

**A MODEL FOR THE DEVELOPMENT OF  
OCCUPATIONAL HEALTH SERVICES WITHIN THE  
FRAMEWORK OF PUBLIC HEALTH WITH SPECIAL  
REFERENCE TO SUDAN**

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**ABSTRACT**

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In most developing countries occupational health services are either meagre or totally non-existent. Even if available they are still not properly integrated into the national health set-up. The last few years have witnessed nearly throughout the world the eradication of some infectious and epidemic diseases like small-pox. At the same time problems of environmental pollution and health problems of the working population have made their fully fledged appearance in the health field. This situation came to represent one of the main complications of industrial progress.

Active occupational health units should be integrated into the health set-up and preventive medicine disciplines in these countries. Some statutory and legal changes have to be introduced in order to strengthen this consensus. High Occupational Health Advisory Boards must be set-up to take care of supervision, planning, training and daily services in industrializing countries. In addition to this they are to achieve collaboration between responsible government departments and other related bodies in all aspects of preventive, curative and rehabilitative occupational health practice. Occupational Health Training Centres must be set-up to provide education for primary health care supervisors who act as the first line of defence in the delivery of occupational safety and health in industrial and agricultural sites. An outline of the curriculum for these supervisors is depicted.

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Many developing countries have embarked upon large-scale development projects, particularly in agriculture, agro-industry, mining and the manufacturing industries. In an appreciable number of these countries these development processes have been very rapid and thus have engendered many health problems. Some of these problems may derive from communicable and endemic diseases traditionally prevalent in the respective countries, while others may have an occupational origin. Though many authors have investigated these "new" problems and contributed a wealth of useful information, it is still felt that there are many gaps in our knowledge of the health problems deriving from industrial and agricultural progress in the developing world.

It is needless to say that the mainstay of any development process is the working population. Working capital and raw materials are certainly of primary

importance, but had it not been for the workers and technicians these two factors would have remained of little or no use. Since the working population is such an important factor in the development process, workers' health and welfare must be treated as priority problems.

### THE SUDAN EXPERIMENT

It is from these two basic lines that the Sudan has been elected to pursue this policy with regard to health of the working populations. This paper summarizes the country's experiment which was referred to by the Director-General of WHO in his Report to the twenty-ninth World Health Assembly (May 1976) when he stated that "the Sudan provides another example of the systematic development of a workers' health programme in a developing country".

The Division of Occupational Health which was set up in 1967 was gradually integrated in the existing system of the health services both at headquarters and country levels. This integration increased and strengthened the comprehensive health care provided to the workers and their families. Within the discipline of preventive medicine and with the participation of the Medical Faculty of the University of Khartoum and the National Health Laboratories, a Central Institute of Occupational Health was set up at the Central Ministry of Health which was entrusted with certain responsibilities and duties under the existing labour laws. One of the first of these responsibilities was the drafting of new legislation in the field of occupational safety and health including regulations for health conditions in certain occupations and types of work involving health hazards.

#### General structure

The Director of the Department of Occupational Health is responsible to the Under-Secretary of State and the Minister of Health for health care planning, supervision and training and for the provision of health services for the working population and their families. The Department also contains a Central Institute, Industrial Hygiene Laboratories, a Guidance Health Inspection Division, a Medical Department, and country branches.

#### Statutory boards

There are two statutory boards responsible directly to the Minister. One is the Occupational Health Advisory Board which includes as members the Director of the Department (Chairman), the Director of the Labour Department (Ministry of Public Services and Administrative Reform, Labour), Head, Preventive and Social Medicine Department of the Faculty of Medicine (University of Khartoum), Head, Industrial Safety Section, Department of Labour, Chief Sanitary Engineering Section of the Ministry of Health, and a representative each of the Sudanese Employers Confederation and the Sudan Federation of Trade Unions. This higher board is responsible for advising the

Ministers of Health and of Labour about all occupational health (and safety) policy in the country. The Director of the Department can thus bring to the Board's notice matters of policy about which he wishes to learn its opinion. This might include long-term planning for setting up country branches, looking after the Training Institute which is responsible for the training of occupational health supervisors (i.e. primary health care workers responsible for safety and health care at factory levels), and questions which have to be co-ordinated with the Ministry of Labour, with the University, and other relevant bodies. The Work of this Board has had a promoting effect on the proportions and maintenance of occupational health and relevant activities in the country acting as a catalyst and a body of mutual interest which can eliminate most of the difficulties which from time to time hamper progress either in planning or actual field work. Thus it is strongly recommended that such advisory board be set up in developing countries in the primary stages of setting up occupational health divisions. This, at least, has been my experience in East Mediterranean and African countries, where minor administrative conflicts between the respective authorities in the ministries of health and labour might seriously hamper the organization of occupational health divisions and later on the maintenance and smooth running of the services of these divisions.

The other board is The Factories and Buildings Planning Board. This is a purely technical body which examines the plans and layouts of new factories and large or complicated buildings in accordance with the regulations issued by ministerial decision in conformity with the existing law, i.e. the Occupational Health and Safety Act of 1976. The plans and layouts of all prospective factories and work-sites have to be submitted to this Board in order to be scrutinized taking into account the type of activity to be carried out, the ecology of the site, industrial wastes disposal, etc. Branches of this Board have now been set up wherever branches of the Occupational Health Department exist. The Director of the Department at the Ministry Headquarters is the ex-officio Chairman/Reporter of this Board whose members include the Chief, Industrial Safety Section of the Department of Labour, the Chief of Sanitary Engineering Division, the Chief of the Public Health Inspection of the Public Ministry of Health, and the Senior Industrial Hygienist of the Occupational Health Department.

The creation of such a statutory technical body in countries which plan to set up occupational health divisions within ministries of health is vital to the service as it ensures full co-ordination among the authorities responsible for this facet of the health sector. If it already exists in some other ministry, e.g. of labour or industry, it must include a strong representation of the respective occupational health division.

#### **Integration within the Social Insurance System**

Public social insurances systems, where they exist, always include a representation of the respective country's Ministry of Health. However, it is of prime importance that this representation be entrusted to the division of

occupational health. In developing countries this division usually implements health legislation related to labour problems. Newly emerging social insurance schemes may not easily set up efficient and "unbiased" health divisions. Labour unions might be inclined to distrust the arrangements. Besides, in their initial stages social insurance projects themselves might not appeal to most workers or some industrial unions. In order to avoid situations, all health aspects and the provision of health care within social insurance schemes should be delegated to occupational health divisions by the respective authorities in the Ministry of Health. The Sudan has followed this experience since the inception of the Social Insurances Public Corporation in early 1974, and the respective work, which includes all medical and preventive occupational health practice in this sphere, has proved successful.

#### **Legislation**

For occupational health services in the broad sense of the term to be properly integrated in public health system of a developing country, existing health legislation must be modernized and brought up to date. Where occupational health legislation is still lacking, it should be adopted as part of the general health legislation.

Because of a shortage of medical and health personnel and facilities the Sudan resorted to "pooling" the existing resources. A case in point are the National Health Laboratories the facilities of which are available to all the specialized departments including, of course, Occupational Health. This course was chosen in order to create an academic atmosphere for daily work as well as for research.

Most developing countries will not be able to provide efficient laboratories without "pooling" the available resources.

#### **Services**

The most important duty of an occupational health department in a developing country is, of course, to provide health care for the working population and their families. This has also been the main objective of Occupational Health Department in the Sudan which is responsible for the development of the following services and facilities.

##### *Guidance inspection service*

This is a specialized service in which the occupational health specialist makes his expert advice available to the worker, the employer, the government and the trade-unions. The health specialist is either a physician, an industrial hygienist, or a sanitarian who has been given specialized training and has a certain amount of experience in the field of occupational health practice. The inspections, known as guidance inspections, have the aim to try and teach both the employer and the worker and are carried out under the authority of the Occupational Health Advisory Board. They include three types of visit. Periodic

visits to plants or work-sites are made for on-the-spot examination of the existing conditions. The industrial hygienist is asked to carry out the actual measurements of the physical, chemical or biological factors and the data thus obtained are used for a more detailed assessment of the situation.

Inspection visits which have to provide solutions for specific problems, e.g. for the purposes of carrying out epidemiological studies or studying individual work situations. These visits are made at the request of the respective occupational health supervisor, the employer or his representative or a trade union officer.

Surprise visits which are sometimes carried out without notice in cases of expected or impending hazards. They may also be made in order to make sure that previous guidance instructions have been observed.

#### *Periodic medical examinations*

These are carried out in cases where groups of workers are continually exposed to specific hazards as, for instance, lead workers and persons exposed to ionizing radiations. They are also undertaken in cases of vulnerable groups e.g. the old, the young, the handicapped, and female workers. These examinations, carried out by physicians specializing in occupational health, are made either on-the-spot or, by previous arrangement with the employer, at a Workers Health Centre.

#### *Occupational health clinics*

In order to give a better idea of the work of these clinics we must first mention the method of integration of the occupational health branches in the health service system at country level where there exists provincial hospital. At these branches, the occupational health service, in addition to office facilities has its own unit within the precincts of the provincial hospital and thus forms a specialized hospital department. This gives the occupational health physician access to all hospital services and enables him to examine and investigate all cases that might be of an occupational nature as he has available all hospital facilities (X-ray department, laboratories etc. in addition to the specialist opinion of his other colleagues in case of need). Occupational health clinics also serve as reference centres to the country's other physicians and medical officers. The Social Insurance Corporation and the Medical Commissioner can also make use of this service by submitting to it cases for expert opinion. Moreover, this facility enables the occupational health physician to complete his epidemiological studies of work situations of special interest to the country's development projects.

#### *Industrial Hygiene Laboratory*

As mentioned before, this laboratory is in the National Health Laboratory buildings. The reason for this has already been generally explained. In the case of this laboratory in particular this situation was found convenient because of its relationship with National Chemical Laboratories which are situated adjacent to

it. The laboratories of the Sudan National Council for Research are also in close proximity to this laboratory. Ideally, the Industrial Hygiene Laboratory should have been set up within the precincts of the Department, but due to the conditions prevailing in the country the existing arrangement is considered suitable. Despite a certain geographical distance, the laboratory is completely incorporated in the Department's system.

Including both physical and chemical sections, the laboratory deals with the country's main occupational health problems. WIIO has contributed towards development of this laboratory by supplying various instruments, equipments and chemicals. Both local country branches and emerging occupational health divisions in neighbouring African and Arab countries could make use of this laboratory.

#### *Medical Commission Division*

The role of occupational health in the existing public health system can also be seen in the use by the Medical Commissioner of occupational health expertise in convening medical boards for the assessment and follow-up of and final decision on, cases of disability due either to organic causes or occupational diseases. Thanks to daily activities in the field, occupational health physicians are in a good position to judge and assess occupational disablements and follow them up after these become chronic.

The medical board, when convened, may also ask for the expert opinion of some other physician, orthopedic surgeon, chest specialist, etc.

#### *Workers health centres*

One of the most important spheres of the Sudan's occupational health experiment is the system of workers health centres. Economic activity in most industrial regions of the Sudan is concentrated in small industries. In order to secure an efficient system of health care for the working population and their families in this sector of the economy, a statutory committee was convened and assigned the responsibility of establishing these centres on the basis of voluntary funds (self-help). Several centres have been established in different regions of the country, priority being given to areas with a large number of small industries (and also large industrial enterprises). This project represents a novel approach in primary health care for working population and their families. The centres are also concerned with the evaluation and control of occupational health hazards, industrial injuries and work-aggravated ill-health.

#### *Training*

The Department is responsible for the training of all medical, engineering and related personnel in the field of occupational health. Suitable curricula have been established for postgraduate students wanting to achieve a M.Sc. degree in community medicine (University of Khartoum), for undergraduates of medical,

engineering and sciences faculties, and students of secondary technical schools. Various industrial institutes (e.g. for spinning and weaving, for vocational training, stores supervision, etc.) receive the necessary instruction in this field. Occupational health as a main subject is also incorporated in the curricula of most health institutes and schools related to the Ministry of Health such as the College of Hygiene, the Nursing College, the Medical Assistants Schools, the Health Visitors Institute, etc.

#### *Occupational Health Training Centre*

In addition to these training activities the Department is responsible for the training of occupational health and safety supervisors. Graduates of the Occupational Health Training Centre, after successfully completing the requisite training courses, resume their statutory duties, chief among which are primary health care and concern with safety matters. Trainees are drawn mainly from manufacturing industries, rural water corporation works, mines and quarries, and other work sites fitting the statutory definition of "factory". From this training centre, which represents one of the main responsibilities of the Department, a fair number of health and safety supervisors have graduated since its establishment in 1967.

#### *Public Corporation for Workers' Education*

The Department represents the Health Ministry on the executive board of this public corporation, the main duty of which is to run short courses and seminars for trade union officers, works controllers and general workers. For this purpose educational centres have been opened in Khartoum province as well as in other provinces. Occupational health constitutes one of the main items in their syllabus, and the teachers are specially trained primary health workers.

It is believed that these activities could be organized without difficulty in prospective occupational health divisions in countries of the developing world.

#### *Regular monitoring programmes*

The Department is solely responsible for initiating and maintaining these programmes. Some of the important areas for regular monitoring are lead works, cotton mills and work sites exposed to wood-dust and other vegetable dusts. The respective work is done by occupational health physicians and industrial hygienists. Research funds contributed by WHO have ensured continuity of work in this sector of the Department's activities.