D.

The topics selected for discussion and other preparations for the meeting were made by an internal task force of UNIDO staff members whose names are listed in Annex C.

REPORT OF THE MEETING

1. The UNIDO Secretariat suggested to the Panel 16 topics which might be chosen as issues to be discussed at the First Consultation Meeting on the Pharmaceutical Industry. The Panel was invited to consider each of these issues and whether it would be useful to discuss the issue at the Consultation Meeting. The Panel was also invited to suggest other issues which they felt should be considered.

Preparing a core list of essential drugs and a national formulary in each developing country

2. The Panel agreed that for many developing countries it would be useful to prepare a list of drugs which identify the priorities for supply that would be needed to meet the countries' health needs. If the list was to be used as a basis for the gradual development of local production of drugs, then it would be important to include drugs which are needed in large volumes. Bearing in mind that such drugs would be used in rural areas, often with no medical supervision, such drugs should be easy to administer.

3. The use of the word "essential" was questioned by some participants because it implied that other drugs were not essential from a medical point of view. It was therefore suggested that a national list of drugs should be described as a list of basic drugs, a priority list of drugs or a core list of drugs.

4. It was recognized that such a list could be drawn up by the country concerned in order to establish a programme for imports and production. It would be difficult, however, to suggest a list for global application as the health needs of individual countries were very different. Any national list of this type would have to be continuously revised in the light of experience and the changing health needs of the country as well as new developments in the field of pharmaceuticals. When it was prepared, there would be a need to consult many parties, including the local medical profession.

5. It was pointed out that some developing countries, who have already moved some way towards establishing such a list, find that it limits the number of drugs that need to be imported or locally produced. It facilitates the development of adequate quality control and contributes to better use of the country's limited foreign exchange resources.

6. A national formulary which listed a limited number of drug formulations could be prepared to meet the basic needs of the country. A national formulary may be particularly appropriate in developing countries where the Government accounted for a high proportion of the drugs used in hospitals and national health services. It was suggested, however, that the formulary should not be too restrictive.

7. The meeting considered the number of pharmaceutical preparations in use in the countries represented. It was pointed out that some countries counted the number of dosage forms and that in one particular case a drug was sold in 75 different formulations. There was, therefore, a considerable amount of double counting. As a result it could be concluded that the approximate number of preparations sold varied between 2,000 and 25,000 (if different dosage forms were counted) and between 1,000 and 2,000 (if only chemical entities were counted).

8. The Panel felt that UNIDO in co-operation with WHO could give useful advice to developing countries in providing criteria for the selection of drugs to be included in the national list. In this connection, some participants expressed their willingness to assist UNIDO in preparing such criteria and broad guidelines. The Panel felt that the principle of establishing a national list should be endorsed at the Consultation Meeting, whilst recognizing that it was the responsibility of each developing country to draw up its own list.

Introducing the use of generic names instead of brand names

9. The Panel agreed that as one step in introducing the generic names of drugs, it was desirable that generic names be used in conjunction with brand names. Where the Government was a substantial purchaser of drugs, it could purchase under generic names.

10. Before intensive reliance was given to the principle of using generic names, it was necessary for the Government to introduce effective quality control of all drugs sold to the public and to take suitable steps to ensure that they have been produced following good manufacturing practice. In this connection, the scope of quality control needed such as chemical analysis dissolution tests, bio-availability studies, etc. was discussed. It would also be necessary to introduce the use of generic names to the medical profession and some revision in their medical education might be required.

11. Some participants felt that there were other issues that could be more usefully discussed at the Consultation Meeting rather than this issue. The use of generic names was a national policy matter and any Government that decided to introduce it should carefully consider the above and other relevant factors.

The establishment of a central procurement and nation-wide distribution system

12. The Panel agreed that central procurement of drugs has some advantages in small countries where the demands are limited and does not involve a large distribution system. In some developing countries, which have already established a local manufacturing base, central procurement would not necessarily achieve economies in the purchasing of bulk drugs from foreign and local suppliers. Even in those countries, however, it could be useful when used on a limited range of products, for example as an instrument (a) to promote the development and production of items not produced locally in adequate quantities and (b) to regulate the prices of certain products available from only a limited number of suppliers.

13. A number of central procurement systems used in different countries were described. In addition, the importance of establishing a nation-wide distribution system was emphasised. The Panel felt that it was up to each country to find the best way, if appropriate with international assistance.

Promotion of traditional systems of medicine

14. The traditional systems of medicine continue to be important in many countries. Several of the active principles contained in these medicines have proved to be useful in modern medicine. Production of

some medicines used in these systems by modern production methods has also been undertaken in a few countries. As systems of traditional medicine can usefully supplement modern medicine, the interested countries should examine which traditional treatments are efficacious using scientific methods.

The production of drugs and intermediates from indigenous herbs and animal by-products

15. The Panel recognized that quite a wide range of intermediates and drugs could be produced by exploiting local resources such as indigenous herbs, animal by-products and marine sources. Developing countries could consider giving priority to products which could be manufactured from such local resources and screening programmes to develop new products.

Availability and price of intermediates

16. Although a wide range of developing countries have established production facilities for the formulation of drugs, most of them continue to rely on importing the active ingredients. In view of the rising cost of imports, it was desirable that developing countries establish facilities to produce locally some of these ingredients. Where the national market was not large enough, regional co-operation among a group of developing countries would be needed.

17. In order to make the active ingredients from imported intermediates, developing countries need access to late intermediates at a reasonable price. Some participants from developing countries quoted examples where lack of availability and/or high price was an obstacle to this form of backward integration. It was recognized that the cost of supplying late intermediates varied from product to product. From the supplier's point of view, the cost of producing the final product was often not greatly different from that of producing the late intermediate and the prices of supplying these alternative forms reflected this fact.

18. It was pointed out that, for those products in which these circumstances prevailed, it might be more attractive for the developing country to undertake all stages of production of the active ingredient from basic raw materials. These could be started on a pilot-plant basis. It would mean that a developing country would need to select a limited number of drugs on which to concentrate its efforts.

19. The Panel viewed this issue as extremely important as it was the first step towards the basic manufacture of drugs. The views of participants from developed and developing countries were different. The participants from developed countries indicated that the price at which intermediates were supplied was a matter of intelligent shopping and negotiation. Some participants from developing countries reported that they had experienced difficulties in obtaining supplies of intermediates at equitable prices. It was therefore suggested that the matter be considered as an important issue for the Consultation Meeting.

20. The participants from developing countries indicated that, in the meantime, the matter should be further investigated by UNIDO with the co-operation of the parties concerned. As part of UNIDO's examination, an attempt should be made to study market structures and pricing practices for selected raw materials and intermediates so that UNIDO can help developing countries obtain the information they need on potential sources of supply and prices. Some participants from developed countries felt that this was not necessary and indicated that long-term contract arrangements could help guarantee availability and lead to more advantageous prices.

Training of personnel for developing countries

21. Training of personnel in the developing countries should preferably be carried out at the plant level. Multi-national companies have provided such training in a wide range of developing countries, often training a far greater number of personnel than required on a continuing basis in their own plant. If a plant was established with a license agreement from a foreign company, it was normal practice for the licensor to provide prior in-plant training abroad as well as continuing on-the-spot training and expert supervision.

22. A number of cases were described in which the Government of a developed country financed a training programme for Government drug inspectors and quality control personnel. The activities of WHO and UNIDO in this field were noted.

23. Co-operation between developing countries could also provide a useful means for training personnel at both the industry and Government levels.

24. The Panel noted that UNIDO was often requested to provide training in the production processes of certain types of drugs in industrial plants in developed countries and agreed in principle that this could be provided; however, each case would have to be considered separately.

Establishment of quality control and testing facilities at the Government and factory levels

25. The Panel recognized that the production of pharmaceutical products in all cases required rigorous in-process quality control at the factory level. It was recognized today that it was not sufficient to test the quality of selected batches of production, rather the industry was moving towards the adoption of what is called 'Good Pharmaceutical Manufacturing Practice'.[1/]

26. In this connection, it was stressed that proper storage of imported drugs in developing countries was required in order to maintain their quality.

27. The meeting recognized the need for some kind of governmental control of quality, but felt that the emphasis of this should be on effective supervision of the control exercised by the factories themselves. The government machinery should not be too big. For small developing countries it would be preferable to establish this machinery at the sub-regional level rather than at the national level.

28. The meeting was informed of a convention adopted by some countries which provided for mutual exchange of information between quality control inspection agencies in the participating countries. This procedure allowed a country importing a drug to rely on local inspection

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1/ Among the national publications mentioned by participants was the Guide to Good Pharmaceutical Manufacturing Practice 1977 compiled by the Department of Health and Social Security, London, and published by H.M.S.O. (reference ISBN 0 11 320662 3).

that had been undertaken in the producing country. It was felt that this approach could be practised more widely by both developed and developing countries.

Patents on products and processes

29. The role of patents in the pharmaceutical industry was discussed. It was pointed out that pharmaceutical products deserve the same protection as inventions in other fields and that a long period of protection was needed because it took many years to bring an innovation to the stage where it could be marketed in compliance with regulations on the safety and efficacy of drugs. Patent protection was therefore needed by the industry to enable it to continue its research and bring about new products with improved therapeutic properties as well as for cures of diseases for which no effective drugs exist at present.

30. It was pointed out that some developed countries are in the process of strengthening their patent laws, whereas some developing countries are weakening the protection which patent legislation gives. Some participants from developing countries quoted cases where the patent system had hindered development of the industry in their country and mentioned different prevailing legal conditions which their Government considered more appropriate to the country's present needs. They advocated a reduced life for patents in developing countries as one possibility among various alternative legal conditions. Their view was not shared by participants from developed countries and some of them expressed strong objections.

31. Participants from developed countries indicated that the expenditure of many pharmaceutical companies on research and development of drugs for treatment of tropical diseases had been reduced because of a lack of patent protection and the low priority given to health-care programmes in some developing countries. As a result, the rewards on such research were, in practice, less likely to be commensurate with the expenditure involved. The Panel noted that WHO is discussing with Governments and industry ways to increase research efforts in this field.

32. Interest was expressed by some of the participants from developing countries in the use of manufacturing processes that were not used for some reason in developed countries. The Panel agreed in principle that these might be made available to developin countries on softer terms. It was suggested that UNIDO compile a list of some such processes which companies are willing to sell and which are well-suited to the developing countries' requirements.

Methods and cost of technology transfer

33. As regards the method of technology transfer, it was agreed that a joint venture was preferable because it ensured that both parties had a continuing interest in the successful operation of a project because they would both achieve appropriate benefits. Other methods were manufacturing under licence or under contract; these were appropriate when the partner in developing countries already had manufacturing experience. It was pointed out that such co-operation agreements could limit the period of management assistance to a fixed period of years after which the foreign partner would withdraw. Turn-key projects were sometimes preferred where the know-how was readily available.

34. The participants from developing countries indicated that if the pharmaceutical industry was to develop as rapidly as the Lima Declaration and Plan of Action envisaged, the present cost of transferring technology might act as an obstacle. They considered that, for example, the scale on which royalties were charged could be reduced after an initial period of five years, and that lower royalties could be charged for processes which had been in operation for some time.

35. The Panel found that there were few cases where developing countries had failed to obtain access to the technology they required. Participants from developed countries pointed out that before they were willing to co-operate with a developing country they had to be sure that the plant would be operating in economic and political conditions that would ensure success of the venture for both parties.

36. Some objections were raised to the practice of certain licensors to require the use of raw materials or active ingredients supplied to the licensee at an inflated price, for example, by using the code name rather than the scientific name. It was noted that the legal system of various countries prohibited tied procurement practices and that international agreements that might, inter alia, discourage such practices were being discussed.

37. In the pharmaceutical industry, there was a need to ensure that the raw material used must conform to the specifications of the licensor because it was necessary to ensure that the drug carrying the name of the licensor performed in the same way in all markets; bad results, even in one developing country, could affect the licensor's reputation in other world markets.

38. The Panel agreed that there were many examples of licence and joint-venture agreements that had worked well to the satisfaction of both parties. Co-operation on the transfer of technology required a high level of mutual respect on the part of both parties. The cost of transfer of technology in each specific case should always be negotiable. It was emphasised that new production facilities, whether for the chemical synthesis of active ingredients or formulations, must have a sound economic base, taking into account the infrastructure, the requirements and financial position of the countries involved.

Co-ordination of research efforts to develop new drugs needed for developing countries

39. The Panel noted that WHO was devoting a large proportion of its budget to examining the health needs of developing countries and the new drugs which this required. WHO was co-operating with industry and Governments on this question. UNIDO's efforts should, therefore, be co-ordinated with WHO and concentrate on the research efforts needed to bring drugs into production.

40. It was recognised that to an increasing extent the developing countries themselves would produce innovations that were designed to combat endemic diseases prevalent in only a few developing countries. It was also recognized that there was a need to disseminate information on these developments as well as on the research programmes being undertaken in developed countries.

41. Participants from developed countries pointed out that the economics of research to develop new drugs of special interest to developing countries depended on the likely market and returns obtainable in these countries. Where the likely returns were not high enough, Governments of developed and developing countries could and should be encouraged to support research projects which would harness the talents of the pharmaceutical industry and the knowledge of the health authorities of developing countries in a common venture to improve the health of the population of developing countries.

Creation of regional pharmaceutical industry development centres

42. The meeting recognized that an important pre-requisite for co-operation among developing countries was the need for countries to have confidence in bulk drugs and formulations manufactured in other developing countries. Although the establishment of an international registration system had been considered by some developed countries, registration was still required in each country based on different national documentation requirements, inspection methods and testing procedures. The developing countries could avoid these difficulties if they established a registration system at the regional level in Africa, Asia, the Arab countries and Latin America, which was based on standardised documentation requirements for the registration of drugs. The establishment of regional testing laboratories and constituting regional teams to inspect pharmaceutical production units are also desirable.

43. The Panel noted the UNIDO Secretariat's suggestion that regional pharmaceutical industry development centres should be established to perform the following principal functions:-

(a) to co-ordinate plans for the manufacture of drugs and intermediate chemicals in the region;

(b) to identify the drugs needed in the region, in particular to fight endemic and other tropical diseases and to help in the drawing-up of a national list of drugs by each country in the region;

(c) to advise on the acquisition and adaptation of technology for the manufacture of drugs and intermediates in the region, emphasising drugs produced from local raw materials;

(d) to screen drugs used in traditional systems of medicine and promote production on a scientific basis;

(e) to promote the development of new drugs needed and to test the new drugs developed;

(f) to register and maintain up-dated clinical information on all drugs consumed in the region;

(g) to assist governments in implementing national policies required to develop a pharmaceutical industry, the establishment of quality control systems requiring good pharmaceutical manufacturing practice, the bulk purchase of drugs and the introduction of the use of generic names;

(h) to assist in the training of technical personnel required by the industry and testing laboratories.

44. The regional pharmaceutical industry development centre that is to be established in Africa in 1978 by UNIDO with bilateral assistance was mentioned. The Panel felt that considerable resources would be needed if such regional pharmaceutical industry development centres were to be established and equipped to perform all the functions that are envisaged.

Regional co-operation on production among developing countries

45. The meeting was informed of two different approaches to regional co-operation on production. Thirteen Arab countries had established a company called The Arab Company for Drug Industries and Medical Appliances (ACDIMA) with a capital of US$ 200 million to construct plants to manufacture bulk drugs and chemical intermediates for their regional market; specific proposals were being developed with assistance arranged by UNIDO. Five member countries of the Andean Group will consider later in 1977 proposals made by their Secretariat for pharmaceutical products and intermediate chemicals which should be manufactured in the region; the proposals will concern products not already manufactured in the region and involve plants that need the whole regional market to be economic.

46. The Panel recognized that multi-purpose plants may be appropriate for production of some bulk drugs in such regional plants. UNIDO was requested to continue its work in this area so as to be in a position to advise interested countries on the layout of a multi-purpose plant for the production of synthetic drugs and the economics of this method of production. Pilot multi-purpose plants might be established at the regional centres proposed above.

47. In this connection, the Panel noted that UNIDO, as part of its preparations for consultations, plans to organise regional meetings at which all aspects of regional co-operation among developing countries, including regional registration of drugs, the establishment of regional pharmaceutical industry development centres, transfer of production know-how, multi-purpose plants, tariff protection etc., could be considered.

Joint venture with enterprises from developed countries

48. The Panel felt that its views on this subject were sufficiently covered in paragraphs 33 to 38 above. In addition to joint ventures, agreements to buy back products produced and turn-key projects were considered. It was felt that turn-key projects were not suitable for countries that lack trained personnel, infrastructure etc.

Assistance from developed countries on a bilateral basis

49. A number of cases were described in which the Government of a developed country financed training programmes for Government drug inspectors and quality control personnel and the establishment of quality control laboratories and training schools for technical personnel. Some of the programmes were implemented by a multi-national company on behalf of the donor Government; others were developed in co-operation with international organizations such as WHO and UNIDO. It would be useful if these forms of assistance were made available to a wider range of developing countries.

50. The Panel felt that in many developing countries a longer term programme of assistance was needed to facilitate development of the pharmaceutical industry; such programmes should be broad in scope and linked to the National Health-care programme. The Ministry of Industry and the Ministry of Health in the developing country and the pharmaceutical industry and Government of the developed country would need to collaborate in the formulation of such longer-term programmes of bilateral assistance.

51. The Panel noted that so far the initiative lay with the developing countries because international and national aid programmes generally provided such assistance only when requested to do so.

52. It would therefore be useful if such new forms of international co-operation to facilitate development of the pharmaceutical industry be prepared by UNIDO for consideration at the Consultation Meeting. The International Federation of Pharmaceutical Manufacturers Associations, which represented industry associations from over 40 developed and developing countries, offered to assist UNIDO in such preparations.

Assistance from international bodies

53. The Panel recognized that the World Health Organization (on the health-care aspects) and UNIDO (on the industrial aspects) could provide useful assistance to developing countries on the development of the pharmaceutical industry. It was important that their efforts be closely co-ordinated.

54. The assistance which UNIDO provided for the development of the pharmaceutical industry was described in a background paper. The Panel attached special importance to assisting individual developing countries:

(a) to establish quality control systems requiring good pharmaceutical manufacturing practice;

(b) to train technical personnel for the pharmaceutical industry;

(c) to consider the possible advantages of multi-purpose plants;

(d) to utilise medicinal plants and animal by-products for pharmaceutical production.

55. Other activities that the Panel considered worthy of study by UNIDO were:-

(a) to assist developing countries in ascertaining the availability and price of intermediates required for local produotion of bulk drugs (paragraph 20 above);

(b) to prepare a list of pharmaoeutical products and prooesses for which suppliers were willing to sell technology to developing countries on favourable terms (paragraph 32 above);

(c) to assist developing countries establish a regional system for registering drugs in Africa, Asia, Latin America and the Arab countries (paragraph 42 above);

(d) to promote the establishment of regional pharmaceutical industry development oentres (paragraph 43 above);

(e) to convene regional meetings to strengthen co-operation among developing countries (paragraph 47 above).

Conclusion

56. Although the Panel was able to give preliminary consideration to all of the 16 issues suggested by the Secretariat, it did not make a selection of issues which might be considered at the Consultation Meeting.

57. The Panel was informed that the pharmaceutical industry was one of five sectors on which UNIDO was making preparations for consultation meetings. The Industrial Development Board, when it meets in May 1978, will select the first two of these sectors on which consultation meetings should be convened. A second meeting of the Panel might need to be convened early in 1978 so that UNIDO could provide the Board with a list of specific issues that might be placed on the agenda of the Consultation Meeting.

ANNEX A

## Brief amplification of the 16 issues for discussion suggested by the UNIDO Secretariat

### I. International Co-operation to promote Production of Pharmaceuticals in Developing Countries

#### 1. Preparing a core list of essential drugs and a national formulary in each developing country

As the technical and economical resources of the developing countries are limited, these countries cannot afford the luxury of importing or producing a wide range of drugs. An essential drug list, based on the generic names of the drugs, would facilitate a concentration of effort on the drugs most needed to combat the diseases prevalent in the country. What steps should be taken to prepare and introduce such a list in developing countries?

#### 2. Introducing the use of generic names instead of brand names

The use of generic names rather than brand names listed under groups describing their therapeutic action makes it easier to satisfy a developing country's need for drugs at the best price taking quality into account. How can the use of generic names in developing countries best be introduced? What steps are required for facilitating such introduction (strengthening of quality control facilities, orienting doctors to the use of generic names, etc.)?

#### 3. The establishment of a central procurement and nation-wide distribution system

Can a central procurement system, which enables the country to negotiate with firms to obtain the best prices for supplies to meet the countries' requirements, ensure that quality drugs are made available to the public at lowest cost?

#### 4. The promotion of traditional systems of medicine

The majority of the population of developing countries depend on using traditional medicines for diseases; the cost of such medicines is low and they are available in the country. How should the promotion of traditional medicines based on scientific methodology be encouraged?

5. The production of drugs and intermediates from indigenous herbs and animal by-products

The developing countries have resources for making plant products and biologicals. How can these resources be better exploited by promoting local manufacture in the developing countries for both internal consumption and exports.

6. Availability and price of intermediates

The high price of some imported intermediates discourages developing countries from starting the local production of some essential drugs. What measures can be suggested to overcome this obstacle?

II. International Co-operation in the Transfer and Development of Technology in the Pharmaceutical Industry

1. Training of Personnel

Shortage of trained personnel is an obstacle to the development of the pharmaceutical industry in most developing countries. How can international co-operation efforts be expanded to meet this need?

2. Establishment of quality control and testing facilities at the Government and factory levels

Testing and quality control facilities, both at the producing units and at Government level need to be established to ensure quality of products produced by the industry. How can training facilities in developing countries and facilities provided by Government bodies and industry in developed countries in the interim period be expanded?

3. Patents on products and processes

Are patent laws as they exist in developing countries today, an obstacle to local manufacture of drugs and the procurement of drugs at reasonable cost by developing countries? If so, what modifications can be discussed?

4. Methods and cost of technology transfer

Should measures to improve the mechanism of transfer of technology to developing countries be discussed with a view to reducing their incidence on the cost of drugs produced in developing countries?

5. Co-ordination of research efforts to develop new drugs needed for developing countries

What co-ordinated measures are required to be taken by developing countries to undertake research to develop new drugs required to combat diseases specific to these areas?

III. Institutional and other Arrangements required to implement this Co-operation

1. Creation of regional pharmaceutical centres

What tasks can regional pharmaceutical centres perform to strengthen national efforts and what kind of international support will they require for these duties?

2. Regional co-operation on production among developing countries

Where demands of countries are not adequate to set up economic units of production and undertake marketing, distribution and promotion, how best can regional co-operation be implemented for undertaking such activities jointly?

3. Assistance from developed countries on a bilateral basis

What institutional arrangements are needed to stimulate a greater flow of bilateral assistance from developed countries to developing countries on reasonable terms?

4. Joint venture with enterprises from developed countries

How can joint ventures be encouraged so as to better accomplish the development of an integrated pharmaceutical industry in developing countries? Are there other mechanisms and approaches?

5. Assistance from international bodies

What role can international bodies, especially UNIDO, play in helping developing countries to accelerate co-operative efforts between developed and developing countries and amongst developing countries themselves?

ANNEX B

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ANNEX C

LIST OF UNIDO STAFF MEMBERS RESPONSIBLE FOR PREPARING MCR CONSULTATIONS ON THE PHARMACEUTICAL INDUSTRY

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| | |
|---|---|
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| Vice-Chairman | Mr. R. J. Line<br>Negotiations Section<br>Division of Policy Co-ordination |
| Secretary | Mr. Ph. de Moustier<br>Negotiations Section<br>Division of Policy Co-ordination |
| Members | Mr. H. Koenig<br>Agro-Industries Section<br>Industrial Operations Division |
| | Mr. Miklovicz<br>Sectoral Studies Section<br>International Centre for Industrial Studies |
| | Mr. H. Molina<br>Investment Co-operative Programme Office<br>Industrial Operations Division |
| | Ms. A. Tcheknavorian-Asenbauer<br>Chemical Industries Section<br>Industrial Operations Division |
| | Mr. K. Venkataraman<br>Development and Transfer of Technology Section<br>International Centre for Industrial Studies |

Other UNIDO staff members participating

| | |
|---|---|
| Mr. A. Hacini | Acting Head, Negotiations Section<br>Division of Policy Co-ordination |
| Dr. B. Shah | Chemical Industries Section<br>Industrial Operations Division |
| Mr. E. Aguilar | Development and Transfer of Technology Section<br>International Centre for Industrial Studies |
| Ms. A. Salburg | Sectoral Studies Section<br>International Centre for Industrial Studies |

ANNEX 3

LIST OF BACKGROUND DOCUMENTS PROVIDED TO MEMBERS OF THE PANEL OF INDUSTRIAL EXPERTS

Outline of the world-wide study of the pharmaceutical industry, prepared by the International Centre for Industrial Studies of UNIDO

Some examples of UNIDO's assistance to developing countries in the past and future programmes for the pharmaceutical industry, prepared by the Chemical Industries Section, Industrial Operations Division of UNIDO

The steps involved in establishing a pharmaceutical industry in developing countries, with specific reference to the experience of India, prepared by Dr. B. Shah, UNIDO staff member

First recommended Essential Drug list as circulated by W.H.O. in 1976

Annual Report of the Executive Director of UNIDO, 1976. (ID/B/180)

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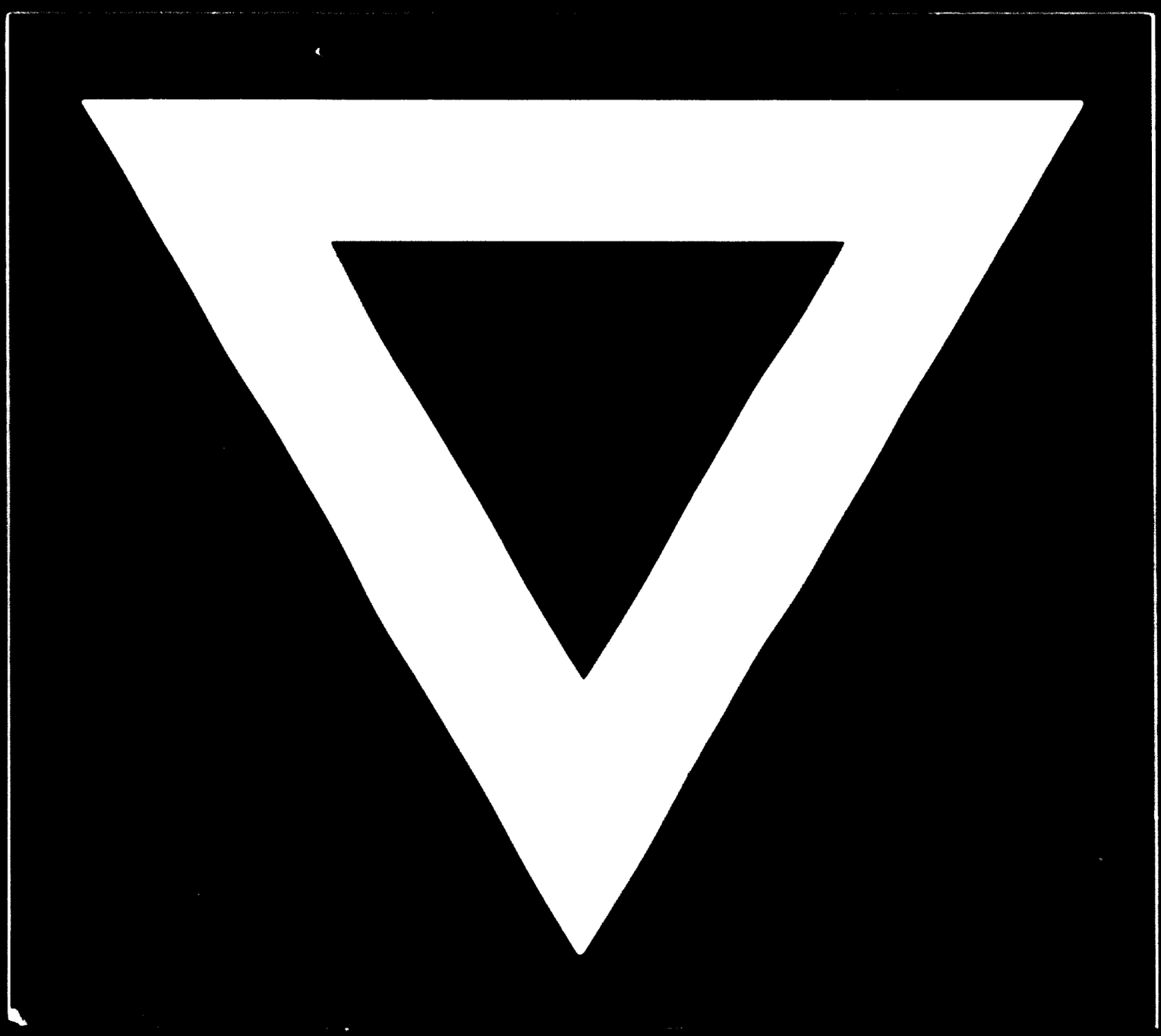

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