Occupational health – a requirement for development
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Many people are at serious risk of ill-health and accidents because of the conditions they encounter in their workplaces. Combating these dangers requires a multidisciplinary approach and special attention to the elimination of hazards from the work environment. This is a long-standing concern of WHO.

Many of the processes in which workers are engaged can inflict unpleasant, harmful and even disastrous consequences on them. Most could be prevented, but unfortunately the knowledge that could make this possible is far from being universally applied. Only a small proportion of workers in the developing world are covered by social programmes, and these do not always embrace effective occupational health practice.

WHO's programme on workers' health is concerned with the control of occupational health risks, the protection and promotion of the health of working populations, and the humanization of work. WHO provides scientific background and guidance for governments making decisions on health legislation and its enforcement and its Regional Offices have specific programmes in which technical cooperation is a major consideration.

Hazards
Pesticide poisoning may affect individuals working with toxic chemicals in agriculture or elsewhere. The storage, distribution and handling of pesticides may take place in close proximity to people's homes. Mass poisonings have occurred when pesticides have been transported or stored with foodstuffs, and when food or water has been put into containers that previously held pesticides. Populations at risk are often unaware of the danger because they have not been advised about it or because of the absence or inadequacy of warning labels.

In one of India's storage battery industries, workers were found to be exposed to mean atmospheric lead concentrations of 37.5 mg/m³; 67% of such workers presented clinical symptoms of lead poisoning (1). In Brazil about a million workers are exposed to poisoning with mercury used in the process of gold extraction by amalgamation. Mercury levels in biological samples taken from gold miners and people living near gold mines are several times higher than those in urban populations (2).

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Accidental poisoning

In Pakistan some 2800 malaria control workers were poisoned and five died after spraying a formulation of malathion that had become partially converted to isomalathion because of deficiencies in production and storage.

Exposure to mineral and vegetable dusts occurs in many workplaces. For example, a high prevalence of silicosis – an incurable fibrotic lung disease – has been reported among workers inhaling free crystalline silica in countless workplaces around the world. Regarding vegetable dusts, large numbers of cotton workers suffer from byssinosis, an obstructive lung disease.

Some health problems are caused by noise or high temperature. Noise-induced hearing loss is a frequent finding among workers in noisy workplaces such as steel mills and foundries. Heat stress may be dangerous in itself and may also predispose workers to other conditions. In hot environments it may be impossible to wear protective clothing, and consequently exposure to other hazards may occur.

Exposure to biological agents is quite common, especially among rural workers, handlers of animal products, and health care personnel. Reservoirs for irrigation projects may provide breeding sites for mosquitoes and other disease vectors. Spores released by fungi in air-conditioning systems have led to serious health problems.

In highly industrialized countries, musculoskeletal problems, resulting from a failure to take ergonomic factors into consideration, account for some 40% of reported occupational diseases. Such problems are probably very common in developing countries because of excessive work speeds, poorly designed machinery, and many other unfavourable factors. The prevalence of impairments triggered by excessive repetitive motion, for instance carpal tunnel syndrome and tenosynovitis, is increasing in all countries, especially among keyboard operators.

Psychological stress may be attributable to migration from rural to urban areas, unfamiliar working conditions, long distances between people’s workplaces and homes, poor transport, poor housing or low incomes. The number of persons dependent on a worker may also be significant in this connection. A study in Thailand, for example, showed that 52% of the women working in a textile factory had full responsibility for a family of four or more. Psychosocial factors also have a bearing on the incidence of alcoholism, drug abuse and accidents.

The influence of hazards encountered in the workplace is often compounded by outside circumstances. For instance, malnutrition, disease prevalence and poor housing may be additional burdens that workers have to bear. Moreover, hazards may be transferred from the workplace to the home. If there are no laundering facilities in a factory, dangerous substances such as lead or asbestos may be carried out every day on workers’ clothes.

The use of some very toxic substances is increasing in developing countries yet declining in the developed world.
Factories and other workplaces contribute substantially to the pollution of air, water and soil, and consequently have adverse effects on health far beyond their boundaries. In some small countries, for example, certain air pollutants come predominantly from large neighbouring ones. The environmental disasters of Bhopal, Seveso and Chernobyl stemmed largely from failures in process control, routine maintenance, hazard communication and training in emergency procedures.

Hazardous wastes from workplaces may find their way to open dumps. Such materials are sometimes carelessly or irresponsibly dealt with after crossing national boundaries, even where regulations require containers to be clearly marked and receiving countries to be competent in handling them.

In small enterprises it often happens that hazardous materials are handled without proper precautions being taken. Not surprisingly, cases of severe intoxication and mortality occur in these circumstances. Clearly, mechanisms should be created for reaching out to the workers concerned. There can be little doubt that the reported incidents represent only a small proportion of the actual number.

Radiation exposure

A radiation therapy machine, carelessly left on an open dump in Goiania, Brazil, broke up, releasing caesium-137. Children found the machine and had fun “shining in the dark”. Many deaths followed and about 240 people were contaminated.

Technology transfer accounts to a significant degree for workplace hazards. Processes have been exported from countries where strict standards are enforced to countries where this is not the case. Highly toxic substances, among them carbon disulfide, asbestos and certain pesticides, continue to be used in many places without proper controls. The use of some very toxic substances is increasing in developing countries yet declining in the developed world. An associated problem is the importation into developing countries of processes, equipment, machinery and tools without due consideration being given to the conditions in which they are to be used. Not only ergonomic and anthropometric factors should be taken into account, but also the skills needed by workers and the prospects for training them.

Obstacles to occupational health protection

Underdiagnosis and underreporting of occupational diseases lead to the belief that they are a minor problem. Moreover, subclinical health problems, which may impair work capacity, are often overlooked. Even when health impairment caused by occupational circumstances is detected it may be attributed to non-
Diagnosis and reporting

In Brazil, 119 cases of silicotic tuberculosis were diagnosed among 3440 patients previously diagnosed as having only tuberculosis. All had been engaged in occupations where the potential for cases of silicotic tuberculosis existed, such as rock-drilling and sandblasting.

Of 30 sugar cane workers who had used a mercurial fungicide, 21 suffered from mercury poisoning. This was in an area where 1456 occupational injuries had been reported, yet the only occupational disease reported had not been mercury poisoning.


The importance and visibility of public health issues often shape political will. Governments and agencies in developing countries commonly direct their efforts principally at such matters as sanitation, water supply, vector control, nutrition and immunization, while overlooking the vital significance of occupational health and environmental pollution.

There are too few adequately trained occupational physicians, while many general practitioners are insufficiently knowledgeable about occupational diseases. In many countries the profession of occupational hygiene, essential for the protection of workers’ health, is wholly unrepresented, and other gaps may exist in the multidisciplinary team that is necessary. Sometimes roles in occupational hygiene are filled by professionals without appropriate qualifications.

National decision-makers commonly fail to accord workers’ health the priority it merits. In developing countries some 90% of workers have no access to occupational health services, and the figure can be as high as 50% even in developed countries.

Intersectoral collaboration and multidisciplinary integration should be aimed for, with a good balance between the components of each discipline.
ments should not be allowed to obstruct preventive action: much can be achieved by recognizing sources of hazards and controlling them.

It is not satisfactory merely to move a person away from a work station and to replace her or him with a colleague when observation or biological monitoring has indicated a danger of health impairment. The cause of the problem must be identified and eliminated before a new worker is introduced. In other words, health surveillance tools cannot replace primary prevention because they only identify but do not prevent exposure or impairment. Of course, the best approach is to endeavour to foresee hazards that may accompany work processes and to design the processes accordingly.

For many occupational diseases there is little point in having so-called preventive services that rely on medical surveillance, because it is too late to stop the progress of the diseases by the time they have been detected. Thus early detection is already too late in cases of occupational hearing loss, silicosis and cancer.

There may be confusion in people’s minds as to the difference between health care for working populations and that provided by occupational health services. Only occupational health services can meet the requirement for safe and healthy workplaces. Some of the elements needed for the creation and maintenance of an occupational health service are:

- political will and decision-making;
- a policy basis;
- clearly defined objectives;
- adequate human and financial resources;
- adequate facilities and equipment;
- competent management;
- multidisciplinary teams and promotion of teamwork;
- assignment of responsibilities to teams and individuals;
- mechanisms for internal and external communication;
- access to information systems;
- quality assurance;
- programme evaluation.

Timely and realistic planning is essential. Resources for occupational health should be allocated in accordance with priorities, and in this connection a balance has to be maintained between facilities, human resources, field equipment, analytical laboratories and information systems. Operational costs have to be borne in mind, including, for example, those of transport, equipment maintenance and repairs, publications and quality assurance.

There is, inevitably, a gap between the acquisition of knowledge and its application. This is particularly marked in developing countries, where there is often lack of access to information. Hazard control fails more often because of an inability to apply knowledge than because of its absence.

**International activities**

Many international and intergovernmental bodies are involved in occupational health activities. The International Labour Or-
Silicosis

Silicosis is a progressive incurable disease caused by the inhalation of airborne dust containing free crystalline silica, to which millions of workers are exposed. In 1995, ILO and WHO established a programme aimed at the global reduction and eventual elimination of the disease, through promotion and support for the development of national capabilities in epidemiological surveillance and monitoring and the prevention and control of dust exposure in the work environment.

WHO and its Network of Collaborating Centres in Occupational Health have worked out a global strategy (3) with the following objectives:

- to identify the main needs and priorities for action in occupational health at the country and global levels;
- to trigger awareness and political commitment so that appropriate occupational health services can be developed, through intersectoral coordination and international collaboration.

The realities on which this strategy is based are as follows.

- Occupational health and safety are integral components of the general concept of health, which is part of socioeconomic development.
- Occupational health and safety are fundamental human rights.
- The achievement of occupational health for all in a country requires the political commitment of the nation as a whole, not only that of the ministry of health or the ministry of labour.
- It is essential to bring about broad participation in the planning and implementation of health and safety at work through an intersectoral and multidisciplinary coordinating body.

National and international occupational health and safety policies need to include:
- avoidance of hazards (primary prevention);
- use of safe technology;
- optimization of working conditions;
- integration of production with health and safety activities;

The occupational hygiene component of WHO’s Workers’ Health Programme aims to:

- promote occupational hygiene at a high level of professional competence and as an integral part of multidisciplinary programmes in occupational health;
- disseminate information on methodologies for the recognition of occupational hazards and the assessment of exposure to them in the workplace;
- promote the prevention and control of hazards in the work environment through appropriate technologies;
- promote international collaboration in this field.
governmental responsibility, authority and competence in the development and control of working conditions;

- primary responsibility of employers and entrepreneurs for health and safety at workplaces;

- recognition of workers’ interest in occupational health and safety;

- collaboration and cooperation between employers and workers on an equal basis;

- recognition of the right of workers to participate in decision-making about their own work;

- recognition of the right to know and the principle of transparency;

- continuous follow-up and development.

In 1994, WHO launched an initiative on hazard prevention and control in the work environment (4) with the objectives of:

- promoting awareness and political will in relation to primary prevention as a priority element in occupational health programmes;

- promoting or strengthening the development of the technical and managerial capabilities needed at country level for the elaboration and implementation of hazard prevention and control measures.

This initiative gives special attention to the exchange and dissemination of information, the development of human resources, and the promotion of research on hazard control. It also promotes safe working practices, workers’ participation in decision-making, the selection of cleaner technologies, the satisfactory design of equipment, work processes and workplaces, the control of occupational hazards at their source, and the integration of occupational health measures with environmental protection. It is hoped that the initiative will help to strengthen national capabilities in the field of hazard prevention and control, and thereby contribute to sustainable development.

Training in all the occupational health disciplines should be extended worldwide. In 1992 the harmonization of training in occupational hygiene received a significant boost at a WHO meeting of experts, who reached consensus on the profile of the occupational hygienist and the required areas of knowledge (5). The meeting was held in collaboration with the International Occupational Hygiene Association and the European Commission. The accreditation of courses and the certification of professionals should be promoted nationally and internationally. Certification schemes have been listed and recommendations have been made for the promotion of international cooperation aimed at achieving improved quality assurance in the practice of occupational hygiene (6).

Collaborative national and international measures designed to overcome occupational health problems can help to ensure sustainable development.

There are many links between work, health, socioeconomic development and the environment. Collaborative national and international measures designed to overcome occupational health problems can help to ensure sustainable development. The commitment to workers’ health should embrace more than the workplace: it should extend to the general environ-
ment and, indeed, to the future, since what is done today is bound to influence the quality of life tomorrow.

References

Age-related occupational health

Studies of age and occupational accidents have found a generally lower incidence of accidents with age, but the severity of injuries increases, as does the time required for recovery. Job satisfaction and job involvement have been found to increase consistently with age. Avoidable absenteeism also decreases with age, although unavoidable absences such as sick leave do increase in older workers. In addition, job turnover significantly decreases with age.