

Occupational Safety and Health in Developing Countries

Review of strategies, case studies and a bibliography

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ARBETSLIVSRAPPORT NR 2000:17

ISSN 1400-8211 <http://www.niwl.se/arb/>

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Arbetslivsinstitutet
National Institute for Working Life

Foreword

The National Institute of Working Life is a national centre of knowledge for issues concerning working life. The Institute carries out research and development covering the whole field of working life, on commission from the Ministry of Industry, Employment and Communications.

The goals of the National Institute of Working Life are to contribute to:

- Renewal and development of working life
- Long-term accumulation of knowledge and competence
- Reduced risk of ill-health and accidents

The Institute collaborates with the social partners, the business world, universities and university colleges, with international partners and with others active in the field of working life.

The Institute places a great deal of emphasis on international collaboration. It is an official collaborating centre of the World Health Organization (WHO), the International Labour Organization, and the International Commission on Occupational Health (ICOH). The Institute has memorandums of understanding with the National Institute of Occupational Safety and Health and with the University of Massachusetts, Lowell, in the United States. Discussions with other institutes are in progress.

The Institute organizes training in occupational health and safety for participants from developing countries and from Eastern Europe. The aim is that the training should lead to development, and therefore emphasis is placed on the participants' own projects and the practical application that they imply.

This paper provides a review of some occupational safety and health problems with relevance for developing countries. The paper describes some prevention strategies to reduce accidents and diseases occurring in the workplace and provides some examples of case studies from developing countries as lessons to follow. The paper also includes a limited and uncommented bibliography based on a few scientific journals 1995-1999. It is hoped that this report will be useful for training purposes and as reference material to inspire more research publications on these issues that are presently underrepresented.

Special thanks to Kristin Skaffloth for all her hard work in putting this together.

November 2000

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1 Occupational safety and health problems

Approximately 45% of the world's population and 58% of the population over 10 years of age belong to the global workforce, i.e. 60-70% of the adult male and 30-60% of the adult female population of the world. The percentage is even higher when home-work and informal work are taken into account. This global workforce sustains the economic and material basis of society, which is critically dependent on their working capacity. The effects of globalization on occupational safety and health have recently been described by Rantanen (1999, 2000 b).

Making working conditions safe and healthy is in the interest of workers, employers and governments, as well as the public at large. Although it seems simple and obvious, this idea has not yet gained meaningful universal recognition. Hundreds of millions of people throughout the world are employed today in conditions that breed ill health and/or are unsafe (WHO 1999).

- Each year, work-related injuries and diseases kill an estimated 1.1 million people worldwide, which roughly equals the global annual number of deaths from malaria.
- 250 million occupational accidents result in more than 300 000 fatalities annually. Many of these accidents lead to partial or complete incapacity to work and generate income.
- Annually, an estimated 160 million new cases of work-related diseases occur worldwide, including respiratory and cardiovascular diseases, cancer, hearing loss, musculoskeletal and reproductive disorders, mental and neurological illnesses.
- An increasing number of workers in industrial countries complain about psychological stress and overwork. These psychological factors have been found to be strongly associated with insomnia, depression and fatigue, and burn-out syndromes, as well as with elevated risks of cardiovascular diseases.
- Only 5-10% of workers in developing countries and 20-50% of workers in industrial countries (with a few exceptions) are estimated to have access to adequate occupational health services. In the USA, for example, 40% of the workforce of some 130 million employees do not have such access.
- Even in advanced economies, a large proportion of work sites is not regularly inspected for occupational health and safety.

The health status of the workforce in every country has an immediate and direct impact on national and world economies. Total economic losses due to occupational illnesses and injuries are enormous (WHO 1999).

- The International Labour Organization (ILO) has estimated that in 1997, the overall economic losses resulting from work-related diseases and injuries were approximately 4% of the world's Gross National Product.
- In 1992, the direct cost paid out in compensation for work-related diseases and injuries in European countries, reached 27 000 million ECUs.

- In 1992, total direct and indirect costs associated with work-related injuries and diseases in the USA were estimated to be US\$ 171 000 million, surpassing those of AIDS and on a par with those of cancer and heart disease.

According to a statement by occupational health institutes collaborating with the WHO (1995) the most important challenges for occupational health for the future will be:

- Occupational health problems linked to new information technologies and automation;
- new chemical substances and physical energies;
- health hazards associated with new biotechnologies;
- transfer of hazardous technologies;
- aging working populations;
- special problems of vulnerable and underserved groups (e.g. chronically ill and handicapped), including migrants and the unemployed; and,
- problems related to growing mobility of worker populations and occurrence of new occupational diseases of various origins.

The ultimate objective of occupational health is a healthy, safe and satisfactory work environment and a healthy, active and productive worker, who is free from both occupational and non-occupational diseases and who is capable and motivated to carry out his or her daily job and is able to experience job satisfaction and develop both as a worker and as an individual. Thus, occupational safety and health can be defined as a multidisciplinary activity aiming at:

- protection and promotion of the health of workers by eliminating occupational factors and conditions hazardous to health and safety at work
- enhancement of physical, mental and social well-being of workers and support for the development and maintenance of their working capacity, as well as professional and social development at work
- development and promotion of sustainable work environments and work organizations

1.1 The overall exposure pattern

There is a wide variation in economic structures, occupational structures, working conditions, work environment, and the health status of workers in different regions of the world, in different countries and in different sectors of economies. There are also special occupational settings and types of enterprises, where work and workplace deviate substantially from the norm.

Accidents and physical and chemical agents are the main problems in manufacturing industries, while pesticides and organic dusts, heavy physical work, biological factors and accidents are the occupational burdens of agricultural workers. A number of studies show that in the worst conditions 50-100% of the workers in some hazardous industries may be exposed to levels of chemical, physical or biological factors that exceed the occupational exposure limits applied in the industrial countries. (WHO 1995).

The least developed countries that still employ the major part of the workforce in agriculture and other types of primary production face occupational health problems that are different from those experienced in the industrial countries. In the least developed countries the occupational factors are aggravated by numerous non-occupational factors such as parasitic

and infectious diseases, poor hygiene and sanitation, poor nutrition, general poverty and illiteracy.

Small-scale industrial and service enterprises often have few resources, heavy workloads and multiple tasks for each worker. Work usually takes place in an environment that does not always meet required standards. Family members of the entrepreneurs and workers, including children, pregnant women and elderly people, share the work in small-scale enterprises, such as home industries, small farms and cottage industries, particularly in developing countries. In such situations, most workplace exposures also affect family members because most of the time is spent in the combined home and work environment. It has been estimated that two-thirds of the workers of the world still work in conditions that do not meet the minimum standards set by ILO.

Detailed information on occupational exposures can be found in a number of recent textbooks (e.g. Levy, Wegman, eds, 2000). This paper presents a modified and up-dated summary from a WHO document (1995).

1.2 Accidents

Mechanical factors, unshielded machinery, unsafe structures at the workplace and dangerous unprotected tools are among the most prevalent hazards in both industrial and developing countries. They affect the health of a high proportion of the workforce. Most accidents could be prevented by applying relatively simple measures in the work environment, working practices, and safety systems and ensuring appropriate behavioural and management practices. This would significantly reduce accident rates within a relatively short period of time. Accident prevention programmes are shown to have high cost-effectiveness and yield rapid results. However, unfortunately, ignorance of such precautions, particularly in sectors where production has grown rapidly, has led to increasing rates of occupational accidents (WHO 1995).

Prevention is the only sustainable strategy for controlling the accident epidemic. Some countries can demonstrate very positive effects of accident prevention programmes. For example, in the 20-year period between 1973 and 1993, Finland was able to reduce its number of accidents by 68%. In Sweden, the development was even more positive: an 85% reduction in fatal accidents between 1955 and 1995 and a 72% reduction between 1975 and 1995 (Rantanen 2000).

1.3 Chemical and organic exposures

About 100,000 different chemical products are currently in use in work environments, and the number is increasing constantly. The extent of exposure varies widely according to the industry, activity and the country.

Metal poisoning, solvent damage to the central nervous system and liver, pesticide poisoning, skin and respiratory allergies, cancers and reproductive disorders are among the health effects of such exposures. Pesticide exposure is the major chemical hazard in developing countries where personal protection is particularly difficult and other preventive means should be implemented (Wesseling et al 1997). The major threat posed by pesticides in many developing countries is acute poisoning itself. A recent estimate by the WHO puts the annual number of severe poisonings at 3 million, with about 220,000 deaths.

Sweden has had only a few new cases of silicosis or asbestosis during the last decade. This is due to the fact that a major national campaign was launched in the 70s on the prevention of dust exposures with high content of silica and the banning of asbestos import in 1975. However, asbestos-induced mesothelioma and lung cancers continue to occur and the incidences have even increased due to long induction periods for cancer. Eventually, the incidence will decrease to null. Furthermore, it has been estimated that in the future, the present occupational exposures in Sweden will cause less than a hundred cases out of 40-50 000 total cancer cases annually (Järholm, ed, 1996).

1.4 Biological agents

Many biological agents, viruses, bacteria, parasites, fungi, moulds and organic dusts have been found to occur in occupational exposures. In the industrial countries around 15% of workers may be at risk of viral or bacterial infection, allergies and respiratory diseases. In many developing countries the number one exposure is to organic and biological agents. The Hepatitis B and Hepatitis C viruses and tuberculosis infections (particularly among health care workers), asthmas (among persons exposed to organic dust) and chronic parasitic (particularly among agricultural and forestry workers) are the most common occupational diseases that result from such exposures (WHO 1995).

1.5 Physical exposures

Workers may be exposed to several physical factors such as noise, vibration, ionizing and non-ionizing radiations and microclimatic conditions that are known to affect their health. Noise-induced hearing is one of the most prevalent occupational diseases in both developing and industrial countries, although many preventive means are available. Preventive strategies have also been developed for other physical factors, particularly for localized vibration and ionizing radiation.

During the 1990's there was intense concern about the possibility of increased cancer risk from electromagnetic fields (EMF). There may also be a small risk increase of leukemia among children, but the exposures have to be high (NIEHS 1999). It is still too early to evaluate the potentially harmful effects of the exposure to cellular phones and large research efforts are ongoing.

1.6 Ergonomics and musculoskeletal exposures

Between 10% and 30% of the workforce in industrial countries and between 50% and 70% in developing countries may be exposed to heavy physical workload or to unergonomic working conditions such as lifting and moving of heavy items or repetitive manual tasks. Repetitive tasks and static muscular load are found in many industrial and service occupations. In many industrial countries musculoskeletal disorders are the main cause of both short-term and permanent work disability, which can cause economic losses that may amount to 5% of the GNP.

Most exposures can be eliminated or minimized through mechanization, improvement of ergonomics, and better organization of work and training. In particular, the growing numbers of elderly workers and the female workforce require constant vigilance from those responsible for the work organization.

1.7 Psychosocial exposures

Up to 50% of all workers in industrial countries judge their work to be “mentally heavy”. Psychological stress caused by time pressure, hectic work, and risk of unemployment has become more prevalent during the past decade (Isaksson et al 2000). Other factors that may have adverse psychological effects include jobs with heavy responsibility for human or economic concerns, monotonous work or work that requires constant concentration. Others are shift-work, jobs with the threat of violence, such as police or prison work, and isolated work.

Psychological stress and overload have been associated with sleep disturbances, burn-out syndromes, stress, nervousness and depression. There is also epidemiological evidence of an elevated risk of cardiovascular disorders, particularly coronary heart disease and hypertension. The EU Commission has recently distributed a guide on work related stress, subtitled "Spice of life or kiss of death" (EU 2000). The guide provides a checklist for work related sources of stress, recommendations for and examples of successful intervention programs.

2. Occupational safety and health management and strategies

Occupational diseases and injuries are, in principle, preventable. Among the approaches to preventing these include, developing awareness of occupational health and safety hazards among workers and employers, assessing the nature and extent of hazards, and introducing and maintaining effective control and evaluation measures. Sometimes these approaches are undertaken solely by employers and workers within a specific workplace. Other times external involvement is needed. This can range from encouragement by appropriate individuals or agencies outside the specific workplace to the promulgation and rigorous enforcement of occupational health and safety regulations.

Working conditions, type of work, vocational and professional status, and geographical location of the workplace also have a profound impact on the social status and social well-being of workers. Historically, occupational health programmes have been developed hand-in-hand with the improvement of social conditions for underserved and unprivileged workers. Although there is an abundant literature on more or less simple solutions to many work place hazards, e.g. in the ILO Encyclopaedia on Occupational Health and Safety (Stellman, ed, 1998), societies need adequate, systematic approaches to manage and make sure that such solutions are implemented.

2.1 UN agencies

There are several agencies dedicated to improving occupational safety and health. The most important of these are the International Labour Organization (ILO), and the World Health Organization (WHO). Occupational safety and health was also an important issue for the United Nations Conference on Environment and Development (UNCED). The UNCED adopted Agenda 21, in Rio 1992. The Agenda also has a section that discusses the increased role of workers and trade unions. Among the targets to be reached by the year 2000 mentioned in this chapter were:

- to promote the right to establish trade unions
- to promote ratification of relevant ILO-conventions
- to establish mechanisms with two and tripartite composition for safety, health and sustainable development
- to increase the number of treaties between the labour market partners on the environment
- to reduce the number of work accidents and occupational diseases and to improve the statistical reporting of those
- to increase training for employees, particularly in occupational safety and health

A five year evaluation of the results of the UNCED process was performed in 1997 at a special UN General Assembly meeting (UNGASS) but the more long-term evaluation remains. The WHO summarized the health experiences for the 1997 meeting.

2.1.1. The International Labour Organization

The *International Labour Organization* (ILO) is a member of the United Nations family of organizations whose special mandate is the promotion of safe and decent work in all countries of the world. The ILO formulates international labour standards in the form of Conventions and Recommendations, which set minimum standards of basic labour rights. To be effective those standards must be adopted by the member countries and implemented in practice.

The ILO Conventions and Recommendations on occupational safety and health define the rights of the workers and allocate duties and responsibilities to the competent authority, the employers and workers in the field of occupational safety and health. The policy on occupational health and safety is essentially contained in two international Conventions and their accompanying Recommendations. They provide for the adoption of a national occupational safety and health policy and describe the actions needed at the national level and at the enterprise level to promote occupational safety and health and to improve the working environment.

The ILO Occupational Health Services Convention 1985 (No. 161) and Recommendation (No. 171), provide for the establishment of occupational health services which will contribute to the implementation of the occupational safety and health policy and will perform their functions at the enterprise level.

A major objective of the ILO in relation to occupational safety and health, is to enable countries to extend social protection to all groups in society and to improve working conditions and safety and health at work through its InFocus Programme which covers working conditions. The objectives of the SafeWork Programme are, 1) to create worldwide awareness of the dimensions and consequences of work-related accidents, injuries and diseases; 2) to promote the goal of basic protection for all workers in conformity with international labour standards; and 3) to enhance the capacity of member States and industry to design and implement effective preventive and protective policies and programmes.

The Programme aims to create worldwide awareness of the dimensions and consequences of work-related accidents, injuries and diseases; to place the health and safety of all workers on the international agenda; and to stimulate and support practical action at all levels. The programme will conduct research, statistical work and media-related activities, and will support national action through a global programme of technical assistance. The Programme will promote, as a policy and operational tool, the value of prevention as an efficient and cost-effective way of providing safety and health protection to all workers.

The SafeWork Programme will focus on hazardous work and give primary attention to workers in especially hazardous occupations in sectors where the risks to life and safety are manifestly high, such as agriculture, mining and construction, workers in the informal sector, and those occupationally exposed to abuse and exploitation, such as women, children and migrants. It will adopt an integrated approach, including non-traditional aspects of workers' health and safety such as stress and HIV-AIDS.

Within the ILO is also the International Safety and Health Information Centre (CIS) in Geneva, Switzerland. The major objective of CIS is to be a worldwide service dedicated to the collection and dissemination of information on the prevention of occupational accidents and diseases.

2.1.2. The World Health Organization and the Global strategy for occupational health for all

The *World Health Organization*, since its inception in 1948 has recognized the utmost importance of improving the health status of working populations and has been developing international cooperation in this area. WHO has a strong network of collaborating centres. It also has an occupational health programme with emphasis on data collection and analysis, research, formulation of strategies and recommendations for hazard prevention and control, human resource development with special emphasis on developing countries. However, in terms of staff, occupational health is not demonstrated as a high priority for WHO.

Wide experience from many countries show that a healthy economy, high quality of products or services and long-term productivity are difficult to achieve in poor working conditions with workers who are exposed to health and safety hazards. The available scientific knowledge and practical experiences of enterprises and countries, which have achieved the best results in the development of occupational safety and health indicate the value of several principles.

Because of the numerous health problems associated with work, the need for occupational health is evident in all countries including the least developed ones. The way to solve such problems may, however, vary substantially according to the national and local needs and conditions, cultural influences, resources and other local factors. Regional cooperation between neighbouring countries for training, research and information could be resource saving and a step towards establishing effective national systems.

A network of occupational health institutes assigned as WHO collaborating centers published in 1995 a "*global strategy for occupational health for all*" with 10 priority objectives, later adopted by the World Health Assembly. These objectives are presented below.

Strengthening of national policies for health at work and development of policy tools.

Major traditional occupational health needs prevail among the global workforce. In addition, due to the rapid changes in economic structures, technologies and demography, new occupational health needs have appeared and should be taken into consideration in policies. National policy and programmes for the further development of occupational health should be reviewed and prepared in collaboration with government and social partners. Special concern should be devoted to enhance the possibilities to integrate the continuous improvement of the work environment in the overall development of enterprises and organisations.

Successful prevention requires: a) information on the causal relationship between risk factor and health outcome, b) knowledge of the mechanism of action of hazardous factors and conditions, c) knowledge of how the causal relationship can be broken, d) resources, tools and mechanisms for the implementation of preventive measures, and e) political, managerial and target group support for the preventive programme.

Development of healthy work environment

Without prejudicing the primary responsibility of the employer for ensuring safety at work, government policy, legal actions and enforcement are needed to ensure minimum levels of health and safety in all sectors of the economy, including small-scale enterprises, the informal sector, agriculture and the self-employed. Occupational health programmes should be considered as integral components of socio-economic development.

Development of healthy work practices and promotion of health at work

Many occupational hazards can be avoided and controlled through the adoption of appropriate working practices by the worker. This is possible by providing him or her with information, tools, work organization and work aids that enable a safe and decent workplace. This requires knowledge of health hazards at work and how to avoid them. In some instances personal protective devices may be needed.

Workers lifestyles may have specific or general impact on their occupational health and safety and working capacity. Health education on avoiding the combined effects of lifestyle factors and occupational exposures should be effectively provided.

Strengthening of Occupational Health Services (OHS)

The emerging problems of occupational health call for the development of OHS for all workers in all sectors of the economy and in all enterprises, as well as for the self-employed.

- Modern occupational health services should draw from relevant professions, e.g. occupational medicine and nursing, occupational hygiene, work physiology and physiotherapy, ergonomics, safety and work psychology.
- The preventive approach should be given the highest priority.
- Due consideration should be given to the needs of OHS for the self-employed, agricultural workers, persons employed in small-scale enterprises, migrant workers and those in the informal sector. Sometimes such services can be provided by primary health care units specially trained in occupational health.

Establishment of support services for occupational health

Many countries have organized such services in institutes of occupational health but many others rely on services provided by universities, large industries or individual consultancies.

- Governments and authorities responsible for occupational health should ensure the availability of expert services for OHS by guaranteeing the availability of institutions with the necessary capacity and manpower.
- The potential shortage of such experts should be considered in the planning of the training curriculae and programmes for occupational health.

- A national quality assurance and quality management element should be included in occupational health programmes and appropriate training should be provided to responsible personnel.

Development of occupational health standards based on scientific risk assessment

To ensure minimum levels of health and safety at work are applied, standards which define the safe levels of various exposures and other conditions of work are needed. The standards also serve as references for assessment of the result of monitoring and provide guidelines for planners. In the further development of standards the high variation in workers' sensitivity to occupational exposures should be considered. A relevant scientific basis for setting standards should be ensured through collaboration with research organizations.

Development of human resources for occupational health

There is a universal shortage of both expert resources and training in developing and newly industrialized countries in the South. This is due to three main reasons:

- a) lack of effective legislation and lack of requests from authorities and employers make the employment opportunities for such experts minimal
- b) in the absence of requests, the vocational training institutions and universities have not organized and developed curricula for the training of experts in occupational health.
- c) in some instances, where training is available, it is oriented to clinical occupational medicine only which, though important, does not give a full response to the needs for expertise in a preventive workplace-oriented occupational health service.
 - Each country should include, in its national programme on occupational health, an element of training of sufficient numbers of experts to implement the national programme and to ensure sufficient personnel resources for OHS.
 - Governments should ensure that the necessary elements of occupational health will be included in the basic training curricula of all who may in the future deal with occupational health issues.
 - Training in occupational health should also be given in connection with vocational training and in training programmes for workers, employers and managers.
 - In all training the need for a multidisciplinary approach in occupational health should be taken into consideration, ensuring involvement of occupational medicine and nursing, occupational hygiene, ergonomics and work physiology, occupational safety, work organisation and other relevant fields.

Establishment of information systems

Analysis of reliable data and establishment of trends in occupational health as well as recognition of priorities at national and local levels are of utmost importance both for decision-making on policies and for occupational health practices.

- Each country should review its data and registration systems of occupational diseases and accidents. The comparability of data should be ensured by collaboration between the countries.

Strengthening of research

- Each government should establish or strengthen its national centre for occupational health and, if appropriate, the network of centres.
- Such a centre should be given the responsibility of carrying out research, information, training, and if appropriate advisory and analytical and measurement services in support of occupational health practices.
- The national research programme for surveying the occupational health and safety situation, for developing competence and methodology in occupational health and for responding to national occupational health programme.
- Effective international collaboration in research should be ensured.

Development of collaboration in occupational health and with other activities

Tripartite collaboration between government, employers and trade unions in implementation of occupational health activities should be ensured by the establishment of formal links with these bodies.

Occupational safety and health activities have several links with other parallel activities, such as environmental health and environmental protection, primary health care and specialized hospital-based health care. In all such collaborative links the role of occupational health experts is to provide expert knowledge on potential hazards in the work environment and their effects on the health of those exposed to them.

In developing occupational health practices for special groups, such as farmers, the self-employed, small-scale industries and home industries, collaborative links may be needed with various extension organizations, industrial associations and several types of nongovernmental voluntary organization. Such links may facilitate the implementation of occupational health programmes among economic activities that are more informal and more difficult to reach than conventional well-organized industry and service enterprises.

2.2 Trade Agreements

Multilateral free trade agreements have been developed throughout the world during the second half of the 20th century. These agreements aim to facilitate international trade by lowering and in some cases removing trade barriers. To the extent that these agreements incorporate related social issues such as working conditions, they may help to advance occupational safety and health. On the other hand, trade agreements that ignore labour standards may have a negative impact (Frumkin 1999). Several major free trade agreements serve as important examples.

The European Union (EU) has paid attention to occupational health and safety in its efforts to develop the social dimension of working life. A comprehensive Framework Directive (391/89) on the minimum requirements for health and safety at work has been approved and has been supplemented with some 16 special directives. General duties placed upon the employer include duties of awareness, duties to take direct action to ensure safety and health, duties of strategic planning to avoid risks to safety and health, duties to train and direct the workforce, duties to inform, consult and involve the workforce, and duties of recording and notification.

The North American Free Trade Association (NAFTA) of the USA, Canada and Mexico has initiated a programme for occupational health and is planning to improve the collection of information, research, and the training and education of experts, workers and employers within the framework of the new Association.

The Subcommittee on Social Security and Occupational Safety and Health within the Employment and Labour Sector (ELS) of the Southern Africa Development Community (SADC) was established in 1996 to promote employment and productivity, and harmonise labour and social protection. The Subcommittee plans to implement the Codes on the Safe Use of Chemicals and HIV/AIDS in the Workplace, as well as monitoring OHS activities in the region, harmonisation of social security schemes and the development of training institutions in the relevant fields (SADC Website).

2.3 Different approaches

There are many different systems for supervising and improving occupational safety and health. Gustavsen (1996) has suggested that they could be grouped into three categories:

- a *specification* model, where laws and regulations are at the core and where the main actors are various types of experts
- a *procedure-based* model, where the potential of a rational systems approach is at the core and the line organisation is the main actor, e.g. internal control
- a *developmental* model, where the principle of continuous improvement is at the core and the activity is distributed as widely throughout the whole organisation as possible.

The *specification model* involves the social partners in many industrial countries and has been shortly described above. In several Latin American countries, as well as in Spain and Germany, social insurance schemes play an important role. A few examples are given below.

The Scandinavian model for occupational health was built upon joint agreements between the social partners rather than on specific legislation on occupational health services. In Sweden, the Working Environment Act provides for the establishment of a safety committee that plans and supervises safety activities. It also provides for the appointment of one or more workers' safety delegates who have wide powers of inspection and access to information. This combined force is authorized to order work to be suspended when it considers a situation to be dangerous, pending a ruling by the labour inspection service and despite opposition by the employer. No penalty can be imposed on a safety delegate whose decision to have the work suspended is not confirmed by the labour inspector, and the employer cannot claim any compensation for the suspension from the safety delegate or trade union organization.

In Germany there is a safety and health system of the statutory accident insurance funds (Gesetzliche Unfallversicherungsträger - UVT) alongside the public system. All companies, establishments and administrations are subject to compulsory membership which ensures insurance coverage in the event of industrial accidents and occupational diseases for all employees in Germany. The UVT is financed through employers' contributions. One of the tasks of the UVT, is to take any suitable action to prevent industrial accidents, occupational diseases and work-related health hazards and to ensure effective first aid. Monitoring and

enforcement of the regulations as well as consultancy for employers and employees is the responsibility of each UVT.

In the past decade there has been an active process of legal reform in occupational health and safety law in most of the Southern African region, motivated by both national and international pressures. These laws give more focus to the occupational health and safety system, particularly the tripartite roles and responsibilities (Loewenson 1996).

According to the Asian Pacific Newsletter on Occupational Health and Safety (2000) a number of steps have been taken recently in many Asian countries to improve the national system for occupational safety and health. For example, in 1994 a new OSH Act became effective in Malaysia that expanded the safety and health protection to all employed persons from the limited coverage of the previous Factories Act. Other key features of the new Act include: establishment of a national tripartite advisory body; clear definition of employers to protect their employees; responsibilities of manufacturers, importers, and suppliers of a plant; establishment of safety and health committees; and requirement of safety and health officers.

A *procedure-based* model for improving the work environment, called "internal control" was introduced in Norway and Sweden during the 1990's. In principle, it is a system for monitoring the work environment and for defining remedial action, with a strong resemblance to modern quality control systems (Gustavsen 1996). The idea is to identify errors and rely on the ordinary line organisation to correct them. Essentially, the point is to bring health and safety into the orbit of ordinary managerial concerns and actions. In return for this involvement, management is given a certain authority to use its own discretion in defining problems and priorities. The role of the labour inspection is defined as systems supervision where the primary point is to ensure that each enterprise has an adequate system in place.

In general, it would seem that the participation of workers in the inspection of working conditions and the working environment will continue to increase, particularly in countries that have introduced "self-inspection regimes" or internal control. Such regimes depend, however, on effective and aggressive workers' organizations and their active involvement in the audit process at the enterprise level, which is the centrepiece of any such "self inspection".

Very few studies on the effectiveness of this approach have been published. A study from Norway (Saksvik, Nytrö 1996) indicates that the system provides a reasonable frame of reference if there is a willingness on behalf of management to actively incorporate health and safety in its workplace. The system itself, however, does not solve the basic motivation problem.

The increasingly pressing nature of the issue of management involvement has brought forth a third type of approach: to see health and safety as subject to *development* and to a principle of continuous improvement.

Does the continuous improvement approach give advantages lacking in the two other approaches? Gustavsen (1996) argues that it does, based on a study of about 1300 Swedish workplaces. The study suggested that if there is broad active involvement, there will be strong positive improvements in work environment conditions as well as in productivity. When health and safety was part of an overall process of improvement and integrated with efforts to promote productivity there was a clear management motivation.

The idea of continuous improvement is widespread in working life today. Originally introduced by the Japanese, it has become a globally accepted practice and in most versions active participation from all concerned is a part of the concept.

In sum, all three approaches described above are important. While expert competence is necessary in dealing with, for instance potentially toxic substances, work postures can hardly be changed without some kind of participation from those concerned. The question is the balance between the two. In recent years there seem to be a drift towards the developmental approach in Europe, primarily for work organization and including the work environment aspects (Ennals, Gustavsen 1998).

2.4 Concluding remarks

This limited review of the major occupational safety and health problems and strategies for prevention is followed by some selected case studies and a limited bibliography from a few journals 1995-1999. Taken all together the major impression is that very little has been published on occupational safety and health from developing countries where 80% of the workers are exposed. Furthermore, although a few strategies have been published there is very little material on the evaluation and effects of such strategies. It is our sincere hope that much more material will be published and made available for an extended review sooner rather than later.

In October 2000 the International Conference on Health Research for Development, with more than 700 participants from more than 100 countries, organized by the WHO and the World Bank, agreed upon a declaration that stated:

"The conference reaffirms that health is a basic human right. Health research is essential for improvements not only in health but also in social and economic development. Rapid globalization, new understanding of human biology, and the information technology revolution pose new challenges and opportunities. Social and health disparities, both within and between countries, are growing. Given these global trends, a focus on social and gender equity should be central to health research."

These statements are as true for occupational health research as for health research in general.

3. Case Studies

3.1 The structure and function of the occupational health system in Thailand

Worker safety and health problems were given special attention in the Fifth National Economic and Social Development Plan (1982-1986). The first national plan was created in 1966, and that plan and each plan thereafter served as a temporary blueprint for guiding development. The fifth plan called for the protection of workers from occupational injuries and diseases as well as the provision of better working conditions. In response, the Department of Labour in 1983 established two new divisions at the central level, the National Institute for the Improvement of Working Conditions and Environment (NICE) and the Division of Safety Inspection. The creation of the NICE, represented an important step toward improving occupational health and safety in Thailand. Its activities, which are focused on encouraging employers to ameliorate hazardous working conditions, include:

- disseminating occupational health and safety information through public relations activities, training seminars, safety exhibitions and other means;
- conducting research on how to improve working conditions and prevent occupational diseases and injuries
- providing industrial hygiene and safety services; and,
- developing recommendations to improve regulations and standards.

In order to provide access to occupational health and safety services, the plan also called for the establishment of ten regional centers located in industrialized areas throughout the country by the year 2000.

Ref: Yingratanasuk T, Keifer MC, Barnhart S. International Journal of Occupational and Environmental Health 4; 121-130, 1998.

3.2 Improving occupational safety and health standards in the tanning industry in South East Asia

Country surveys were carried out in several South East Asian countries by the United Nations Industrial Development Organization (UNIDO), in connection with its regional programme for Pollution Control in the Tanning Industry in India, Indonesia, Nepal, and Sri Lanka . The surveys indicated that the tanning industry's performance in terms of safety and health at work and quality management was poor. During late 1996 and early 1997, the final strategy and mode of implementation was jointly decided upon based on a detailed assessment of the prevailing occupational safety and health standards at work in tanneries and CETP's as well as of the overall framework (legal, cultural, socio-economic), in participating countries.

The strategy and mode of implementation was based on an approach termed as "know-how through show-how" principle. The basic idea behind it was to disseminate the integrated concept of productivity, environment and OSH management by assisting few selected tanneries and using them as strongholds for training and demonstration of good practices. The main elements of the strategy, keeping in mind the future sustainability, were:

- establishment of demonstration sites in operational tanneries or effluent treatment plants, where good occupational safety and health practices at work will be visibly followed.
- preparation of a tannery specific labour safety manual and on-site training programme, using the said demonstration sites training base.
- involvement of leading tanners as trainers – after undergoing intensive train-the-trainers seminars – and as key promoters of OSH standards and practices.
- on-site advisory services and training under the overall coordination of activities in each country by the tanners association and/or organizations associated with the tanning industry, with the experts of the Regional Programme mainly providing technical guidance.

Results after 10 months of the implementation phase:

The overall assessment was positive, particularly in terms of awareness creation and tanners' response. Also, the pro-active endeavours by the tanning industry in the participating countries should be highlighted.

Successful solutions and ideas are documented and shared with the tanners in the other countries.

Lessons learned:

- change is best stimulated by starting from the real problems and conditions in the companies instead of the priorities of outsiders
- approaches have to be flexible and informal
- exchange of experience amongst entrepreneurs can be used to promote positive attitude to change
- emphasis should be put on local improvement measures which are already in use
- highlight "demand driven" concept (designed at entrepreneur's own initiative)
- link OSH standards and practices with improved profit, cost savings
- involve pro-active entrepreneurs to act as advocates of the cause

Ref: Hannak J. OSH and Development. Swedish Association for Occupational and Environmental Health and Development (UFA), and Swedish International Development Cooperation (SIDA) and Swedish National Institute for Working Life (NIWL), No.1, August 1998

3.3 Malaysian information service on pesticide toxicity

In Malaysia, a largely agricultural country, the use of pesticides is relatively prevalent and the employment of almost 4.3 million people is related to agriculture.

The use of pesticide in Malaysia has caused serious concern. A report by the Malaysian Factories and Machinery Department, an agency that enforces the Occupational Safety and Health Act, revealed that the accident rate for improper handling of pesticides is four times higher than that of other industries, and is as high as 93 per 1,000 workers as compared with the national average of 23 per 1,000. This indicated that there is an insufficiency of educational materials and information on safety and an apparent lack of caution in the handling of pesticides.

There was an urgent need to collect data and also to facilitate education among those involved in the use of pesticides. With this in mind, a pesticide information service was developed and a pilot information system was launched throughout the country in 1989. This system is focused on registered pesticides in Malaysia, but could also cater to those found throughout Asia-Pacific region. To date, information on more than 500 biochemically active substances has been incorporated into the pesticide information system, with some 3,000 commercially available products and their profiles listed. The system is available in two modes, namely, via a videotex system and also through a computer network utilizing PCs. The former is called Pestinfo, while the latter is called the Pesticide Information System.

The *Pestinfo* system operates via Malaysia's National Videotex System. The system is economical and can be accessed by members of the public and by professionals alike, including those in the agricultural sectors, whether extension workers or field workers.

The on-line Poisoning Reporting System is an outstanding feature incorporated in Pestinfo. This feature enables first-line reporting to be done electronically by the end-user, through a specially designed format, when any case of poisoning is encountered. It not only allows automatic documentation of all the cases reported, but simultaneously acts as an instant referral system which permits follow-up to be done systematically. Through the reporting system too, initiation of the appropriate immediate response can be undertaken to further assist the user in the management of the poisoning case. Data obtained via the Poisoning Reporting System will automatically be stored in a PC-based network system to make it possible to generate statistical reports.

The initial experience with Pestinfo has led to the development of the *Pesticide Information System*, which offers new possibilities of information processing for purposes of identification in cases of poisoning and can serve as a medium of references for extension workers as well as a means of compiling poisoning events that could be of assistance in policy decision-making and planning for health centres. PIS contains relevant information that can be readily accessed either by pesticide name, composition, registration number and name of the manufacturer or registrant of each and every product registered in the country. .

Compiling and disseminating pesticide information has been very successful.

Ref: Razak DA, Latiff AA, Majid MIA, Awang R. In Stellman (ed), *Encyclopaedia of Occupational Health and Safety*, Vol. I, Geneva, ILO 1998.

3.4 Fighting the pesticide related health problem in Central America

Despite awareness of the problems associated with pesticide use, they have persisted, and are even increasing in some regions of the developing world. Nowhere is this more apparent than in Latin America. The region produces 40% of the world's bananas, 60% of the world's coffee, and 25% of the world's beans.

If the pesticide problem is to be addressed effectively, the health sector must become more informed and more aggressive. In particular, health workers at the local level must be equipped with knowledge about pesticide health effects and data gathering and analytical skills. Further, they must use their knowledge and skills to elucidate the health impact of pesticide policy decisions, to develop well-reasoned arguments for preventive measures and regulatory controls and to be proactive in local and national action to alter the pesticide problem.

A recent initiative in Central America is designed to focus attention on the health effects of pesticides and to alter the pattern of uninvolvement by the health sector. Its goal is to strengthen the intervention capacity of frontline health practitioners, and thus, it represents a significant new direction in the effort to resolve the pesticide problem in Latin America.

The project titled *Project on Occupational and Environmental Aspects of Exposure to Pesticides in the Central America Isthmus* (PLAGSALUD), is coordinated by the Pan American Health Organization (PAHO), and funded by the Danish Agency for International Development (DANIDA). It is an attempt to implement a proactive strategy for dealing with the pesticide problem. Activities included: gathering of data on the nature and scope of the pesticide problem; training of health personnel in the diagnosis and treatment of pesticide poisoning; coordination of inter-institutional policy initiatives; development of technical resources (for example, training manuals); ongoing provision of technical expertise to the ministries of health in the region; provision of support for national and multinational policy development, and, promotion of applied research.

Emphasis has been given to strengthening local responses to the pesticide problem. The project is based on a multi-level "bottom-up" strategy. While the project is ultimately aimed at increasing the influence of the health sector on national pesticide policy, its primary emphasis is on developing local capacity to identify and respond to pesticide poisonings. By using this "bottom-up" approach, the project will foster sustainable responses to pesticide problems because such responses will be generated and implemented by those in closest contact with the problems (local health workers).

The project goals include improving:

- the epidemiological surveillance skills of local health workers so that they can gather reliable and up-to-date information on pesticide related problems;
- the outbreak investigation skills of local health workers so that they can better identify and understand general and area-specific risk factors for pesticide over-exposure and poisoning
- the capacity of local workers to respond to mass poisoning outbreaks (for example, when the illness reporting system identifies several victims from a particular farm or agricultural zone or when a high incidence of poisoning is associated with a particular chemical);
- the capacity of local health workers to analyze data and define appropriate responses;
- the capacity of local health workers to selectively monitor pesticide exposure among high-risk cohorts; and
- the coordination of local-level inter-institutional efforts to reduce pesticide hazards, (for example, inspection efforts involving health workers, labour inspectors, and agricultural technicians).

At the regional level, the project will seek to create a network with local and national health workers to help improve national and local pesticide-related initiatives. The resulting exchange of experiences and knowledge will contribute to the sustainability of problem-solving measures and lead to the generation of a common regional agenda. The activities include: developing short courses on pesticide health issues; standardizing data-gathering methods and instruments; initiating the development of bi-national and multi-national agreements intended to deal with pesticide problems involving common resources.

Ref: Keifer MC, Murray DI, Amador R, Corriols M, Gonzalez D, Molieri JJ, Rodriguez AC, Van Der Haar R, Wesseling C, McConnell R. Solving the Pesticide Problem in Latin America: A Model for Health-Sector Empowerment. *New Solutions* 7; 26-31, 1997.

3.5 Occupational health and safety campaigns at the national level in India

In 1966, industrial workplaces in India experienced a rising trend of accidents, and enforcement of safety and health statutes by government agencies alone was not sufficient to reverse this trend. The establishment of the National Safety Council (NSC) as a voluntary body in such a national perspective was effective. The first NSD campaign was launched in 1972. Gradually over the years this one-day campaign has been increased to a one-week annual campaign.

Objectives

- to increase OSH standards throughout India
- to promote the active participation of employers in the education of their employees to achieve OSH goals in their workplace through the use of local knowledge and experience.
- strengthen professional OSH management systems in institutions/companies/industries
- bring in sectors not so far covered by safety and health legislation. eg. construction sector, small shops using hazardous machines, and materials.

The methodology and approach used to introduce and promote the Campaign initially comprised two elements: (1) issuing of letters of appeal to NSC member organizations to organize the Campaign (2) providing them with professionally designed promotional materials such as badges, posters, stickers etc. After several years, the methodology and approach were widened and the campaign has gained: national stature; state control media coverage; NSC's publications and other publications and newspapers involved more effectively; duration of campaign increased to a week; and, active involvement of the state governments and district administrations at the grass roots.

At the national level, activities have taken the form of public functions, seminars, discussions and debates, the issuance of appeals and messages and the release of special films on national OSH issues. Participation of top officials of Ministries, NSC, industry, national trade unions, NGOs etc has imparted to these activities the desired level of impact. The national television and radio networks, the press and other media have been involved in propagating these activities widely.

Activities at the individual enterprise level are more practical and varied. Generally, such activities are designed by the safety committee (if existing as per statutory requirements applicable to enterprises employing a certain minimum number of employees) or by a specially constituted task force set up by management.

Some of the most common and important approaches which have contributed to the effectiveness of activities at the enterprise level may be summarised as follows:

- dramatizations and plays
- a large number of companies, in both the public and private sectors, have designed activities including contests to involve families and students in safety and health;
- in the wake of the Bhopal disaster, many enterprises engaged in manufacture, storage or use of hazardous chemicals and having potential for major accidents have developed activities to create awareness of OSH in nearby communities. They invite members of these communities to visit their plants for exhibitions or functions during the Campaign
- activities within enterprises involving practical demonstrations of safety oriented resources such as personal protective equipment, training courses have proved successful in creating enthusiasm and a supportive environment within enterprises.

The NSD has shown a positive impact on the trend of industrial injuries in India. The incidence rate of industrial (per 1 000 workers) decreased from 75.67 in 1971 to 26.54 in 1992, a reduction of about 65%. This reduction is due, in addition to the NSD campaign activities, to the combined impact on OSH government policy and legislation, enforcement, education and training, promotion, modernization of industrial processes and operations.

Ref: Gupta KC. In Stellman (ed) Encyclopaedia of Occupational Health and Safety, Vol. II, Geneva, ILO 1998.

3.6 Health impact of occupational risks in the informal sector in Zimbabwe

Information about occupational health in the informal sector is lacking, despite its size and growing contribution to employment.

A survey was carried out in 1997 of occupational health in 1,587 urban and rural informal-sector workers in Zimbabwe. Workers were interviewed at household level and production sites. The greater share of workers were relatively young (more than half under 29 years of age), particularly in rural areas. Those working at home were mainly female, while those in production sites were mainly male. While the majority were self-employed (60%), a further quarter were employed in casual, contract or seasonal jobs.

Work organization, hygiene and ergonomic problems accounted for a significant share of inspected and reported workplace risks across all areas of informal sector work. Chemical use was present in 40% of workplaces, particularly solvents in urban areas and agrochemicals in rural areas. The reported health problems in the informal sector are generally the same as those in the formal sector, with a common presence of poor housekeeping, poor lighting, long hours, poor workplace design, unawareness of chemical risks, and increased use of drugs as home medication.

The survey found a much higher burden of ill health in the informal sector than is reported recognized in national databases. The survey found reported annual rates of injury and illness in the informal sector of 131 injuries/1,000 workers and 116 illnesses/1,000 workers. These rates exceeded those in the formal sector by a factor of 10 in the case of injury and of about 100 in the case of illness, but this is attributable to acknowledged underreporting even in formal sector systems.

The distribution of injury between sectors correlated significantly with formal sector rates, with an excess in manufacturing, while illness rates were higher in the agricultural and service sectors. The similar pattern of illness as in the formal sector, the similarity between the ratio of illness and injury to that prevailing in countries with better reporting systems and the fact that under-reporting of injury and illness in the formal sector is widely suspected, signals that the rates found in the informal sector survey in Zimbabwe may be closer to the real health burden than what is formally reported. In particular, the survey found high levels of musculoskeletal and respiratory illness, thought to be under detected in formal systems, but commonly reported in surveys of formal sector workers. The health problems reported related closely to the occupational risks observed, with musculoskeletal problems from poor work posture and loads; exposure to dusts and chemicals leading to respiratory problems; injury from hand tools and poor housekeeping; and stomach problems linked with the lack of accessible clean water and safe sanitation.

The significant under-detection of occupational morbidity is exacerbated by the almost complete lack of coverage of occupational health services in the informal sector. In the survey, 19% of injuries, or 24.8 injuries per 1,000 workers, resulted in some form of permanent disability.

There were few built-in safety measures. Personnel protective equipment was used by less than 5% of workers, compared to the 55% doing work where it was judged that PPE would be needed.

With no comprehensive monitoring of work environments or of injury and illness in the informal sectors, there is poor data for directing interventions to reduce occupational risks, or manage the injuries and illnesses they cause. It is commonly agreed that "alternative approaches" are needed, perhaps more community based than workplace based, more linked to primary health care systems, than with an occupational health hierarchy, and linked to support of organizational networks.

Ref: Loewenson RH. International Journal of Occupational and Environmental Health 4; 241-245, 1998.

3.7 Safety climate and association with injuries and safety practices in public hospitals in Costa Rica

A study of work-related injuries and accidents in public hospitals in Costa Rica in 1994 documented a disturbing increase in occupational injuries in the nations's hospitals, as well as increased costs due to time lost from work and treatment of these injuries. The 1994 study, which was conducted by the Costa Rica Social Security System (CCSS) Department of Occupational Health, also revealed a general lack of support for, and participation in, occupational health programmes throughout the health care system.

In an effort to further investigate the increase in work-related injuries in the national hospital system, and to respond to the identified need for worker training programmes in occupational health, the CCSS entered into a five-year collaborative agreement with the University of Texas School of Public Health in 1995. The overall purpose of the training programme is to improve the safety climate in the CCSS system, based on the hypothesis that improvement of the safety climate should ultimately decrease work-related injuries and increase compliance with established safety practices. The analyses are based on a cross-sectional survey of hospital-based health care workers (HCW's) conducted in Costa Rica, May –June 1997. A stratified cluster-sampling technique was used to select a representative sample of hospitals and employees from among the 19,000 hospital-based workers in the 29 hospitals in the CCSS system. The cross-sectional data obtained are being used to develop worker training programmes designed to improve safety climate, and will provide the foundation for future interventions in these settings.

The questionnaire was designed on previous surveys of hospital-based HCWs to assess safety climate and other factors associated with compliance with safety practices: 1) history of worker safety training, 2) psychosocial and physical work environment 3) job task demands and their influence 4) availability of personal protective equipment, and 5) presence of administrative controls to support and encourage safety behaviours.

The second-stage outcome variables of work injuries and safety practices were assessed by documenting history of work-related injury and report of injury during the previous six months, and self-reported compliance with established safety practices.

The results of the data analysis suggest that, in general, the safety climate is very poor in the CCSS hospital system and needs improvement in all hospitals. The number of work-related injuries was found to be very high among all hospitals and the percentage of injuries reported extremely low. The relationship between safety climate and work injuries was found to be significant and inversed, suggesting that if safety climate could be improved, work injuries would decline. The two most significant predictors of safety climate were training and administrative support for safety. Safety climate was a statistically significant predictor of workplace injuries and safety practices, respectively, and there was an underreporting rate of 71% of workplace injuries. These finding underscore the need for improvement of the safety climate in the public hospital system in Costa Rica.

Further research planned as a result of this research includes the design, implementation, and analysis of training programmes aimed at improving the safety climate in the CCSS hospital system based on the results of this survey. These training programmes are being designed with the participation of workers at every level in the CCSS hospital system and with the commitment and support of the CCSS administration and management. Once these programmes have been implemented with sufficient time to see results, future research will include repeating the questionnaire to see whether there have been any changes in the perceptions of these variables by the health-care-worker population or in the relative associations of these variables. Current research being conducted by the study team includes repeating this study in other countries and in other industries to see whether the method is transferable to diverse cultural and work settings.

Ref: Felknor SA, Aday LA, Burau KD, Delclos GL, Kapadia AS. International Journal of Occupational and Environmental Health 6; 18-25, 2000.

4. References

Asian Pacific Newsletter on Occupational Health and Safety, 7; 9-11, 2000.

Coppee GH. International Cooperation in Occupational Health: The Role of International Organizations. In Stellman JM (ed). Encyclopaedia of Occupational Health and Safety. Vol. 1. Geneva, ILO 1998.

Ennals R, Gustavsen B. Work Organization and Europe as a Development Coalition. Amsterdam, John Benjamins Publishing Company 1998.

EU Commission. Guidance on work-related stress. Spice of life or kiss of death? EU 2000

Felknor SA, Aday LA, Burau KD, Delclos GL, Kapadia AS. International Journal of Occupational and Environmental Health 6; 18-25, 2000.

Frumkin H. Across the water and down the ladder: Occupational health in the global economy. In Frumkin H, Pransky G (eds). Special Populations, Occupational Medicine. State of the Art Reviews, 637-663, 1999.

Gupta KC. In Stellman (ed) Encyclopaedia of Occupational Health and Safety, Vol. II, Geneva, ILO 1998.

Gustavsen B, Ekman Philips M, Wikman A, Hofmaier B. Concept driven development and the organisation of the process of change. An evaluation of the Swedish Working Life Fund. Amsterdam. John Benjamins 1996

Gustavsen B. Health and safety as a development resource. Key-note addresses to the 25th International Congress on Occupational Health. Stockholm, National Institute for Working Life 1996.

Hannak J. OSH and Development. Swedish Association for Occupational and Environmental Health and Development (UFA), and Swedish International Development Cooperation (SIDA) and Swedish National Institute for Working Life (NIWL), No.1, August 1998.

Husbands R. National Level Tripartite and Bipartite Cooperation on Health and Safety. In Stellman JM (ed). Encyclopaedia of Occupational Health and Safety, Vol. I. Geneva, ILO 1998.

Isaksson K, Hogstedt C, Eriksson C, Theorell T (eds). Health Effects of the New Labour Market. New York, Kluwer Academic/Plenum Publishers 2000.

Järvholm B (Ed.). Working life and health. A Swedish survey. Solna, Swedish National Institute for Working Life 1996.

Jeyaratnam J, 1996. Occupational Health - a Global Perspective. Key-note address to the 25th International Congress on Occupational Health. Stockholm, Swedish National Institute for Working Life 1996.

Keifer MC, Murray DI, Amador R, Corriols M, Gonzalez D, Molieri JJ, Rodriguez AC, Van Der Haar R, Wesseling C, Mcconnell R. Solving the Pesticide Problem in Latin America: A Model for Health-Sector Empowerment. *New Solutions* 7; 26-31, 1997.

Knospe U. Country Report Germany. In *Occupational Health for Europeans*, Helsinki. Finnish Institute of Occupational Health 1999.

Lamberg ME. Country Report Finland. In *Occupational Health for Europeans*. Helsinki, Finnish Institute of Occupational Health 1999.

Levy BS, Wegman DH (eds) *Occupational Health: Recognizing and Preventing Work-Related Disease and Injury*, Fourth Edition. Boston, Little, Brown & Company 2000.

Loewenson RH. Occupational Health and Developments in Southern Africa. In *UFA's Bulletin*, Stockholm, Swedish Association for Occupational and Environmental Health 1996.

Loewenson RH. *International Journal of Occupational and Environmental Health* 4; 241-245, 1998.

Loewenson RH, Laurell AC, Hogstedt C. Participatory approaches in occupational research. In Daykin N & Doyal L (eds). *Health and Work. Critical perspectives*. London, MacMillan Press 1999.

National Institute of Environmental Health Sciences. NIEHS Report on health effects from exposure to power-line frequency electric and magnetic fields. Research Triangle Park: NIH publication No. 99-4493. 1999.

Rantanen J, Strategies for Regulations and Services in OH&S. *From Research to Prevention: Managing Occupational and Environmental Health Hazards*. Helsinki, Finnish Institute of Occupational Health 1995.

Rantanen J. Impact of globalization on occupational health. *Eur J Oncol* 1999, 4; 111-119.

Rantanen J. *African Newsletter on Occupational Health and Safety* 10; 3, 2000, a.

Rantanen J. Impact of globalization on occupational health. In *Key note addresses*, 26th International Congress on Occupational Health, Singapore, 27th August-1 September 2000, b.

Razak DA, Latiff AA, Majid MIA, Awang R. In Stellman (ed), *Encyclopaedia of Occupational Health and Safety*, Vol. I, Geneva, ILO 1998.

Richtofen W. Labour Inspection. Stellman JM (ed). *Encyclopaedia of Occupational Health and Safety*, Vol. I. Geneva, ILO 1998.

Saksvik, P.Ö, Nytrö, K. Implementation of internal control (IC) of health, environment and safety (HES) in Norwegian enterprises. *Safety Science* 23; 53-61, 1996.

Stellman JM (ed). *Encyclopaedia of Occupational Health and Safety*. 4th Edition. Vol 1- 4. Geneva, ILO 1998.

Takala J. Global Estimates of Fatal Occupational Accidents. *Epidemiology* 10; 640-646, 1999.

Walters, D. Health and safety strategies in a changing Europe. *International Journal of Health Services* 28; 305-331, 1998.

Wesseling C, McConnel R, Partanen T, Hogstedt C. Agricultural pesticide use in developing countries: Health effects and research needs. *International Journal of Health Services* 27; 273-308, 1997.

World Health Organization. *Global Strategy on Occupational Health for All: The way to health at work, Recommendations of the Second Meeting of the WHO Collaborating Centres in Occupational Health, 11-14 October 1994, Beijing, China.* Geneva, WHO 1995.

World Health Organization. *Health and Environment in Sustainable Development. Five years after the Earth Summit.* Geneva, WHO 1997.

World Health Organization. *Fact Sheet No. 84.* Revised June 1999.

Wright FB. Occupational Health and Safety: The European Union. In Stellman JM (ed). *Encyclopaedia of Occupational Health and Safety, Vol. I.* Geneva, ILO 1998.

Yingratanasuk T, Keifer MC, Barnhart S. *International Journal of Occupational and Environmental Health* 4; 121-130, 1998.

5. BIBLIOGRAPHY

5.1 ASIA

International Journal of Occupational and Environmental Health:

Christiani DC, Niu T, Xu X. Occupational Stress and Dysmenorrhea in Women Working in Cotton Textile Mills. *IJOEH* 1; 9-15, 1995.

Dhara R, Dhara VR. Bhopal – A Case Study of International Disaster. *IJOEH* 1; 58-69, 1995.

Inoue O, Seiji K, Kudo S, Jin C, Cai S, Liu S, Watanabe T, Nakatsuka H, Ikeda M. Urinary Phenylglyoxylic Acid Excretion after Exposure to Ethylbenzene among Solvent-exposed Chinese Workers. *IJOEH* 1; 1-8, 1995.

Inoue O, Seiji K, Kudo S, Jin C, Cai S, Liu S, Watanabe T, Nakatsuka H, Ikeda M. A Sensitive HPLC Method for Determination of Mandelic Acid in Urine, and Its Application to Biological Monitoring of Ethylbenzene-exposed Chinese Workers. *IJOEH* 1; 245-251, 1995.

Jin K, Sorock GS, Courtney T, Liang Y, Yao Z, Matz S, Ge L. Risk Factors for Work-related Low Back Pain in the People's Republic of China. *IJOEH* 6; 26-33, 2000.

Lin MR, Tsao JY, Wang JD. Determinants of Economic Cost Related to Low Back Pain among Nurses at a University Hospital. *IJOEH* 2; 257-263, 1996.

Matsuda S, Luong NA, Jonai H, Yoshimura T. Setting Priorities in Occupational Health Research in Vietnam. *IJOEH* 3; 277-285, 1997.

Potula V, Hu H. Occupational and Lifestyle Determinants of Blood Levels among Men in Madras, India. *IJOEH* 2; 1-4, 1996.

Subramanian KS, Kosnett MJ. Human Exposures to Arsenic from Consumption of Well Water in West Bengal, India. *IJOEH* 4; 217-230, 1998.

Sun WY, Ling GP, Chen P, Shan L. Burnout among Nurses in the People's Republic of China. *IJOEH* 2; 274-279, 1996.

Takahashi K, Pan G, Kasai H, Hanaoka T, Feng Y, Liu N, Zhang S, Su Z, Tsuda T, Yamato H, Higashi T, Okubo T. Relationship between Asbestos Exposures and 8-Hydroxydeoxyguanosine Levels in Leukocytic DNA of Workers at a Chinese Asbestos-material Plant. *IJOEH* 3; 111-119, 1997.

Xu X, Niu T, Christiani DC, Weiss ST, Chen C, Zhou Y, Yang J, Fang Z, Jiang Z, Liang W, Zhang F. Occupational and Environmental Risk Factors for Asthma in Rural Communities in China. *IJOEH* 2; 172-176, 1996.

Ye TT, Huang JX, Shen YE, Lu PL, Christiani DC. Respiratory Symptoms and Pulmonary Function among Chinese Rice-granary Workers. *IJOEH* 4; 155-159, 1998.

Yingratanasuk T, Keifer MC, Barnhart S. The Structure and Function of the Occupational Health System in Thailand. *IJOEH* 4; 121-130, 1998.

Öry FG, Rahman FU, Shukla A, Zwaag R, Burdorf A. Industrial Counseling: Linking Occupational and Environmental Health in Tanneries of Kanpur, India. *IJOEH* 2; 311-318, 1996.

New Solutions:

Comments and Controversies. Bhopal: 10 years later – Why the Permanent Peoples' Tribunal? *New Solutions* 5; 11-13, 1994.

Dhara R. Health Effects of the Bhopal Gas Leak: A Review. *New Solutions* 4; 35-48, 1994.

Park CU. Economic Miracle for What?: State and Workers' Health in South Korea. *New Solutions* 9; 81-101, 1999.

Scandinavian Journal of Work, Environment and Health:

Dosemeci M, McLaughlin JK, Chen JQ, Hearl F, Chen RG, McCawley M, Wu Z, Peng KL, Chen AL, Rexing SH, Blot WJ. Historical Total and Respirable Silica Dust Exposure Levels in Mines and Pottery Factories in China. *SJWEH* 21; 39-43, 1995.

Fang MZ, Shin MK, Park KW, Kim YS, Lee JW, Cho MH. Analysis of Urinary S-Phenylmercapturic Acid and Trans, Trans-Muconic Acid as Exposure Biomarkers of Benzene in Petrochemical and Industrial Areas of Korea. *SJWEH* 26; 62-66, 2000.

Kawakami N, Araki S, Kawashima M, Masumoto T, Hayashi T. Effects of Work-related Stress Reduction on Depressive Symptoms among Japanese Blue-collar Workers. *SJWEH* 23; 54-59, 1997.

Kawakami N, Haratani T, Araki S. Effects of Perceived Job Stress on Depressive Symptoms in Blue-collar Workers of an Electrical Factory in Japan. *SJWEH* 18; 195-200, 1992.

Kishi M, Hirschhorn, Djajadisastra M, Satterlee LN, Strowman S, Dilts R. Relationship of Pesticide Spraying to Signs and Symptoms in Indonesian Farmers. *SJWEH* 21; 124-133, 1995.

Kobayashi F. Japanese Perspective of Future Worklife. *SJWEH* 23; 66-72, 1997.

Maruyama S, Morimoto K. Effects of Long Work Hours on Life-style, Stress and Quality of Life Among Intermediate Japanese Managers. *SJWEH* 22; 353-359, 1996.

Meeting Reports. First China-Japan Asbestos Symposium, Beijing, 16-17 July 1999. *SJWEH* 25; 458, 1999.

Morikawa Y, Nakagawa H, Miura K, Ishizaki M, Tabata M, Nishijo M, Higashiguchi K, Yoshita K, Sagara T, Kido T, Naruse Y, Nogawa K. Relationship Between Shift Work and Onset of Hypertension in a Cohort of Manual Workers. *SJWEH* 25; 100-104, 1999.

5.2 AFRICA

International Journal of Occupational and Environmental Health:

Bartie C, Klugman KP. Exposures to Legionella pneumophila and Chlamydia pneumoniae in South African Mine Workers. IJOEH 3; 120-127, 1997.

Colvin M, Dalvie A, Myers JE, Macun IA, Sharp B. Health and Safety in the Lesotho Highlands Dam and Tunnel Construction Programme. IJOEH 4; 231-235, 1998.

Laraqui CH, Caubet A, Harourate K, Laraqui S, Belamalle I, Verger C. Occupational Medicine in Morocco. IJOEH 5; 316-322, 1999.

Levy BS. Occupational Health Policy Issues in Developing Countries: The Experience in Kenya. IJOEH 1; 79-85, 1995.

Loewenson RH, Ehrlich R. Occupational Health in Southern Africa: Challenges to Occupational Epidemiology. IJOEH 4; 241-245, 1998.

Loewenson RH. Occupational Health Epidemiology in Africa: Drought on Fertile Grounds, JOEH 1; 260-268, 1995.

Loewenson RH. Health Impact of Occupational Risks in the Informal Sector in Zimbabwe. IJOEH 4; 264-274, 1998.

London L. Occupational Epidemiology in Agriculture: A Case Study in the Southern African Context. IJOEH 4; 245-256, 1998.

Ohayo-Mitoko GJA, Heederik DJJ, Kromhout H, Omondi BEO, Boleij JSM. Acetylcholinesterase Inhibition as an Indicator of Organophosphate and Carbamate Poisoning in Kenyan Agricultural Workers. IJOEH 3; 210-220, 1997.

Williams B, Campbell C. Creating Alliances for Disease Management in Industrial Settings: A Case Study of HIV/AIDS in Workers in South African Gold Mines. IJOEH 4; 257-264, 1998.

New Solutions:

Clapp R. Industrial Hygiene Practice in South Africa. New Solutions 6; 77-83, 1996.

Lindeke WA, Tjivikua T. Uranium Mining in Namibia: Occupational Health and Safety Issues. New Solutions 5; 72-79, 1995.

Scandinavian Journal of Work, Environment and Health:

London L, Nell V, Thompson ML, Myers JE. Effects of Long-term Organophosphate Exposures on Neurological Symptoms, Vibration Sense and Tremor among South African Farm Workers. SJWEH 24; 18-29, 1998.

American Journal of Public Health:

Coovadia HM. Sanctions and the Struggle for Health in South Africa. *AJPH* 89; 1505-1508, 1999.

5.3 Latin America and the Caribbean

International Journal of Occupational and Environmental Health:

Becerril LAC, Harlow SD, Sanchez RA, Monroy DS. Establishing Priorities for Occupational Health Research among Women Working in the Maquiladora Industry. *IJOEH* 3; 221-230, 1997.

Chain-Castro TD, Barron-Aragon R, Haro-Garcia L. Pesticide Poisoning in Mexican Seasonal Farm Workers. *IJOEH* 4; 202-203, 1998.

Chen GX, Burnett CA, Cameron LL, Alterman T, Lalach NR, Tanaka S, Althouse RB. Tuberculosis Mortality and Silica Exposure: A Case-Control Study Based on a National Mortality Database for the Years 1983-1992. *IJOEH* 3; 163-170, 1997.

Ferraz MB, Frumkin H, Helfenstein M, Gianceschini C, Atra E. Upper-extremity Musculoskeletal Disorders in Keyboard Operators in Brazil: A Cross-sectional Study. *IJOEH* 1; 239-244, 1995.

Felknor SA, Aday LA, Burau KD, Delclos GL, Kapadia AS. Safety Climate and Its Association with Injuries and Safety Practices in Public Hospitals in Costa Rica. *IJOEH* 6; 18-25, 2000.

Fernandez N, Tate RB, Bonet M, Canizares M, Mas P, Yassi A. Health-risk Perception in the Inner City Community of Centro Habana, Cuba. *IJOEH* 6; 34-43, 2000.

Froines JR, Barile R. Approaches to Addressing Occupational and Environmental Health Needs in Mexico. *IJOEH* 5; 208-212, 1999.

Giannasi F, Thebaud-Mony A. Occupational Exposures to Asbestos in Brazil. *IJOEH* 3;150-157, 1997.

Gilioli R, Alessio L. Occupational Health Care Delivery: The Italian Experience in Latin America. *IJOEH* 1; 131-135, 1995.

Quintero C, Larios L, Andersson K. Comparison of Two Questionnaires on Respiratory Symptoms in a Nicaraguan Population: Value in Diagnosis of Chronic Bronchitis. *IJOEH* 2; 88-94, 1996.

Riopelle DD, Bourque LB, Robbins M, Shoaf KI, Kraus J. Prevalence of Assault and Perception of Risk of Assault in Urban Public Service Employment Settings. *IJOEH* 6; 9-17, 2000.

Sing KA, Hryhorczuk DO, Saffirio G, Sinks T, Paschal DC, Chen EH. Environmental Exposure to Organic Mercury among the Makuxi in the Amazon Basin. *IJOEH* 2; 165-171, 1996.

Takaro TK, Arroyo MG, Brown GD, Brumis SG, Knight EB. Community-based Survey of Maquiladora Workers in Tijuana and Tecate, Mexico. *IJOEH* 5; 313-315, 1999.

Van Wendel De Joode BN; De Graaf IAM, Wesseling C, Kromhout H. Paraquat Exposure of Knapsack Spray Operators on Banana Plantations in Costa Rica. *IJOEH* 2; 294-304, 1996.

New Solutions:

Dorman P. NAFTA: A Great Leap Backward. *New Solutions* 3; 81-87, 1993.

Epelman M. The Export of Hazards to the Third World: The Case of Asbestos in Latin America, *New Solutions* 2; 48-56, 1992.

Holter D. NAFTA and Occupational Health and Safety. *New Solutions* 4; 10-12, 1994.

Keifer MC, Murray DI, Amador R, Corriols M, Gonzalez D, Molieri JJ, Rodriguez AC, Van Der Haar R, Wesseling C, Mcconnell R. Solving the Pesticide Problem in Latin America: A Model for Health-Sector Empowerment. *New Solutions* 7; 26-31, 1997.

Laurell AC. Research on Work and Health in Latin America: The Perspective of Social Medicine. *New Solutions* 5; 53-63, 1995.

Lemus B. Occupational Health and Safety in Mexico: Adequate Legislation and Ineffective Enforcement. *New Solutions* 5; 64-71, 1995.

Lemus B, Barkin D. The Impact of Integration on Mexico's Workers: Why GATT, NAFTA, WTO, and OECD are Important. *New Solutions* 8; 243-252, 1998.

Wilcox M. Occupational Health in Nicaragua: A Different Perspective on Worker Health and Safety. *New Solutions* 2; 64-74, 1991.

Scandinavian Journal of Work, Environment and Health:

Stefani ED, Kogevinas M, Boffetta P, Ronco A, Mendilaharsu M. Occupation and the Risk of Lung Cancer in Uruguay. *SJWEH* 22; 346-352, 1996.

Wunsch.Filho V, Moncau JE, Mirabelli D, Boffetta P. Occupational Risk Factors of Lung Cancer in Sao Paulo, Brazil. *SJWEH* 24; 118-124, 1998.

American Journal of Public Health:

Frenk J, Knaul FM, Vazquez-Segovia LA, Nigenda G. Trends in Medical Employment: Persistent Imbalances in Urban Mexico. *AJPH* 89; 1054-1058, 1999.

5.4 CENTRAL & EASTERN EUROPE

International Journal of Occupational and Environmental Health:

Bartoov B, Zabudovsky N, Eltes F, Smirnov VV, Grischenko VI, Fischbein A. Semen Quality of Workers Exposed to Ionizing Radiation in Decontamination Work after the Chernobyl Nuclear Reactor Accident. *IJOEH* 3, 198-203, 1997.

Cook TM, Kross BC, Ciznar I, Ungar R. International Training and Research in Central and Eastern Europe: The University of Iowa Model. *IJOEH* 5; 234-236, 1999.

Fuzesi Z, Levy BS, Levenstein C, Barbeau E, Ori I, Rest K, Tistyan L. A Multisectoral Approach to Prevention of Lead Poisoning in Hungary: Lessons Learned and Potential for Replicability Elsewhere. *IJOEH* 3; 60-67, 1997.

Goldsmith JR. Epidemiologic Evidence of Radiofrequency Radiation (Microwave) Effects on Health in Military, Broadcasting, and Occupational Studies. *IJOEH* 1; 47-57, 1995.

New Solutions:

Broszkiewicz R, Krzyskow B, Brown HS. The Occupational Safety and Health System in Poland During the Transition to Democracy and a Market Economy. *New Solutions* 8; 221-242, 1998.

Dodic-Fikfak M, Kristancic Z, Rahotina L, Vidic R. Case Study: Slovenia – Asbestos Valley. *New Solutions* 8; 469-478, 1998.

Kokalov I, Atschkova P, Zaikova M, Todorov T, Popov T. Privatization – The New Challenge to Working Conditions in Bulgarian Enterprises. *New Solutions* 8; 479-492, 1998.

Pelcova D, Weinstein C, Vejlupekova J. Occupational Health in the Czech Republic: Old and New Solutions. *New Solutions* 4; 70-75, 1994.

Rice A. Privatization in the Countries of Central and Eastern Europe and its Implications for Occupational Health and Safety and the Environment. *New Solutions* 8; 451-460, 1998.

Veleva V. Meeting the Challenge of Privatization: Its Impact on Occupational Health and Safety, Public Health and Environmental Protection. *New Solutions* 4; 415-448, 1998.

Scandinavian Journal of Work, Environment and Health:

Solionova LG, Smulevich VB. Mortality and Cancer Incidence in a Cohort of Rubber Workers in Moscow. *SJWEH* 19; 96-101, 1993.

Solinova LG, Smulevich VB, Turbin EV, Krivosheyeva LV, Krivosheyeva LV, Plotnikov JV. Carcinogens in Rubber Production in the Soviet Union. *SJWEH* 18; 120-123, 1992.

American Journal of Public Health:

Chen MS, Mastilica M. Public Health Policy Forum: Health Care Reform in Croatia: For Better or for Worse? *AJPH* 88; 1156-1160, 1998.

5.5 MISCELLANEOUS

International Journal of Occupational and Environmental Health:

Archer VE. Reversal of the Healthy-worker Effect. *IJOEH* 1; 33-36, 1995.

Beach JR, Baranski B, Harrington JM. Equity or Inequity in Occupational Health? *IJOEH* 2; 247-250, 1996.

Castleman B. Global Corporate Policies and International “Double Standards” in Occupational and Environmental Health. *IJOEH* 5; 61-64, 1999.

Castleman BI, Lemen RA. The Manipulation of International Scientific Organizations. *IJOEH* 4; 53-55, 1998.

Coppee GH. International Cooperation in Occupational Health: The Role of International Organizations. *IJOEH* 1; 200-210, 1995.

Editorial. Impartiality in Research. *IJOEH* 3; 158-160, 1997.

Fassa AG, Facchini LA, Dall’Agnol MM, Christiani DC. Child Labour and Health: Problems and Perspectives. *IJOEH* 5; 55-62, 1999.

Gilad I, Lenger R, Rempel D. Upper-limb Postures and Movements during Diamond Polishing. *IJOEH* 2; 177- 184, 1996.

Hilhorst TJ. Appraisal of Risk Perception in Occupational Health and Safety Research in Developing Countries. *IJOEH* 2; 319-326, 1996.

Kogi K. Collaborative Field Research and Training in Occupational Health and Ergonomics. *IJOEH* 4; 189-195, 1998.

Kosnett MJ. “Sullivan-style” Principles for Occupational Health: Corporate Commitment to First-world Standards in Third-world Countries. *IJOEH* 6; 291-292, 2000.

LaDou, J. DBCP in Global Context: The Unchecked Power of Multinational Corporations. *IJOEH* 5; 151-153, 1999.

ICOH Position Paper. Musculoskeletal Disorders: Work-related Risk Factors and Prevention. *IJOEH* 2; 239-246, 1996.

Rice A. International Labour Federations. *IJOEH* 1; 215-221, 1995.

Sorsa M. Genetic Monitoring: Experiences, Possibilities, and Applications in Occupational Health Practices. *IJOEH* 2; S54-S56, 1996.

Rutherford BA, Forget G. The Impact of Support of Occupational Health Research on National Development in Developing Countries. *IJOEH* 3; 68-83, 1997.

Sekimpi DK, Tambellini AT, Trung LV. The Global Economy and Occupational Health. IJOEH 1; 76-79, 1995.

Silbergeld EK. The International Dimensions of Lead Exposure. IJOEH 1; 336-348, 1995.

Stewart PA, Stewart WF. An International Effort to Improve Methods of Data Collection and Exposure Assessment for Community-based Case-Control Studies of Occupational Disease. IJOEH 1; 37-46, 1995.

Takala J. International Agency Efforts to Protect Workers and the Environment. IJOEH 5; 30-37, 1999.

Van Der Vliet JA. Multinational Corporations. IJOEH 1; 210-215, 1995.

New Solutions:

American Industrial Hygiene Association (AIHA) and American Conference of Governmental Industrial Hygienists (ACGIH). Strengthening Occupational and Environmental Health and Safety Protections in a Global Economy. New Solutions 9; 335-338, 1999.

Ashford NA. Policies for the Promotion of Inherent Safety. New Solutions 7; 46-52, 1997.

Barkin D. Healthy Work: What to Produce and How to Coordinate – A Vision from the Third World. New Solutions 6, 49-56, 1995.

Scandinavian Journal of Work, Environment and Health:

Kogi K. International Regulations on the Organization of Shift Work. SJWEH 23; 7-12, 1998.

Rantanen J. Research Challenges Arising from Changes in Worklife. SJWEH 25; 473-483, 1999.

Takashi K, Aw TC, Koh D, Wong TW, Kauppinen T, Westerholm P. Developing National Indicators for Occupational Health. SJWEH 23; 392-393, 1997.

American Journal of Public Health:

Krug EG, Sharma GK, Lozano R. Commentaries: The Global Burden of Injuries. AJPH 90; 523-526, 2000.