In BURMA, the Burma Pharmaceutical Industry received WHO assistance to help the Government to achieve self-reliance in the production of the pertussis component of DPT vaccine.

Facilities for the production of DPT vaccine were further strengthened in INDIA. The Pasteur Institute, Coonoor, was supported in its efforts to initiate the production of TT, DT and DPT vaccines. The Haffkine Biopharmaceutical Corporation now produces oral polio vaccine Types I, II and III, which are being tested with the help of a WHO consultant.

5. PROMOTION OF ENVIRONMENTAL HEALTH

An event of significance during the period under review was the official launching of the International Drinking Water Supply and Sanitation Decade.

In most countries of the Region, statements on policy, intent, goals and plans for water and sanitation in the Decade were made at high decision-making levels. Wide publicity was given through the public information media, in which the United Nations agencies participated. A number of government representatives from the Region stated their governments' policies and plans at the special one-day session of the United Nations General Assembly on 10 November 1980, when the Decade was launched. The delegate of Burma, speaking on behalf of all Asian countries, made an earnest appeal to "urge the relevant international organizations and developed countries to increase their support and the flow of grant assistance to developing countries in their efforts to fulfil the worthy goals of the Decade".

During the year, the Organization cooperated actively with governments in the preparation of first drafts of their national Sector Decade Plans, a number of which are now ready.

Rationalization of the training of senior national personnel, initiated last year, has been completed and the training programme is now being implemented and closely monitored with a view to producing the desired results. Group training was organized on the monitoring of pollution of inland and coastal waters; observation/study tours were arranged on the planning, programming, construction, operation and maintenance of rural water supply and sanitation programmes. At the request of one country, orientation and practical training in project formulation and appraisal has been arranged at the World Bank, and a special course on programme management conducted at the Asian Institute of Technology, Bangkok. The experience is being monitored so as to improve the delivery and offer viable group training opportunities to all countries of the Region.

Research in environmental health is being focused more directly on meeting immediate needs and on the practical application of the considerable knowledge and knowhow that exist in the Region.

In some countries health education is being made a part of water and sanitation projects, in which the Organization is collaborating.
An area where no substantial progress has been made is the dovetailing of water and sanitation with primary health care activities. This will be a challenge in the coming years.

5.1 Environmental Health

Most of the countries of the Region have established national mechanisms to coordinate policy and action for the International Drinking Water Supply and Sanitation Decade. In some countries subsidiary bodies have been established to deal with specific priority areas of action for the Decade such as the development of human resources, the production and logistics of materials and supplies and funding. The committees or other bodies set up have taken stock of the situation to outline the actions needed. The UNDP Resident Representatives in the countries have been designated as the focal points for the United Nations system in the activities related to the International Drinking Water Supply and Sanitation Decade. WHO continues to provide the technical secretariat to the UNDP necessary for discharging this function.

The governments which have already prepared national plans for the Decade are likely to face a variety of problems.

In regard to the gap between needs and resources, a number of water and sanitation decade plans have been prepared, with a rough forecast of the expected availability of external resources. The countries of the Region have been successfully stimulated to give priority to and accelerate their activities in water supply and sanitation. However, without any addition to the flow of external resources through soft loans and grants from expected funding sources, they are bound to be disenchanted with the so-called "Decade activities". Notwithstanding, many of them have substantially increased their national budget allocations for water and sanitation.

Under the inter-country Community Water Supply and Sanitation Project, Member States received assistance in their preparatory activities for the Decade through staff sent on missions to countries, who have helped to review specific projects and to initiate baseline surveys as of the beginning of the Decade. This effort was primarily aimed at helping each country generate baseline information to enable it to monitor progress during the Decade.

In Bangladesh, under the UNDP-assisted project for the Development of Drinking Water Supplies and Sanitation Programmes, the Government received assistance in establishing an information base of ground water quality so as to enable it to deal with the specific problems of high iron content of ground water in certain areas and to determine the norms required to prevent pollution of shallow tube-well water by on-site disposal of excreta. The Regional Office continued to cooperate with the Government in preparing a national sector development plan for the Decade.

In India, WHO has collaborated with the national authorities in action to generate data for the formulation of annual, five-year and perspective plans for water and sanitation decade activities. It is expected
that by the end of 1981 the approved State plans will be compiled into a national plan document. Additional information has been collected for each State for projects which have been given high priority by the governments, to enable them to prepare a feasibility report and project document for investment.

In Nepal, with assistance from this inter-country project, the Government has prepared a ten-year National Plan for Water and Sanitation and is now in the process of taking up priority projects under the Plan. The first of these relates to manpower development for which the Government is also utilizing inter alia the UNDP's indicative planning figure.

With financial assistance from the Government of the Federal Republic of Germany (GTZ/WHO programme), WHO is collaborating with the Governments of Burma, Indonesia and Thailand in organizing national workshops to review the status of and determine the strategies and actions required for preparing national decade plans and related programmes.

Under the WHO/IBRD Co-operative Programme, the activities in sector support programme development for Decade planning efforts were further assisted in Nepal, Thailand, India (Bihar) and Maldives. Sector memoranda have been completed for all the States and union territories in India. Assistance was given to the Dacca and Chittagong Water and Sanitation Authorities in billing and collection operations, and preliminary discussions were held on Decade plan preparations in the country. The national plan document of the Government of Maldives was reviewed, and, as stated above, assistance was given to Nepal in the preparation of a manpower development project.

Under the DANIDA-assisted project on information systems for water supply and sanitation activities, agencies in Indonesia, Sri Lanka and Thailand were determined to be appropriate for providing assistance in developing a suitable management-oriented information system. A subsidy of US $24,566 was given to the Provincial Water Works Authority, Thailand, and the grant of a subsidy of $25,000 to CIPTA KARYA (Directorate General of Urban Development and Housing, Ministry of Public Works), Indonesia, has been agreed. A workshop on "Management Information Systems for Water Supply Organizations" has been planned for December 1981 to enable an exchange of experiences among the participating countries.

To stimulate activities for the control of environmental pollution, short-term consultants were provided to Indonesia and Thailand for assistance in developing schemes for surface water quality monitoring and control. An inter-country workshop on "Rapid Assessment of Pollutants and Impacts" is being planned for late 1981. At the request of UNEP, proposals are under preparation for Indonesia and Thailand along with other ASEAN countries, for research in industrial waste reduction methods for possible funding by the European Economic Community. Fellowships were provided to enable a number of national workers to attend a special course on monitoring the pollution of inland and coastal waters at the Technological Institute, Delft (Netherlands).
Under the Global Environmental Monitoring Systems (GEMS) Programme, four stations (in India, Indonesia, Sri Lanka and Thailand) continued to operate for air quality monitoring and five stations (in Bangladesh, India, Indonesia, Sri Lanka and Thailand) for water quality monitoring. A bi-regional workshop on the control of emissions from motor vehicles was held at Kuala Lumpur in November 1980 with participants from five countries in the Region.

In BANGLADESH, a protocol for a field study of the pollution of groundwater from on-site excreta disposal systems was completed. The guidelines that will emerge from this field study and the development of appropriate technology and the training of staff now under way should enable the Government to expand the water and sanitation services qualitatively and geographically without risks to public health. A water quality surveillance programme is also to be instituted simultaneously.

Work on updating tariff structures as well as improving collection and distribution systems and maintenance continued in the Dacca and Chittagong Water and Sewerage Authorities, which have been receiving World Bank (IDA) loans.

Stream water quality monitoring data from nine stations are being reported on by the Environment Pollution Control Board, under the UNEP/WHO/GEMS programme. Activities are now mainly concerned with preparing a national plan document for the water and sanitation sector for the IDWSS Decade.

In BURMA, the main focus in the environmental health programme is on community water supply and sanitation. The programme is managed in the field through one long-term sanitary engineer attached to the Environmental Sanitation Division (ESD) of the Ministry of Health and the Ministry of Agriculture and Forests. A 10-to-20-fold growth in the ESD's programme of work is envisaged, following the second country health programming exercise completed recently. A support activity project to remove a number of constraints identified is under preparation for possible external funding. A status survey of community water supply and sanitation to be undertaken with UNDP/WHO assistance will facilitate programme planning. Burma will also receive technical assistance in Decade planning, under the GTZ/WHO inter-regional project, and the first inter-sectoral meeting is proposed for August 1981.

In the urban sector, a project document for feasibility studies for water supplies to ten towns and for related institution building, has been prepared by the Government with WHO assistance, for potential UNDP funding.

During the year there was a spate of activities in INDIA in the development of plans for water and sanitation to meet IDWSSD goals. Under the UNDP/WHO inter-regional cooperation project, assistance was provided in the collection of detailed information from each State and Union Territory for preparing the annual and five-year plans as well as the perspective master plan for the sector for the Decade. In addition, local consultants were engaged to collect data in each
State on which to base feasibility reports for high priority projects identified by the respective State Governments. The Government of India and the Regional Office cooperated with the World Bank in the preparation of a handbook on project preparation.

The reorientation of the WHO fellowship programme for India, started last year, was continued. A special orientation programme has been arranged with the World Bank on project preparation and feasibility studies for six senior sanitary engineers. Group training in programme management for senior state engineers was also arranged at the Asian Institute of Technology, Bangkok. In September 1981, twelve engineers will be attending a special course on the monitoring of inland and coastal water quality, to be organized at the International Institute for Hydraulic and Environment Engineering, Delft, Netherlands. The Government of India has enacted a Bill for the Control of Air Pollution. Arrangements are also under way for deputing a number of sanitary engineers to observe the planning, programming, management and operational maintenance of rural water supply programmes in selected countries. In addition, up to ten sanitary engineers will visit Australia to observe water development and management in arid zones.

The services of short-term consultants, to furnish know-how on wastes prevention, control and treatment in a number of industries (e.g., electro-plating and distillery spent wash waters), were provided. Support was also given for stack and ambient air quality monitoring and air pollution control.

The National Environmental Engineering Research Institute, Nagpur, received assistance in the form of fellowships and short-term consultants in specific areas.

The environmental health programme in INDONESIA is made up of several on-going or about-to-start projects, and has five long-term WHO staff members in position, with three more likely to join soon. The major thrust of the programme has been towards assisting the Government in planning and designing water and sanitation schemes, promoting man-power development and using appropriate technology. One WHO sanitary engineer and one sanitarian are attached to the Ministry of Health, and another sanitary engineer works with the CIPTA KARYA. This project also serves as an umbrella for various other related activities with external funding. With UNDP's financial support, a rural water supply project, including groundwater exploration and health education, is under way in Nusa Tenggara Province; a similar one for South Sulawesi is expected to commence shortly. Another rural water supply project for Central Java, with GTZ funding, is also due to start soon.

With assistance from a WHO sanitary engineer, the Government of MALDIVES has prepared a draft document for water and sanitation. During 1981 it is expected that this draft will be edited, updated and enlarged in the form of a national programme plan. Two candidates were trained in water supply and sanitation under WHO fellowships. UNICEF and the United Nations Capital Development Fund (UNCDF) are assisting in the construction of rain-water tanks and communal latrines.
For Male, a draft plan commissioned by the Federal Republic of Germany was prepared by a consultant firm in the United Kingdom. This was reviewed by the Regional Office at the request of the Government, and comments were furnished.

In MONGOLIA, two courses on sanitary engineering, in which the WHO sanitary engineer participated, were conducted. It is proposed to send two Mongolian observers to attend the Workshop on Environmental Health Problems in Arctic and Sub-Arctic Areas, scheduled to be held in Copenhagen in August 1981. This workshop will deal with water and sanitation problems in permafrost conditions.

The Government of NEPAL has prepared a "Ten-Year Plan for the Provision of Drinking Water and Sanitation (1981-1990)", and the sector agencies have now approved the document for printing. The shortage of graduate engineers and also of technicians has adversely affected the planning and implementation of the Decade programme. Manpower planning and in-service training are still crucial needs in the country, and proposals for increased UNDP/WHO assistance are now under consideration. Assistance was given in planning and implementing 59 rural water supply schemes. Project proposals for the consideration of external funding agencies have also been prepared for rural water supply schemes in the Western and Far-western Regions. Under the WHO fellowships programme, Nepalese engineers have visited India and Bangladesh to study low-cost technology for water and sanitation, particularly in rural areas and on the urban fringe.

SRI LANKA's national plan for the IDWSS Decade was finalized, and copies of the plan document were made available to international and bilateral agencies interested in the development of the sector. Data have been compiled for specific projects under the Decade plan. A rural water supply project for Asian Development Bank (AsDB) funding was prepared, and, with UNICEF assistance, projects have been formulated for rural water supplies in Kalutara District and the Mahaweli "H" area. Tubewell drilling in hard-rock areas continues to make progress, and the upgrading of community wells is on hand. Progress in the provision of shallow dug wells is yet to be speeded up. A programme for upgrading water treatment plants and for the preventive maintenance of plants and machinery as well as the training of operators has been taken up, and a unit set up for the operation and maintenance of water supplies at the National Water Supply and Drainage Board.

Laboratory equipment and supplies for the Universities of Peradeniya and Moratuwa have been ordered, and staff of the universities have been sent abroad for training in the further development of public health engineering faculties in these universities.

The Board itself has made substantial progress in strengthening its capacity for the planning and design of water supply schemes. The manpower situation, however, continues to be critical. In the light of the 25% cut in the development budget, the Decade plan activities will have to be focused on high priority projects.

Under the UNDP-assisted project in THAILAND, appropriate technologies and approaches have been field-tested and, in collaboration with
Chulalongkorn University, light-weight PVC handpumps that are easy to maintain have been developed. Groundwater investigations and staff training also have been undertaken.

Research in appropriate technology is going on at two institutions and more sponsored projects are expected to be taken up shortly.

5.2 **Occupational Health**

The programme in occupational health is developing steadily in the Region.

Preparatory work for launching a research project on the pulmonary affection of jute mill workers in Bangladesh has been completed.

In Burma, the project on "Strengthening of Health Services in the Newly Industrialized Areas (West Bank of the Irrawaddy River)" continued. A mid-term review recommended an extension of the project for two to three years, with the additional provision of short-term consultants, fellowships and supplies and equipment. During the year, a consultant advised the Government on the methodology for assessing the environmental sanitation situation, for sample checking and for laboratory testing, as well as on the provision of proper sanitation, water supply, and the disposal of excreta, industrial pollutants and industrial effluents. He also helped to develop guidelines for the training of national health workers in the sanitary aspects of occupational health. A second consultant conducted a training course on occupational hygiene and toxicology and their practice in industry, for physicians and hygienists. He advised on the importance of assessment and control of occupational standards in industry, and demonstrated to national occupational hygienists and toxicologists the maintenance and calibration of field and laboratory equipment and the conduct of air sampling.

WHO assistance to India consisted of fellowships for advanced training abroad, to strengthen occupational and industrial health services.

The agency terminal report of the UNDP-funded project on "Development of Central and Regional Occupational Health and Industrial Hygiene Laboratories" in Indonesia was prepared and submitted to the Government. Further extension of industrial hygiene, occupational health and safety laboratories was considered necessary. Specifically the recommendations were: (a) to establish more branch laboratories, (b) to provide more suitable equipment, (c) to increase the number of technical personnel and to develop their skills on a continuing basis, and (d) to expand occupational health and hygiene services, services in ergonomics and services in occupational nutrition. It was recommended that further UNDP assistance might be sought, to determine occupational hazards affecting industrial workers in the country and to find ways and means of dealing with the situation resulting from the use of new insecticides and fertilizers and the tendency for infectious diseases to establish themselves among agricultural workers.

A consultant in pesticide toxicology was assigned, to collaborate with the Government of Sri Lanka in the training of national personnel in...
environmental pollution, particularly with regard to chemicals used in agriculture. He also assisted in setting up a laboratory for analysis of pesticides. Fellowships were awarded for the training of national staff in occupational health.

A WHO consultant visited THAILAND during the year to help the Government prepare a plan of work and a project proposal for the development of the National Institute of Occupational Health. Fellowships, supplies and equipment were provided to strengthen the national occupational public health programme.

5.3 Radiation Medicine

Efforts are being made to introduce the Basic Radiology System on a pilot basis in selected countries in the Region. The radiotherapy facilities available are being improved, and documentation on the best use of these facilities was given wide distribution. The postal dose intercomparison programme was continued in collaboration with IAEA, and recently linear accelerators were included in this activity. In India and Thailand secondary standard dosimetric laboratories expanded their activities by providing personnel dosimetric services to increasing numbers of health workers exposed to ionizing radiation and by undertaking the monitoring and calibration of equipment. Films were regularly supplied by WHO for the radiation protection services in Bangladesh, Burma, Mongolia and Nepal.

In INDIA, under bilateral assistance from the United Kingdom, a linear accelerator was installed at the Gujarat Cancer and Research Institute. There, a repair and maintenance workshop and training facilities are also available. Some regional cancer centres will soon be having linear accelerators for the treatment of cancer. Facilities for nuclear teaching medicine are being strengthened in several medical colleges. The Radiation Protection Division of the Bhabha Atomic Centre, Trombay, published the proceedings of a national seminar on radiation protection held in Bombay during December 1976, including the development of radiological physics in India, and this document was widely circulated. A WHO consultant is being assigned to the Radiation Medicine Centre, Bombay.

Radiotherapy centres in INDONESIA are being strengthened in the provinces, with the installation of high-energy therapy units.

Two consultants visited MALDIVES to repair the X-ray machines at the Government Hospital, Male, to assess the safety of the radiological installation and to advise on improving the safety standards of the X-ray unit.

In SRI LANKA, plans have been formulated for establishing radiotherapy facilities in Galle and Jaffna.

A consultant assigned to THAILAND advised the National Cancer Institute on the treatment of cancer patients with radiotherapy and on the planning of such treatment. He recommended decentralization of treatment facilities through the establishment of radiotherapy equipment, computerized treatment planning and joint clinics to take advantage of the multiple treatment modalities.
5.4 Food Safety Programme

The systematic development of national food safety programmes applicable to countries of the Region received little attention during the year, except for pragmatic programme review and development related to institutional and manpower requirements, provision of short-term consultants and fellowships for some countries. Food safety programmes are in varying degrees of development in Burma, India, Indonesia, Mongolia, Sri Lanka and Thailand.

Although the programme has been instrumental in upgrading some of the facilities and technical competence of services and personnel in food control, particularly in Sri Lanka, Thailand and Indonesia, many aspects still remain to be covered. The Organization continues to assist countries in reviewing food laws and regulations and in initiating training activities, by awarding fellowships. In India, a national workshop on "National Strategy for Food Quality Control" was organized at the National Institute of Nutrition in Hyderabad.

Through the provision of short-term consultants, the methodology and instrumentation for the analysis of food contaminants (in Thailand) and the utilization of laboratory services, the training programme and microbiological requirements for food standards (in Indonesia) have been reviewed and strengthened.

In most countries of the Region there is a strongly felt need to develop a rational food safety programme, integrating all related aspects of public health such as veterinary public health, laboratory health services, administration, nutrition, communicable disease control, environmental health and health education.

Although country reports on the food control situation in respect of most countries are available, there is still a need for more comprehensive baseline data and information on all related public health aspects. The Regional Office has prepared a comprehensive questionnaire that should enable countries to assess the situation in all its aspects. The main problem in launching a food safety programme is the dispersal of the activities of different facets of the programme among different ministries or departments. It is therefore planned that, on the basis of a comprehensive review, a multidisciplinary WHO team should visit countries and discuss the question of food safety with all departments and ministries concerned and assist them in evolving a rational food safety programme that meets the needs of the country and is feasible to implement.

6. HEALTH INFORMATION AND STATISTICS

During the period under review there have been efforts to evolve methods and procedures for collecting, processing and utilizing information which could have general application in the countries of the Region. Probably the most productive work has, however, been direct collaboration with the countries in improving their information systems.

A major part of the activities has been concerned with developing methods of monitoring and evaluating primary health care programmes.