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OCCUPATIONAL HEALTH PROGRAMMES

Report by the Director-General



CONTENTS

	<u>Page</u>
1. INTRODUCTION	3
2. CONDITIONS OF OCCUPATIONAL HEALTH IN DIFFERENT PARTS OF THE WORLD	3
2.1 Occupational health - objectives and scope	3
2.2 Interaction between work and health	3
2.3 State of health of workers in different parts of the world	4
2.3.1 Industrialization and health	4
2.3.2 Conditions of health	4
2.3.2.1 Health problems affecting workers	4
2.3.2.2 Occurrence of occupational diseases and injuries	5
2.3.2.3 Health problems in small scale industries	6
2.3.2.4 Health problems in different occupational sectors	7
2.4 Occupational health services	7
2.4.1 Practice at the local level	8
2.4.2 Occupational health services at the national level	8
3. GUIDING PRINCIPLES IN ESTABLISHING AND PROMOTING OCCUPATIONAL HEALTH PROGRAMMES BY NATIONAL HEALTH SERVICES	9
3.1 Involvement of national health services in occupational health	9
3.2 Role of national health services in occupational health	9

3.2.1	Priority status	10
3.2.2	Health centres carrying out occupational health duties	10
3.2.3	The occupational health centre	10
3.2.4	Responsibilities of provincial or district (intermediate) health services	10
3.2.5	Responsibilities at the central level	10
3.3	Co-ordination of occupational health services at the national level	11
4.	STATEMENT OF NEEDS IN COUNTRIES UNDERGOING INDUSTRIAL DEVELOPMENT	11
4.1	Training	11
4.2	Needs relating to the organization of services	11
4.3	Needs in field investigation and research	12
4.4	Needs for evaluation of occupational health programmes	12
5.	CURRENT WHO PROGRAMME IN OCCUPATIONAL HEALTH	12
5.1	Occupational health institutes and centres	12
5.2	Fellowships	13
5.3	Seminars and training courses	13
5.4	Consultants	13
5.5	Research activities	13
6.	COLLABORATION WITH ILO	14
7.	PROPOSED PROGRAMME OF WHO TO ASSIST NATIONAL HEALTH SERVICES IN ESTABLISHING AND PROMOTING OCCUPATIONAL HEALTH PROGRAMMES	14
7.1	Direct assistance to governments	15
7.1.1	Preliminary surveys	15
7.1.2	Organization of a service	15
7.1.3	Occupational health legislation	15
7.1.4	Services to special occupational groups	15
7.1.5	Occupational health of vulnerable groups	16
7.1.6	The development of ergonomics	16
7.1.7	The development of occupational health manpower	16
7.1.8	Proposed assistance in education and training	16

	<u>Page</u>
7.2 The development of guidelines	17
7.2.1 Development of a standard medical reporting system and occupational health statistics	17
7.2.2 Guidelines for health services in plants	17
7.3 Development of the research programme in occupational health	18
7.4 Development of reference centres in occupational health fields	18

1. INTRODUCTION

The Twenty-fourth World Health Assembly, in resolution WHA24.30, requested the Director-General to submit to the Twenty-fifth World Health Assembly a report containing measures that the World Health Organization might appropriately take in order to assist national health services in establishing and promoting occupational health programmes, including acceleration of the training of their national personnel.

In pursuance of this resolution, this report presents a review of background information with respect to occupational health programmes and proposes possible courses of action.

2. CONDITIONS OF OCCUPATIONAL HEALTH IN DIFFERENT PARTS OF THE WORLD

2.1 Occupational health - objectives and scope

The objectives of occupational health have been defined as "the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention among workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological condition;"¹

The scope of occupational health is not limited to the prevention of occupational diseases and injuries but includes all aspects of the health of the gainfully employed. For these reasons occupational health is regarded by health authorities as being an integral part of health practice and its importance is based on the fact that workers constitute a large and productive portion of the community.

2.2 Interaction between work and health

As a well adjusted and profitable activity of man, work can be an important factor in health promotion, but when it produces excessive stress it may affect health in one or more of the following ways: (a) it may result in an occupational disease or injury from specific physical, chemical or biological exposure; (b) it may lead to the aggravation of existing disabilities of non-occupational origin; and (c) it may be a factor in a number of diseases of multiple etiology.

In all these cases, ill health influences human performance, efficiency and productivity. Workers' health has, therefore, to be safeguarded as a whole through adequate occupational health programmes.

¹ Joint ILO/WHO Committee on Occupational Health, second report (Wld Hlth Org. techn. Rep. Ser., 1953, No. 66), p. 4.

2.3 State of health of workers in different parts of the world

In 1970 the economically active population was estimated at 1500 million, or 41.3%, of a total world population of 3635 million (the "economically active" being defined as workers in all trades, including employers, the self-employed, salaried employees, wage earners and, so far as data are available, unpaid family workers). Distribution of the economically active in different occupational sectors varies geographically and depends on the stage of industrialization. There are a number of countries where agricultural workers exceed 80% of the working population, and other countries where the workers engaged in manufacturing and mining are much more numerous than those in agriculture.

2.3.1 Industrialization and health

The developing countries are industrializing gradually, some more rapidly than others, and mechanization is introducing new important variables affecting health. With progress in manufacturing there is a gradual transfer of working populations to this sector. The health aspects of industrialization and urbanization are beyond the scope of this report, but there is no doubt that the health of workers is affected by changes in the community as well as by new industrial processes and techniques involving adaptation and exposure to new risks.

Thanks to technological advances in industrial hygiene many toxic elements, both physical and chemical, in the working environment that were highly prevalent during the early period of the industrial revolution have been to a large extent controlled. Many occupational hazards and diseases are now considered past history in industrialized countries, although there are still instances in modern industries of serious episodes of mass disease that could have been prevented. In the developing countries, modern measures to protect the workers' health have been introduced in many new industries, but in most cases risks subsist; in the hurry to increase industrial production many factories are built without due concern for occupational health, mainly because of the lack of experience in this field.

2.3.2 Conditions of health

The conditions of health of workers vary widely, depending inter alia on the type of employment and the pattern of disease in the area. A small proportion of the working population may enjoy better health than other sectors of the community, particularly when there are health services on the plant, including pre-employment medical examination. The majority, however, work under inadequate conditions and, in addition to their exposure to the health hazards prevailing in the general population, are exposed to work stresses and strains of all types.

Although reports describing the health problems of workers are few and often not comprehensive, there is sufficient evidence of the magnitude of these problems in different parts of the world.

2.3.2.1 Health problems affecting workers

The majority of diseases affecting workers in most industries do not necessarily originate from specific work factors, although they may be communicated in the working environment or aggravated by working conditions.

Community health problems affect all workers. In developing countries the prevalence of certain communicable diseases is sometimes higher in industrial workers than in the general population, probably because of transmission of the diseases by direct contact at work. Reports of investigations show a high prevalence of communicable, nutritional, parasitic and other diseases among workers, particularly in small-scale industries and in agriculture. A rate of between 5% and 7% of pulmonary tuberculosis has been reported, for example, in some Asian countries, which is probably higher than in the general population. This is aggravated by work exposures, including dust.

In industrial countries with a relatively higher prevalence of chronic non-communicable diseases, industrial medical services have to pay special attention to cardiovascular disorders and to mental and psychological conditions.

In many situations it may not be easy to separate occupational diseases from other health problems affecting the workers, because of the complex pathology resulting from exposure at work and other factors in the living environment.

2.3.2.2 Occurrence of occupational diseases and injuries

Occupational disease reporting is generally inadequate. However, investigations carried out in countries in the process of industrialization often show a high incidence of occupational diseases. Fibrotic pneumoconiosis resulting from inhalation of dusts in mining, quarrying, sandblasting, in foundries, in the pottery industry, etc., cause considerable disability and mortality. According to some official reports the prevalence of pneumoconiosis is as high as 25% in workers exposed to dusts, particularly in mining and stone cutting.

Poisoning by toxic gases is frequent. Carbon monoxide poisoning in soft coal burning, in iron and steel industries, and in gas plants has been reported in from 3% to 15% of workers; respiratory irritants such as sulfur dioxide, nitrogen dioxides, chlorine, ammonia, acrolein and alkaline mists result in a high incidence of acute respiratory disease and in chronic obstructive pulmonary disease from prolonged exposure.

Industrial solvents are encountered in many working processes. Toxic exposure to solvents may cause anaemia (e.g., benzene), liver and kidney damage (e.g., carbon tetrachloride), neurological disorders, atherosclerosis and heart disease (e.g., carbon disulfide).

Intoxication by heavy metals also occurs. Recently, serious lead poisoning was reported in one of the modern plants in a highly industrialized country. In developing countries reports show a prevalence of up to 40% of lead absorption among exposed workers and advanced poisoning in a considerable proportion, particularly in workers in the smelting and battery industries and in foundries. Exposure to mercury, arsenic, beryllium, vanadium, chromium, nickel, uranium and zinc is encountered in industrial, mining and agricultural operations. Investigations carried out in some north African countries show the occurrence of severe damage to the central nervous system by manganese poisoning.

Inhalation of organic and other vegetable dusts throughout the developing countries causes respiratory allergy, asthma, bronchitis and other infections not only in the workers but also among the members of their families, including children. Large numbers of people are exposed to dusts from flax, hemp, jute, coconut fibres, rice germs, bagasse, tobacco, tea, cocoa, paprika and wood in industrial and agricultural processes. Although information is lacking on the pathological effects of many of these dusts, investigations carried out in some producing countries show a prevalence of 60% of respiratory diseases and byssinosis in the cotton and flax industries, pulmonary irritation and allergy in tea and tobacco processing and cases of suspected aspergilliosis caused by exposure to cocoa dust, particularly after storage.

Occupational dermatoses remain among the most common occupational diseases, affecting, in certain instances, up to one third of workers exposed to mineral oils, cement and other substances.

Cancer-producing chemical and physical agents remain uncontrolled in workplaces in developing and industrial countries. Despite the possibilities of prevention, the reporting and control of occupational cancer do not receive sufficient attention. Thousands of cases are under investigation in some industrial countries, and in the developing countries the disease has been reported in connexion with exposure to tar products and amino compounds; in some agricultural plantations cases of cancerous varicose ulcers have been found associated with the use of arsenical compounds.

Physical agents such as noise, vibration, heat, ionizing and non-ionizing radiation, high and low atmospheric pressure, may affect the health of workers. Hearing loss due to noise in weaving has been reported in 12.5% to 20% of middle-aged workers in some developing countries, and diseases caused by vibration are reported everywhere.

Occupational infections and parasitic diseases are highly prevalent in agricultural work and are sometimes encountered in certain manufacturing industries and in mining. One of the most commonly reported diseases is anthrax, caused by handling infected animals and hides in wool sorting and tanning.

Psychosocial factors connected with increased mechanization, shift work, repetitive tasks and low job satisfaction may result in fatigue, psychosomatic diseases and absenteeism. Neurotic manifestations, digestive disorders, peptic ulcer and cardiac conditions seem to affect workers engaged in occupations associated with mental and physical strain, and some diseases traditionally considered as "non-occupational" may result from specific physical, chemical or psychosocial factors at work, or from a combination of them. There is epidemiological evidence of relatively higher mortality from cardiovascular disease in the viscose rayon industry and a significant incidence of peptic ulcer in certain industries where a combination of work stresses occur.

Occupational injuries, which are generally more adequately reported than occupational diseases, exact a heavy toll every year in most occupations. In all official reports they are prominent. Accidents result from both human and environmental factors, the former accounting for the majority. In addition to the environmental and mechanical safety measures that can be taken, placement of workers and education in safety have contributed to lowering the frequency and severity of accidents.

Economic losses resulting from work hazards are substantial. For example, occupational diseases and injuries in the United States of America cost nearly \$ 9000 million in 1969. In the United Kingdom in 1967 there were 900 000 compensated cases of occupational diseases and injuries in industry, agriculture and commerce which resulted in a loss of 23 million workdays, compared to three million lost through strikes. In 1968 in the Republic of Korea compensation for permanent disabilities and loss of life was awarded in respect of 21% of the mine workers. In the same country and year, a loss of about 2.5 million man-hours in manufacturing industry due to occupational injuries was registered, amounting to about 8% of total production hours. According to reports from the Bureau of Social Welfare of the National Health Service in Chile, some 18% of insured workers had occupational disabilities in 1965, with an estimated loss of 6.8 million workdays and \$ 73 million. In Indonesia in 1969 sickness absenteeism in industry resulted in a total loss of 12% of workdays.

2.3.2.3 Health problems in small-scale industries

Small industries throughout the world, with a few exceptions, play an important role in total industrial production. They also employ most of the labour force in most countries, particularly those undergoing industrialization.

Though the conditions of work and health do not necessarily depend on the size or economic scope of establishments, the great majority of small undertakings, particularly in developing countries, suffer from inadequate conditions and complex health problems. Small industries¹ are in some instances not covered by protective labour laws; in most cases the administrative supervision of such laws does not reach this sector because of the very large number of concerns, sometimes spread over vast areas. Small industries also include family and home industries where people live and work in the same premises. The employers, with

¹ "Small industries" have been arbitrarily defined as those workplaces with close employer/owner and workers relations; no specialization in management functions and small economic compass in terms of number employed, products, capital, etc.

their technical limitations, are generally unaware of measures for controlling work hazards and there are hardly any health or welfare services. Many small workplaces harbour a wide variety of health risks; they are overcrowded, dim, humid and dusty, and the workers of all ages, some of them partially disabled, work without health supervision for long hours and with hardly any holidays.

Although health problems of workers in small industries are found everywhere, the situation seems to be more acute in many developing countries, where there are clear indications of a need for active measures.

2.3.2.4 Health problems in different occupational sectors

Workers in agriculture, who compose the majority of the working population in most developing countries, are affected by the health problems that prevail in rural areas, in addition to zoonotic diseases from their contact with animals, chemical intoxication from the use of pesticides, occupational accidents from agricultural machinery, climatic variations, and other hazards such as snake and animal bites. Agricultural occupational health practice depends mainly on rural health services in which, at present, little attention is given to occupational factors.

Mining is still one of the most hazardous occupations. Occupational diseases and accidents among miners continue unabated in many countries. Working and living conditions are often extremely poor and the employment of young children in heavy mining work is not uncommon.

Seafarers are exposed to great changes of climate and to any diseases that may be prevalent in ports of call. They may become carriers of disease and the protection of their health is important not only for their welfare but also for that of the shore populations of the countries they visit. Yet on account of the nature of their employment it is difficult to provide them with medical services of the standard generally available to other sections of the population. Seafarers are also sometimes exposed to chemical substances on board ship and handle dangerous goods. Their psychosocial environment is characterized by a lack of identification and weak family attachment.

The health problems of transport drivers directly influence traffic accidents.

The construction industry covers a wide range of operations and the work hazards include accidents and exposure to dusts and fumes, arc welding, vibration and noise.

Research in occupational health is still needed, particularly since working conditions and processes, tools and materials, are constantly changing.

2.4 Occupational health services

Occupational health services include preventive measures, industrial hygiene and many other services. Occupational health includes detection, estimation and control of physical, chemical and biological hazards at work. It also takes account of psychosocial factors in the working environment.

The health services at workplaces have to be suitably co-ordinated in a national programme. Sometimes they are part of the national health services and in many countries national health authorities play an important role in providing and administering occupational health services, although there are wide variations in the systems followed in different parts of the world.

2.4.1 Practice at the local level

The occupational health team is composed of the industrial physician, who carries out a preventive medical programme and integrates and evaluates the various components of the services; the hygienist, who deals with the detection and control of physical and chemical work hazards; the nurse, who complements medical control measures and/or carries out general health work and, particularly in the absence of medical personnel, keeps records. Safety supervisors contribute to accident prevention through safety education, provision of personal protective equipment, organization of safety committees, and investigation of accidents. Plants may also require the services of occupational physiologists and of ergonomists, particularly at the early stages in plant and machine design, layout and operation; they play an important role in adapting machines and processes to human capacities.

On the whole, factory health services are in the best position to execute a health programme, to carry out evaluation and follow-up action and to provide reliable health statistics. However, such services, where they exist, are frequently inadequate.

Many industries, mines and plantations have organized medical units for the treatment of sick workers and sometimes also their families. In some developing countries the number of physicians and other health personnel working full-time or part-time in industry is substantial (sometimes even exceeding the number employed in the national health services). Emphasis, however, is largely on treatment and little attention is given to prevention.

There is a great need to develop occupational health practice in a comprehensive sense to deal with placement examination, early discovery and treatment of diseases of all kinds, immunization, occupational nutrition and health education.

2.4.2 Occupational health services at the national level

The way in which occupational health and safety administration has developed, together with the formidable health problems that have to be faced in developing countries and the lack of human resources, has prevented the national health authorities in many such countries from playing an important role in occupational health. There has been a tendency for the health programmes for workers to be administratively separated from public health programmes, although in most countries the majority of workers receive medical care from state-run clinics and hospitals. However, many health administrations have developed occupational health activities; and in several countries occupational health legislation is administered by the health authorities.

For historical reasons, occupational health legislation has preceded education. The unhealthy conditions in the early stages of the industrial revolution made legislation a prime necessity. Desirable safety practices were laid down and infringements were penalized. With the further development of legislation, more attention has been paid to human values and to upholding the dignity of the worker.

National occupational health services in a number of countries concentrate on factory inspection. However, occupational health and safety acts are often not properly adapted to local conditions in the developing countries. Often the enforcing machinery in these countries lacks strength and manpower and cannot deal with all the health problems of the working community. Workers in small industries and in agriculture are largely left without services. It seems, therefore, that in addition to the need for strengthening legislation and inspection, there is also a need to provide services to deal with the health problems of workers in a comprehensive manner.

3. GUIDING PRINCIPLES IN ESTABLISHING AND PROMOTING OCCUPATIONAL HEALTH PROGRAMMES BY NATIONAL HEALTH SERVICES

3.1 Involvement of national health services in occupational health

The indications for involvement of national health services in occupational health may be summarized as follows:

- (a) The working population is the most important sector of the community in respect of numbers and its contribution to the national economy. The state of its health is a prime factor in productivity, while the health of individual workers has repercussions on family health and social well-being.
- (b) In many instances, workers are a group at risk. Many in developing countries belong to vulnerable groups, including the young, the old or the partially disabled, and the number of women employed throughout the world is steadily increasing.
- (c) Basic health services are often the only means by which the health needs of a large number of workers engaged in small concerns (including mines, factories and agriculture) can be provided. In the majority of industrializing countries no special schemes have yet been developed to deal with these groups, which form the majority of the working population.
- (d) Since the number of qualified health personnel in all branches of medicine is limited, it is advantageous to group health services together as far as possible. Experience has shown that health programmes are most effective when conducted among working populations.
- (e) The airborne and waterborne effluents of industrial enterprises, and in some cases their products, affect the total environment and the community.
- (f) The administrative and financial burdens of ill health are in many countries borne by the State, which provides medical care. It is therefore appropriate that preventive programmes should be constructively planned to integrate services provided for workers into the remainder of the health services.
- (g) In many developing countries, national health services can be advantageously complemented by health personnel in industry, agriculture and mining. With adequate education, medical services in workplaces could meet appropriate standards in preventive health and provide reliable health statistics.

3.2 Role of national health services in occupational health

In occupational health, national health services can complement services provided by other government departments.

Depending on conditions and on the availability and effectiveness of other agencies, the functions of national health services, especially in the developing countries, may include setting health standards and norms; providing day-to-day preventive health services at the workplace in collaboration with the employer; monitoring environmental exposures at work; arranging for ambulant treatment of workers; training health personnel, including those dealing directly with workers; providing health education of employers and workers; carrying out field investigations and research; and evaluation and follow-up, with the relevant statistics.

According to the needs and resources, a decision has to be made with regard to the range of occupational health activities that can be undertaken at the plant level and by other governmental bodies.

In any country, national health services should play a role in occupational health, regardless of the stage of development or the degree of maturity of national health programmes. Whenever necessary, serious consideration should be given to extending national health services into the field of occupational health rather than trying to build up a completely new and possibly costly structure.

3.2.1 Priority status

The advantages of giving due priority to occupational health in any health scheme include the following: (a) the measurable effectiveness of occupational health programmes; (b) the relatively lower cost in programme implementation; (c) the positive economic gains from protecting and promoting the health of the working population; (d) elimination of the risk of general diseases becoming complicated by adverse working conditions.

3.2.2 Health centres carrying out occupational health duties

For occupational groups in small industries, mines and agriculture, particularly in remote areas, health centres of different sizes may provide occupational health services providing environmental monitoring of workplaces, pre-employment medical examination, health education, immunization and compilation of statistics. This will require the training of health centre personnel for such work. In centres where no medical officer is available, nurses, health assistants and auxiliary staff can carry out health education, immunization, first aid and keeping of records.

3.2.3 The occupational health centre

In certain countries national health services have established occupational health centres in productive areas. The administration of such centres may, however, come under different organizational structures such as health insurance programmes, workers' unions, employers' groups or private medical practice. The centres provide services mainly to the working population, but in some cases also to their families. Depending on the resources available, they usually carry out some or all of the following activities: (a) study of the conditions of health and work, evaluation of hazards and recommendation of environmental control measures, and provision of advice on adaptation of machines and processes to human capabilities; (b) pre-employment and periodic medical examinations of workers and special examinations of key workers; (c) first-aid and early treatment of diseases and referral of cases to medical care units; (d) advice to management on the operation of a preventive occupational health and safety programme; (e) immunization of workers against communicable diseases and other public health measures such as health education, industrial nutrition, and tuberculosis control; (f) health and safety education of workers, training of physicians, nurses and sanitarians employed at the workplaces; (g) liaison with workers' organizations and co-ordination of day-to-day activities with inspectors of labour; (h) compilation of statistics and record-keeping.

3.2.4 Responsibilities of provincial or district (intermediate) health services

In the countries where occupational health programmes are developed in the framework of national health services, activities at the intermediate level include: (a) supervision of occupational health practice at the local level, where it is provided by occupational health units or centres or through public health centres; (b) compilation and analysis of morbidity statistics; (c) contributions to planning.

3.2.5 Responsibilities at the central level

Health authorities should establish a permanent central occupational health service to function as the planning and supervisory unit and executing agency of the occupational health programme. Taking into account the functions carried out by other agencies, the responsibilities at the central level may include promulgation of standards for placement medical

examinations and health education of workers; development of occupational health guidelines; licensure of new workplaces; compilation of statistics; planning and supervision of services provided at the local level; co-operation with other public health programmes in promoting measures to control non-occupational diseases affecting the workers; and training in occupational health for all levels of health personnel, particularly those dealing directly with workers.

Occupational health institutes, usually related to the central body, have been established in many industrialized and developing countries. They provide technical advisory services on problems of occupational health, hygiene and ergonomics and carry out research and teaching.

3.3 Co-ordination of occupational health services at the national level

According to the country, different roles are played in occupational health services at the national level by the labour administration, the health services, national planning and industrial development agencies, health insurance, social security, social welfare schemes, private organizations and others. With a multiplicity of agencies involved there is the possibility of duplication leading to lower efficiency and higher cost. Co-ordination of all governmental departments concerned with occupational health at the national level is therefore essential.

Co-ordination is also essential when several government departments deal with the same aspect of occupational health. When more than one agency is dealing with the inspection of workplaces, for example, health inspectors, inspectors belonging to labour departments and others dealing with general conditions of work need to co-ordinate their work in order to avoid controversy in the recommendations made following inspection. Even where all the national services in occupational health are under the department of health, these services should maintain liaison with departments of industry, labour and mining and with the universities. It is therefore advisable to establish and maintain a co-ordinating body or standing committee on which all those concerned with occupational health will be represented.

4. STATEMENT OF NEEDS IN COUNTRIES UNDERGOING INDUSTRIAL DEVELOPMENT

4.1 Training

The assessment of occupational health manpower needs in developing countries may not be easy. The magnitude of the problem can be assessed only by taking into consideration such factors as the nature of occupational risks and other health problems and the numbers of health personnel employed in the major types of industry as well as the number of already active personnel such as industrial physicians, nurses, and health inspectors.

Occupational health manpower is in short supply practically everywhere. In some industrial countries the ratio of trained personnel to those practising in industry and other workplaces may not exceed 5%. In most developing countries persons trained in occupational health are rarely found. In the regional committees' discussions of occupational health programmes in 1971, proposals were made for the acceleration of training.

Many of those trained in this field are not used effectively on account of the absence of organized services. Some of the training received is not geared to conditions in developing countries.

4.2 Needs relating to the organization of services

The inadequacy of occupational health services in many developing countries is related not only to lack of training but also to the inheritance of organizational patterns dating back to early industrial development. To meet the demands with the available resources, the revision of organizational patterns in legislation, enforcement and delivery of daily services is essential. Understanding of occupational health as concerned with the total health problems of workers is a prerequisite for the development of sound preventive programmes in all countries.

4.3 Needs in field investigation and research

In the developing countries, surveys and field investigations are needed to evaluate the magnitude of the health problems of the working population, and to provide guidelines for the organization of occupational health services and the establishment of norms.

Epidemiological investigations should be carried out to study the effects of exposure to multiple stress, the reaction of workers to different degrees of harmful exposure and the effects of the introduction of new substances and processes in industry. Knowledge of the effects of exposure to multiple stress, which may lead to synergism or potentiation, is crucial for the establishment of guides and norms, which are needed in both developing and industrial countries. Observations of man/work interactions are needed for setting standards of health and evaluating geographical, climatic, health and other human variables.

The research experience of industrialized countries should be of value to some developing countries during their industrial development, but there are many problems for whose solution developing countries have to create their own approach. There are many factors in harmful exposures specific to developing countries by virtue of their geography, natural resources, methods of work, personal habits and modes of development.

To ensure healthy industrial development, research is needed on adaptation to mechanization and the change-over from manual labour.

4.4 Needs for evaluation of occupational health programmes

In occupational health, the results of environmental control of hazardous exposures should be immediately evaluated; establishment of a control designed to remove a specific hazard is always preceded by an estimation of risk and followed by an assessment of effectiveness. A further check is a periodic medical examination of workers.

The effectiveness of general health services for workers should also be evaluated by adequate recording systems. Following educational programmes on occupational safety, for example, an evaluation can be made over a period of time of the frequency and severity of accidents.

The occupational set-up presents a good opportunity for which cost/effectiveness and cost/benefit studies are needed as a means of evaluation and an incentive to management. Services in the plant are well defined and their cost can be determined according to the size of the establishment and the risks involved. The direct benefits at least can be calculated to some extent in terms of the productivity of workers (the number of units produced per man-hour), reduction in sickness absenteeism, lowering of cost of medical care and rehabilitation, and lowering of payment of workmen's compensation. The indirect benefits of occupational health programmes may exceed the direct ones and are reflected mainly in better morale, increased work performance, economy of effort, prevention of fatigue and prolongation of the productive life-span.

5. CURRENT WHO PROGRAMME IN OCCUPATIONAL HEALTH

WHO has through the years provided direct assistance in occupational health to Member States. The approach has differed from one country or region to another, depending on the needs. The assistance provided so far can be summarized under the following headings:

5.1 Occupational health institutes and centres

Assistance in the development of occupational health institutes and centres for training, services and research has been given to the Institute of Occupational Health in Santiago, Chile; the Department of Occupational Health of the University of Alexandria, Egypt; the Institute of Labour, Health and Hygiene in Sofia, Bulgaria (with ILO participation); the

National Institute of Occupational Health in Ahmedabad, India; the Occupational Health Department in the Institute of Public Health, Lahore, Pakistan; a similar Department at the University of Teheran, Iran; the Occupational Health Unit at the Ministry of Public Health, Khartoum, Sudan; etc. The assistance provided (sometimes under UNDP) has comprised long-term and short-term experts, fellowships and equipment for field training and research.

5.2 Fellowships

In recent years, many long-term fellowships have been awarded in the different occupational health specialties, and even more short-term fellowships. On return to their countries many of the fellows have started different occupational health activities.

5.3 Seminars and training courses

In addition to participating in many regional and inter-regional seminars organized by international organizations such as ILO and FAO, as well as by international scientific societies, WHO has organized regional and inter-regional seminars and courses in various fields of occupational health. The inter-regional activities have included a training course on occupational health, Alexandria, 1961; a seminar on the health aspects of industrialization, Dacca, 1963; a joint WHO/FAO seminar on industrial feeding, Alexandria, 1965; a course on ergonomics, Bombay, 1967; a training course on agricultural health, Dundee, 1968; two courses on occupational health in agriculture, USSR, 1965 and 1969; a seminar on training and education in occupational health for developing countries, Santiago, 1970; and a seminar on training and services in occupational health for developing countries, Djakarta, 1971.

The regional seminars and courses in occupational health have included a number of key activities such as a seminar on occupational health for small industries, United Kingdom, 1963 (EURO); a conference on silicosis in Latin America, 1969 (AMRO); a symposium on pneumoconiosis, Katowice, 1967 (EURO); the first and second joint ILO/WHO seminars on occupational health, Tokyo and Manila, 1962 and 1967 (WPRO); an industrial hygiene course (nine months), Zagreb, 1970/71 (EMRO).

Regional and inter-regional training courses and seminars have always included professionals in different fields of public health and occupational health, including physicians, engineers, chemists and nurses.

5.4 Consultants

Many consultants in the different fields of occupational health have been seconded to Member States to assist in the development of specific programmes in the overall structure of occupational health services or for limited objectives aiming at the solution of various problems.

5.5 Research activities

Collaborative research in occupational health has been expanded in recent years. At present there are contractual agreements for undertaking research with WHO assistance in Bolivia, Brazil, Egypt, Indonesia, Jamaica, Japan, Mexico, Nigeria, Republic of Korea, Singapore, Sudan, Sweden, Thailand, and Turkey, and for 1972 plans are under way for collaboration in research with Bulgaria, Ceylon, Finland, India, Iran, and Yugoslavia. The programme is based on needs in industrializing countries and comprises mainly applied research leading to operational programmes. Of the different research activities carried out in collaboration with WHO the important concern occupational health problems in small-scale industries; effects of exposure to organic and other vegetable dusts; epidemiological studies of intoxication in industry; monitoring of exposure to industrial toxic agents; combined effects of exposure to multiple stress; exposure and adaptation to extreme climatic conditions and to high altitude. Plans are under way to carry out research on occupational health and productivity; health problems of vulnerable groups; and health conditions in different occupational sectors, such as seafarers.

6. COLLABORATION WITH ILO

ILO and WHO have been associated in many occupational health activities, and close co-operation has been maintained since the establishment of WHO's occupational health programme in 1948. The Joint ILO/WHO Committee on Occupational Health was established in 1949 and has held several meetings on different technical subjects. Good co-ordination has been built up over the years by consultation as soon as one organization considered that the other might be interested or involved in a proposed activity, reciprocal representation at meetings, including seminars and courses, creation of joint committees, both standing and ad hoc, and continuous personal contact between officials of both organizations.

Joint ILO/WHO activities in occupational health are reviewed in the Executive Board's organizational study on co-ordination with the United Nations and the specialized agencies.¹ The study shows that, while WHO places emphasis on the total health of workers, including occupational diseases and injuries, nutrition, mental health, and health education, ILO places emphasis on the prevention of specific risks resulting from employment and such other matters as vocational rehabilitation, labour relations and "the adaptation of work to man and each man to his job".

There are at present two joint committees, one on occupational health and one on the health of seafarers. The former has met to examine such questions as the definition, scope and objective of occupational health; the organization of occupational health services; training in occupational health; occupational health in agriculture; occupational health for developing countries; and maximum permissible concentrations of toxic substances in the working environment. The latter has met to consider the health problems of and services for seafarers.

WHO has been associated with ILO in joint field activities to develop occupational health programmes in different countries; examples of these are the joint ILO/WHO projects in the Philippines and in Kuwait.

7. PROPOSED PROGRAMME OF WHO TO ASSIST NATIONAL HEALTH SERVICES IN ESTABLISHING AND PROMOTING OCCUPATIONAL HEALTH PROGRAMMES

The fifth general programme of work covering a specific period (1973-1977 inclusive) stated: "Working populations deserve particular attention in view both of their economic value and their additional vulnerability due to physical, chemical and biological occupational exposures and to the social environment at work. Occupational health programmes, in addition to relying on relevant general health services, will exploit the easily identifiable nature of the populations to be served, which enhances the feasibility of undertaking health programmes of all types through services provided within occupational sectors."²

Many years earlier, in 1951, the Executive Board recommended the training of all health personnel in occupational health,³ since in one way or another they are likely to deal with occupational groups. Occupational health personnel, as executors of some programmes and co-ordinators of others, have in return to receive adequate training in public health.

With these facts in mind the following lines of action by WHO are proposed: direct assistance to governments, including assistance in the development of occupational health manpower and of service programmes; the development of guidelines for the operation of

¹ Off. Rec. Wld Hlth Org., 1970, No. 181, Annex 4.

² Off. Rec. Wld Hlth Org., 1971, No. 193, p. 74.

³ Handbook of Resolutions and Decisions, 11th ed., p. 89, resolution EB7.R68.

occupational health services; the setting of standards, based on experience and on fundamental and applied research; the development of reference centres in occupational health.

7.1 Direct assistance to governments

WHO assistance in this respect should include:

7.1.1 Preliminary surveys

No problem can be solved unless its nature and extent have been defined. It will therefore be necessary for countries where occupational health services are underdeveloped to evaluate the type and magnitude of their occupational health problems and survey their available health resources, both at the government level and in industry, plantations and mines, and their administration and legislation.

7.1.2 Organization of a service

A large corps of highly trained personnel is not always needed; however, it is always necessary to start, even in a modest way, with a nucleus of trained personnel. The situation will vary, since many developing countries have already succeeded in establishing reasonably developed occupational health services within the general health services. They have to cover real needs and not to duplicate other systems that are functioning effectively. With WHO assistance, countries can decide on the size and scope of activities to be organized. Short-term and long-term consultants can assist in developing service centres and units and qualified regional advisory services should be available. The WHO inter-regional services in occupational health available at present should be strengthened to provide assistance in the planning and organization of services and in training and research.

7.1.3 Occupational health legislation

In view of the importance of legislation and its enforcement, the acts and regulations in many countries have to be revised and adapted to new developments. Wherever appropriate, WHO should provide expert advice and assistance to countries in which the health authorities have the power of enforcement of occupational health legislation.

7.1.4 Services to special occupational groups

The WHO programme should include assistance in the development of health services for small industries. There are different models to follow, but for countries in the process of industrialization the most convenient method will be to extend basic health services to workers in small plants and mines and rural health services to agricultural workers, taking account of the specific exposures encountered at work. In some countries, governments have established occupational health centres to provide preventive and curative services to workers in groups of small industries in different geographical areas. In other countries the industrial planning authority has designated certain zones for the establishment of small-scale concerns which provide a convenient setting for health services. Governments should encourage small-scale employers to undertake co-operative schemes for the establishment of occupational health services.

The results obtained through the current WHO research programme on conditions of health in small industries will assist in the development of service programmes to these groups. In addition, national seminars on the organization of occupational health services are planned for 1972 in three countries in the Western Pacific Region and are expected to result in the implementation of a programme. Seminars should also be organized in other countries in the different regions. WHO should provide expertise in occupational health, industrial hygiene and other specialties. Fellowships should be provided for directors of health centres servicing small industries to observe the activities carried out in similar centres in different parts of the world.

The Twenty-third and Twenty-fourth World Health Assemblies recognized the need for the development of health services for miners and adopted resolutions containing specific recommendations.¹ The Twenty-second World Health Assembly, realizing the importance of international action in respect to the health of seafarers, made recommendations for the establishment of pilot health centres.²

7.1.5 Occupational health of vulnerable groups

Field investigations are proposed for 1974, but the work should be expanded in the following years to provide satisfactory material on the basis of which specific programmes can be developed. These programmes may be directly linked with the development of an occupational health service and with projects on occupational health for small industries, and should include the development of services, legislation, inspection and rehabilitation, particularly for cases of partial disability employed in hazardous occupations, and the proper placement of workers.

7.1.6 The development of ergonomics

Ergonomics is important to all countries, since it helps in the adaptation of tools and processes of work to human capacities and limitations. Services in ergonomics should be developed and training courses, such as the one organized in Bombay, India, for several countries in 1968, should be included in WHO programmes.

7.1.7 The development of occupational health manpower

Training in occupational health is fundamental to the development and promotion of occupational health programmes. It should be provided for the following sectors of health personnel: (a) those with a primary responsibility for practising occupational health, occupational hygiene, occupational safety, and ergonomics should receive specialized training through the award of fellowships and/or the organization of local training courses; (b) medical officers, public health nurses, and auxiliary health personnel in productive areas should receive basic training in occupational health; (c) workers and management should also be provided with education emphasizing proper practices and measures of hygiene.

Courses should be designed to meet the job description of the personnel carrying out occupational health services or participating in them.

7.1.8 Proposed assistance in education and training

WHO can assist countries in the development of occupational health manpower by:

(a) Assistance to Member States in organizing short-term training courses for occupational physicians, nurses, and hygienists, and educational programmes for workers and employers. In 1971 a two-month course was organized in Ghana for occupational physicians and nurses.

(b) The organization of inter-country or regional training seminars in different subjects for the exchange of experience between neighbouring countries. The WHO Regional Office for the Eastern Mediterranean organized a nine-month course in industrial hygiene in 1970/1971 and is repeating it in 1972/1973. Courses, either short-term or long-term, should be regularly organized on other subjects, such as epidemiological methods in occupational health practice, occupational health statistics and record keeping, the role of auxiliary staff, the introduction of public health programmes into industry, the contribution of occupational health services to public health; and on more specialized subjects such as occupational nutrition,

¹ Handbook of Resolutions and Decisions, 11th ed., pp. 94-95, resolution WHA23.47; Off. Rec. Wld Hlth Org., 1971, No. 193, p. 14, resolution WHA24.27.

² Handbook of Resolutions and Decisions, 11th ed., p. 92, resolution WHA22.31.

occupational health in agriculture, health services for different occupational sectors, early diagnosis of occupational diseases, simple industrial hygiene methodology, and ergonomics.

(c) Inter-regional courses and seminars in occupational health have proved to have a real impact. The need exists for one inter-regional seminar or course every year, on a different subject, particularly among those that have been emphasized in the discussions on resolution WHA24.30 by the regional committees. The Regional Committee for the Western Pacific adopted in 1971 a resolution requesting the Regional Director to study the possibility of establishing training programmes of regional interest. There should be continuation and strengthening of these programmes in addition to the development of regional training institutions in Africa, South-East Asia, and the Western Pacific and a study of the possibility of establishing international occupational health courses in certain countries to which fellows can be directed.

(d) The development of university departments in occupational health in different schools of public health and medical faculties has been assisted by WHO on several occasions. Occupational health should be taught at every school of public health. Undergraduate and post-graduate courses should be organized at universities in the medical, engineering and other sciences.

(e) The development of national and regional institutes of occupational health is necessary to provide the ever-increasing number of health personnel working in industry, plantations, and mines with education and training suited to local conditions and to train personnel of other key sectors, such as health planners. WHO should assist in the establishment and development of occupational health institutes in different parts of the world. Several projects are at present in progress and more should be developed.

7.2 The development of guidelines

7.2.1 Development of a standard medical reporting system and occupational health statistics

The state of health of the working population in plantations, industry and mining reflects that of the community, in addition to whatever may be encountered as a result of employment. Health authorities should make use of the medical and health services available to occupational groups to provide them regularly with adequate statistics on morbidity. There is need to plan a standard medical reporting system to provide information on the health problems of workers on a regular basis. There is also a need for a model medical reporting system for use in different countries. The WHO programme should include appropriate meetings to prepare guidelines for standard medical reporting of occupational health problems. Experience in using such models should lead to refinement and improvement and serve as an effective tool in the evaluation of occupational health services and possibly also of their effect on productivity.

7.2.2 Guidelines for health services in plants

The organizational patterns of occupational health services at the local level should be reviewed in the light of the needs, the prevailing type of work, the risks involved and the health resources available. The Regional Office for Europe has started a long-term programme to prepare guidelines for health services in plants. Other regions may find it appropriate to study the need for this activity. WHO should continue to provide guidelines for the performance of duties of health personnel serving different occupational sectors such as agriculture, various industries, mining, and seafaring.

7.3 Development of the research programme in occupational health

There appears to be a need to develop programme-oriented research activities that would assist countries in developing their occupational health services. At the same time the research programme should take account of the fact that new methods and substances having possible toxic effects on man are introduced every day into industry. Furthermore, there are many areas requiring field investigation and study in the developing countries in order to obtain more knowledge of the magnitude of the problem, effects on man of exposure and means of control. Research in occupational health should lead to the development of criteria and guides in human exposure to single and multiple stresses. For these reasons a number of research programmes are included in the programme and budget proposals for 1973; it is anticipated that research in these fields will be increased in the following years. They cover such subjects as respiratory diseases resulting from inhalation of vegetable and other organic dusts; effects on the health of workers of exposure to extreme climatic conditions; monitoring of exposure to industrial toxic agents; occupational health problems in small-scale industries; effects of exposure to combined hazardous environmental conditions at work; conditions of health in different occupations; and states of health affecting industry. Other research proposed includes the establishment of criteria for the early diagnosis of pathological changes in workers exposed to physical and chemical environmental factors; international studies on normal values of toxic substances in the human body; psychosocial factors at work; and the epidemiology of intoxications in industry.

7.4 Development of reference centres in occupational health fields

The report of the Director-General on problems of the human environment made to the Twenty-fourth World Health Assembly recommended the establishment of three international reference centres in the occupational health fields: in occupational medicine and industrial hygiene, in ergonomics and work physiology, and in occupational toxicology. The aim is to improve precision, reliability, consistency and comparability in practice and obtain better results from national and international studies. It is also recommended that reference centres should be utilized in such vital areas as training in occupational health for developing countries and in agricultural health. The reference centres would also serve as an important tool for the collection of information in all the specialized fields of occupational health and its dissemination to developing countries, and create a medium for the synthesis of different approaches followed in industrialized countries in research. Up-to-date methods in evaluation and control of hazardous exposures at work, the refinement of techniques of diagnostic methods, particularly in the occurrence of complex pathology resulting from exposure to combined factors, would be among the terms of reference of these reference centres.