

# Guidelines on Quality Management in Multidisciplinary Occupational Health Services



WHO European Centre for Environment and Health  
Bilthoven

## EUROPEAN HEALTH21 TARGET 13

### SETTINGS FOR HEALTH

By the year 2015, people in the Region should have greater opportunities to live in healthy physical and social environments at home, at school, at the workplace and in the local community

*(Adopted by the WHO Regional Committee for Europe at its forty-eighth session, Copenhagen, September 1998)*

### ABSTRACT

This document is concerned with the introduction and development of quality assurance in occupational health services. It is primarily intended to help purchasers and providers of occupational health services ensure that the services which are delivered meet the real needs of their customers, including commercial and societal needs, and that a process of continuous quality improvement is designed and implemented in every occupational health service.

### Keywords

OCCUPATIONAL HEALTH SERVICES  
GUIDELINES  
QUALITY ASSURANCE, HEALTH CARE  
AIR POLLUTION, INDOOR  
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EUROPE, EASTERN  
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## **Intended audience**

- Policy- and decision-makers in health, social and environmental issues
- Purchasers and providers of occupational health services
- Trade unions and workers' representatives
- Organizations and representatives of employers
- Professional associations in all occupational health disciplines
- Academic departments involved in research, education and training in occupational health
- Researchers
- Health, safety and environment agencies responsible for inspection and enforcement of legislation
- Insurance companies
- Auditing and certifying bodies

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## **PREFACE**

Good practice in health, environment and safety (HES) management in enterprises was one of the leading topics considered at the Third Ministerial Conference on Environment and Health held in London from 16 to 18 June 1999. Occupational health services play an important role in achieving good practice in HES management in enterprises. Quality management in these services is, therefore, of great importance.

The changing nature of working life and reorientation of occupational health services (OHS) towards multidisciplinary, competitive, effect-oriented teams, which in many countries operate on a commercial basis in competition with other similar service providers, requires the development and implementation of effective tools for high quality service management.

Leading industrial and service corporations and enterprises in the private and public sectors all over Europe increasingly use quality management standards to assure the quality of their products or services and to secure the confidence of their customers. This has resulted in wide variations in the use of internationally accepted quality standards and terminology by industrial and other enterprises in different areas, as well as in the establishment of governmental and nongovernmental quality certification bodies and training centres. The application of these standards to occupational health practice is also variable. However, some countries (such as Finland, the Netherlands, Spain, Sweden and the United Kingdom) have identified the requirements for implementing quality management principles in OHS including auditing, certification and the existence of guidelines on good occupational health practice.

To explore this option further, the World Health Organization European Centre for Environment and Health, Bilthoven Division, and the National Institute for Working Life, Solna,

Sweden, jointly organized a Workshop on Quality Management in Occupational Health Services in Stockholm, Sweden, from 20 to 22 November 1997, in collaboration with the Finnish Institute of Occupational Health and the International Commission on Occupational Health Scientific Committee on Health Services Research and Evaluation in Occupational Health.

The main purpose of international guidelines is to encourage and facilitate implementation of quality management in OHS or in enterprises that have not yet adopted this approach. A second objective is to support further harmonization of occupational health practice internationally so as to minimize inequity in health of workers and to avoid social exclusion. Implementation of quality management will facilitate occupational health impact assessment and will increase efficiency and utility value of OHS. Quality management in OHS and in enterprises will introduce processes and encourage participation of all partners essential in the development of good occupational and environmental health practice at enterprise, local and national level. The involvement of the social partners and technical experts in quality management should underpin quality initiatives. The adoption of similar procedures and terminology across Europe will help to facilitate international cooperation and the development of European occupational health information systems.

The editors thank the contributors listed above who kindly shared their knowledge, experience and time to review and supplement this work, and for the recommendations in the working papers prepared before the meeting in Stockholm in order to produce these guidelines.

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## 1. INTRODUCTION

Convention No. 161 of the International Labour Organization (ILO) [1] defines occupational health services as services entrusted with essentially preventive functions and responsible for advising the employer, the workers and their representatives in undertakings on the requirements for establishing and maintaining a safe and healthy working environment which will facilitate optimal physical and mental health in relation to work and the adaptation of work to the capabilities of workers in the light of their state of physical and mental health. Similar objectives for protective and preventive services in enterprises are defined in the European Union (EU) framework directive 89/391/EEC on the introduction of measures to improve the safety and health of workers [2] and in national legislation of most of the Member States of the World Health Organization (WHO) European Region.

It is recognized that the impact of industry on the environment and workers' health cannot be controlled by state authorities alone to the extent of satisfying all concerned parties, including first and foremost the general public, working people and particularly the people who may feel affected by it. As resources are limited, inspection procedures can result in inspections which are of insufficient depth, content and/or coverage. Thus, to involve industrial concerns in self-regulation, so that they demonstrate and prove that they follow good occupational and environmental health practices, should be seen as a valuable measure, and one which is directed towards improving workers' health as well as fostering good public relations with neighbouring communities and with the general public. The adoption by industry of procedures compatible with quality management will also improve existing services. The Responsible Care Movement which has already developed in the chemical industry indicates that this approach is feasible and beneficial [3]. As an ILO meeting in 1999 concluded: "The

development of voluntary initiatives, including the Responsible Care Programme, was an important new departure aimed at continuous improvement of health, environment and safety (HES) performance in the industry and the communication of those results to stakeholders and the general public is important. These initiatives have had positive results, have enhanced the HES culture in the industry, and there is the potential, with greater involvement of stakeholders, to go further.” [4]

The Twelfth Session of the Joint ILO/WHO Committee on Occupational Health, held from 5 to 7 April 1995, noted that it was high time to develop new social policies to improve occupational health. International economic and trade agreements require the recognition of workers’ health protection and promotion. Use of voluntary quality-related management practices to improve health and safety was considered. The ILO/WHO Committee took note of the new tools that could potentially improve occupational health and safety performance, such as: quality management standards for occupational health and safety, auditing procedures linking compensation insurance premiums to audits of health and safety programmes, Responsible Care programmes, product stewardship arrangements and others. Following the Committee’s recommendation, the ILO programme of action of safety culture has in the last few years placed a special emphasis on occupational safety and health management systems. The ILO has also made technical contributions to WHO activities aimed at arousing the awareness of decision-makers in government health and environment sectors regarding the value of good practices in health, environment and safety management in enterprises [5].

The role of adequate quality management or, as an option, quality assurance in dealing with occupational safety and health matters at the levels of enterprises and the general public is gaining increasing recognition. Working cultures and managerial approaches are very important prerequisites for the use of existing scientific knowledge and should be the concern of international

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organizations. Nongovernmental organizations (NGOs), including employers' and employees' organizations, have an essential role to play in collecting, reviewing and disseminating the experience of different countries in the field of good working cultures conducive to health and quality management of occupational safety and health.

The provision of occupational health services entails carrying out activities in the workplace with the aim of protecting and promoting workers' safety, health and wellbeing, as well as improving working conditions and the working environment. These services are provided by occupational health professionals working independently or as members of special service units in the enterprise or of external services [6–9].

Occupational health services (OHS) are an essential element of national health care and public health care systems, and they are expected to provide a major input in the building of good practices in health, environment and safety management in the enterprises they serve. In many countries, OHS units operate in the private health market, i.e. outside the public health and primary health care systems [10,11]. This means that analyses of national health resources do not always take account of OHS. In about 40% of the European Region Member States they are supervised by ministries of labour and in about 60% by ministries of health. Coverage varies from 90% to 20% of the entire workforce in different countries. At the beginning of the 1990s the estimated total number of occupational health personnel in the WHO European Region was about 450 000, of whom 100 000 were physicians, 172 000 nurses, 25 000 hygienists and 70 000 safety engineers [12]. In general, collaboration between different government sectors in the OHS field is rather limited in Europe.

Occupational health practice encompasses the activities of all those who contribute to the protection and promotion of workers' health and to the improvement of working conditions and the working environment. These activities should not be understood

as merely the activities of occupational health professionals. Occupational health is a multidisciplinary and multisectoral field of social policy involving, in addition to OHS professionals, other specialists both in the enterprise and outside, as well as competent authorities, employers' and workers' organizations and their representatives. Infrastructures for occupational health practice comprise all the organizational arrangements needed to implement a national policy on occupational safety and health and action at enterprise level. They include many bodies other than OHS, such as enforcement agencies, research institutions, educational and training institutions, NGOs and tripartite bodies which have a stakeholder's interest in occupational health. They also include the organization of health and safety management in enterprises with bipartite bodies for industrial relations and works councils or health and safety committees [13–15]. An analysis of differences in occupational health practice between various countries shows up the benefits of integrating occupational, environmental, public health and social security policies for good performance in promoting the health, safety, work ability and wellbeing of workers [16–19].

The experience of international governmental and nongovernmental organizations and WHO shows that the transfer of technical scientific information between countries is already intense. There are well trained occupational health experts available in many countries – not just in economically and industrially advanced countries. It remains, however, to demonstrate their impact on workers' health protection and promotion. The effective management of health, environment and safety in enterprises is being recognized as an important factor contributing to the quality of life and outcomes of investment in health [20–24]. The costs and benefits of occupational safety and health were a main topic of the European conference held in The Hague, Netherlands, from 26 to 30 April 1997 and hosted by the Dutch Ministry of Social Affairs and Employment in cooperation with the European Foundation for the Improvement of Living and Working Conditions [25]. Cost–benefit analyses of occupational

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health are now important in many European countries [25–28] and it would be difficult to imagine how the maximum benefit could be achieved without the implementation of quality management in this field.

There is a trend across Europe towards deregulating the area of health and safety and encouraging OHS to operate on the open market, implying competition with other health care providers and consultancy enterprises. Privatization of OHS often leads to the development of quality systems as an integral part of their management in order to cope with the increasingly diverse and complex service contracts and the requirement to make profits and contribute to the economic success of the host organization [11,29–31].

Application of a quality approach should take the following features of OHS into account:

- clients, customers and health service providers may have different views about what they need from OHS;
- real needs and recognized or expressed demands for services may not be related to each other: some needs do not result in demands, and some demands are not based on needs;
- the aim is to build a complex provider–client relationship whereby the needs of many stakeholders (individual workers, groups of workers, employers, management, health professionals, insurance bodies including social security agencies) are met;
- differences in the power or status of the stakeholders and variations in responsibility for ensuring that companies' resources are appropriately distributed can be a challenge;
- there is a high professional component in the provision of health services;
- there is a need for the application of research-based evidence in the delivery of OHS, and consequently the application of

evidence-based criteria for the quality assurance of process and outcome.

## **2. BROADENING THE OCCUPATIONAL HEALTH CONCEPT**

Since 1950, the ILO and WHO have had a common definition of occupational health. Occupational health, as defined by the First Session of the Joint ILO/WHO Committee on Occupational Health in 1950, is a multidisciplinary activity which should aim at promoting and maintaining the highest degree of physical, mental and social wellbeing of workers in all occupations; preventing lapses in health among workers caused by unsafe and unhealthy working conditions; protecting workers in their employment from risks resulting from factors adverse to health; placing and keeping workers in occupational environments adapted to their physiological and psychological capacities – to summarize: the adaptation of work to the person and each person to his or her job.

The Twelfth Session of the Joint ILO/WHO Committee on Occupational Health revised the definition of occupational health with: (i) an emphasis on prevention in addition to protection, i.e. maintaining a safe and healthy working environment for all; (ii) a clear objective to both protect workers' health and maintain their working capacity; and (iii) an emphasis on management involvement and workers' participation [32].

The main focus in occupational health is now on three objectives:

- (i) the maintenance and promotion of workers' health and working capacity;
- (ii) the improvement of the working environment and work to become conducive to safety and health; and
- (iii) the development of work organization and working cultures in a direction which supports health and safety at work and, in so doing, also promotes a positive social climate and

smooth operation and may enhance productivity of the undertaking.

The concept of working culture is intended, in this context, to mean a reflection of the essential value systems adopted by the undertaking concerned. Such a culture is reflected in practice in the managerial systems, personnel policies and principles for participation, training policies and quality management of the undertaking [32].

The objective of occupational safety and health has also been defined in the EU's Community Charter of the Fundamental Social Rights of Workers [33], which states:

Every worker must enjoy satisfactory health and safety conditions in his working environment. Appropriate measures must be taken in order to achieve further harmonization of conditions in this area while maintaining the improvements made.

These measures shall take account, in particular, of the need for the training, information, consultation and balanced participation of workers as regards the risks incurred and the steps taken to eliminate or reduce them. The provisions regarding implementation of the internal market shall help to ensure such protection.

The shift in the scope of occupational health is reflected in the WHO Global Strategy on Occupational Health for All [34] endorsed in the resolution WHA49.12 of the forty-ninth World Health Assembly on 25 May 1996. It shows that improved working conditions and environment are important assets contributing to national development and a measure of success in economic and social policy. It is important to view occupational safety and health within the framework of a new concept of productivity, including the quality of production, its social usefulness, its impact on workers' health and the environment, and the quality of life [35].

The new concept is frequently called “comprehensive occupational health”. The definition of occupational health has been considerably broadened from the strict concept of prevention of occupational diseases and injuries to overall protection and promotion of health and work ability for all employees [36]. This transition also concerns workers employed in small and medium-size enterprises (SMEs) who require high quality occupational health services [37].

## **2.1 Ethics**

To ensure that they are of the required quality, occupational health professionals must comply with the principles of their professional ethics, commonly set by their professional bodies. The purpose of ethical codes is to provide guidance to occupational health professionals on the ethical standards required by their professional bodies in order to protect the interests of society and to ensure the maintenance of public trust in the profession.

High standards of professional ethics are of fundamental importance in delivering OHS. The ethics of occupational health professionals may, in many important regards, affect the quality of services provided to employers, employees and society [38]. Attention therefore needs to be paid to the ethical standards that are applied in practice, and systems of audit are needed to ensure that these standards are met [39]. The International Commission on Occupational Health has prepared an international code of ethics for occupational health professionals which has been distributed to all members of the commission. It can serve as a useful guide to ethical practice [40].

## **3. THE ECONOMY AND OCCUPATIONAL HEALTH**

There is a growing awareness in Europe that improvements in working conditions and working environments carry inherently

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positive contributions to national development and constitute in themselves measures of the success of economic and social policy. However, the level of awareness of these benefits is not consistent within or between countries. Some employers, particularly those in SMEs, may not have sufficient knowledge or information to be able to recognize the positive economic benefits of improved occupational health and safety. Thus further efforts are required to increase the awareness of employers and national policy-makers of the positive benefits of occupational health and safety.

Work-related ill health resulting from unsafe working conditions is a significant burden on the national economy and comprises much preventable suffering, illness and premature death. Approximately 3% of the global burden of disease is caused each year by preventable injuries and deaths in high-risk occupations and by chronic illness stemming from exposure to toxic chemicals, noise, stress and physically debilitating work patterns [41]. The total economic loss from occupational accidents in some industrialized countries has been calculated at 3–5% of the gross national product (GNP). Economic losses resulting from premature mortality and work incapacity, which may be related to occupational health hazards, have been estimated to amount to 10–15% of GNP in some countries [42]. The survey report published in 1997 by the European Foundation for the Improvement of Living and Working Conditions in Dublin [43] revealed that in the United Kingdom 177 million working days were lost in 1994 as a result of sickness absence; this has been assessed at over 13.2 billion ECU in lost productivity. In Germany, employers paid in 1993 ca. 30.5 billion ECU for the social security insurance of their workers to cover payments during absence from work. In Denmark, according to the same report, it has been estimated that the working environment accounts for 20% of the sickness absence at work among people aged 15–66 years. In 1992, in EU countries, the direct cost paid in compensation for work-related diseases and injuries reached 27 000 million ECU. In the

United States, the total direct and indirect costs associated with work-related injuries and diseases in 1992 were estimated to be US \$171 000, surpassing those related to AIDS and on a par with those for cancer and heart diseases [44]. However, methodologies for evaluating costs and benefits associated with existing occupational health practice are not sufficiently developed and rarely used for planning prevention strategies in many European countries [45].

The large numbers of premature retirements from the active workforce due to ill health places a significant economic burden on society and may have other important social effects [44]. This burden could be substantially reduced through preventive activities at the workplace aimed at reducing the risk of work-related conditions [28,46]. Further reductions could be achieved by modifying the working environment and working practices, where possible, in order to facilitate the retention in the economically active workforce of staff with chronic conditions who are still capable of working efficiently. The promotion of employees' health through, for instance, advice on lifestyle factors may also help employees to avoid high-risk behaviour and so maintain their employment, work ability and financial independence. Preventive and health promotion activities – if implemented appropriately – can be expected to be even more effective in reducing the costs of ill health and injuries at the workplace than simply improving the efficiency of treatment services. An example of reorientation at the enterprise level is shown by the growing attention paid by organizations, enterprises and institutions to the cost–benefits relation achieved by improving working conditions and workers' health when measured against increased productivity, attendance and participation [45,47,49]. Reorientation also includes the more extensive use of workplace health promotion activities to help improve the health, quality of life, efficiency, motivation and work ability of employees in order to improve productivity and human relations at work and reduce absence through sickness.

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Workplace health promotion can also help with the recruitment of new staff and the retention of existing workers [46,48,49].

As a result of the above considerations, in many WHO Member States there is a trend towards assessing the economic impact and reorienting occupational health and safety practices to help reduce the increasing social costs of work-related ill health and disability [8,26–28,45,50]. This is a critical economic factor at both the national and enterprise level. For example, at national level there is increasing concern with the externalization of costs incurred as a result of work-related injuries and ill health, much of which could have been prevented through good occupational health practices. These costs fall on society through increased taxation and/or health and social insurance premiums instead of being covered by the enterprises, which are responsible for providing healthy and safe working environments. The internalization of such costs within the enterprises concerned can help to reduce this economic burden on society and create important economic incentives to improve occupational health practice at the company level [5,27]. Improvements in the design of the national financial framework should actively encourage employers – who are primarily responsible for working conditions and thus have the most effective control over operations – to undertake jointly with their employees the activities necessary to improve health and safety at work and to rehabilitate and reintegrate injured workers back into the active workforce.

#### **4. HEALTH, ENVIRONMENT AND SAFETY MANAGEMENT IN ENTERPRISES**

Broadly speaking, there are at least three health aspects of the management of each enterprise: occupational health, health promotion, and environmental health. All three are covered by the overall management, although their quality and effectiveness depend on whether the employer, senior manager and/or employees are aware of their potential role and diversity in

health management. In addition, enterprises can make an important contribution to the health of the nation through their contribution to the development of social capital. This is achieved through their impact on social, economic and urban development in their local communities and the wider regions.

#### **4.1 Occupational health**

Occupational health is most frequently understood in practice as activities aiming at minimizing the risk to employees' health from occupational factors and preventing occupational accidents and diseases. In some European cultures, occupational health is divided into prevention of occupational diseases and work-related medical activities (occupational health or occupational medicine) and prevention of occupational accidents (occupational safety), with separate services for each. Occupational health is highly regulated by legislation and a subject of official agreements between employers' and employees' organizations. As a result of legislation, more and more enterprises have to have OHS either in their own organizations or on contract from outside. The required skills and competences in occupational health have led to the establishment and recognition of several occupational health professions such as occupational physicians, occupational hygienists, ergonomists, safety engineers, occupational health nurses, occupational psychologists or work organization specialists and occupational health and safety managers.

#### **4.2 Health promotion**

Health promotion is a key issue of HEALTH21 – the new health for all policy framework for the WHO European Region [51]. It is defined in the Ottawa Charter for Health Promotion as the process of enabling people to increase control over and to improve their health. Health promotion, dealing mostly with non-occupational health determinants, leads to lasting behavioural changes in work practice and lifestyle. The essential quality of health promotion is the promotion of individuals'

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direct involvement in maintaining or improving their own health. This is why the WHO Jakarta Conference on Health Promotion in 1997 declared that health promotion, through investment and action, acts on the determinants of health:

- to create the greatest health gain for people
- to contribute significantly to reduction of inequities in health
- to ensure human rights, and
- to build up social capital.

The assessment of health promotion needs in an enterprise and the evaluation of progress in meeting them are the essential components of the management of workplace health promotion. For the fruitful development of such management, it is important to recognize the central role of the empowerment of employees, in terms of competence and level of autonomy; to include a comprehensive understanding of health in company policies; to ensure the establishment of an enterprise-wide participatory infrastructure; and to enable employees at all levels to share their interests and expertise with the key players. Health promotion is a strategy complementing occupational health. Within the same population, they target different health problems and their causes. Health promotion should not be used as a guise to shift responsibility for protection of the workers' health at the workplace from the employer to the workers themselves. Unlike occupational health, there are no legal requirements or mandatory infrastructure for enforcing health promotion in enterprises. However, in many enterprises conscious of the importance of good human resource management, this strategy is used by occupational health multidisciplinary teams. Health promotion at work has grown in importance over the last decade as employers and employees recognize the respective benefits [46–51]. Health promotion as a recognized health strategy should not be limited to the skills or responsibility of one profession. Thus different professions, including occupational health professionals, are using this strategy for structuring investment in health protection and promotion.

### **4.3 Environmental health**

Environmental health refers to the health consequences of exposure to factors present in the environment outside the enterprise's premises. Every enterprise has the potential to affect the health of people living in its neighbourhood or using its products or services. To ensure optimal health for employees and the population at large, the environmental management of an enterprise should include the sustainable use of natural resources, energy efficiency, waste minimization and cleaner production. It should apply an integrated, preventive environmental strategy to production processes and to products throughout their life cycle. The prevention of pollution should gradually replace its control. As defined in the 1998 United Nations Environment Programme International Declaration on Cleaner Production, it is "the continuous application of an integrated, preventive environmental strategy applied to processes, products and services to produce economic, health, safety and environmental benefits" [52]. The Declaration promotes sustainable production and consumption practices. Integrated environmental and occupational health impact assessment should be used to assess the effect of an enterprise on the health of society, including its workforce [53]. Every enterprise should develop and implement its own procedures for assessing and minimizing its own impact on environmental health.

### **4.4 Health, social capital and community development**

Social capital is an element of national wealth and is created by people acting collectively. It can be measured by the quality of life and of working and living conditions. The social capital determines to what extent everyone can make full use of his or her physical, mental and social capacities. In general, a lot of collective action undertaken by people takes place in enterprises. Therefore, although the main objective of most enterprises is making a profit, they are or should also be active

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in improving the quality of life and of conditions of living and working together.

Local and municipal authorities and enterprises located in their geographical jurisdictions have much joint interest in social capital and community developments such as effective systems for banking, insurance and transport, access to health care services, organization of recreational infrastructure, better housing, and vocational training for employees. In all countries enterprises play an important role in building up the social capital in the surrounding communities and wider environment, which in turn is a major prerequisite for sustainable development of both business and society.

#### **4.5 Integrated policy on health, the environment and safety in the enterprise**

There is always a strong relationship between good occupational health and safety practice and environmental management in enterprises [54–56]. Better cooperation between them may lead to mutual benefits in performance. Many leading enterprises have recognized the importance of this relationship between management of the working and ambient environment and health. As a result, a health and safety audit is now combined with certain aspects of environmental audit into a health, environment and safety (HES) audit. Good occupational health practice based on quality management should complement and support effective environmental management in enterprises and, in turn, itself be strengthened by dissemination of cleaner production technologies [57–61].

Although the above-mentioned health aspects of enterprise management have very different legislative backgrounds and different service infrastructures, they can be combined into one health policy for an enterprise [55,56,58,61]. Such a combination should only be considered in an enterprise if it provides an added value due to mutual strengthening of performance and more

efficient use of existing resources for achieving health and environmental objectives. This is possible through avoiding duplication, unnecessary overlapping and solving conflicts of interest. Such an assumption underlaid the preparation for the Third European Ministerial Conference on Environment and Health (held in London from 16 to 18 June 1999) of the policy development document *Towards good practice in health, environment and safety management in industrial and other enterprises* [5]. Good practice in industrial and other enterprises has been defined as a multidisciplinary process that aims at continuous improvement in health, environment and safety management performance, involving all stakeholders within and outside the enterprise: working communities (employers, management and employees), experts in different disciplines (health promotion, occupational health, environment, safety, economics and others) and the surrounding community.

The process of implementing good practice in health, environment and safety management in all enterprises would:

- measure the impact of each enterprise on health, safety and the environment;
- use environmental quality and the health of workers as performance indicators;
- take into account occupational, environmental, social and lifestyle health determinants;
- assess the risks to health and the environment, and
- ensure continuous improvement in health, environment and safety management.

An enterprise's health, environment and safety policy determines targets, defines processes, and assures financial and human resources necessary to act on the health determinants and improve social and physical environments in order to:

- bring about the greatest gain in health and working ability of the entire staff and, if possible, also for their families;

- provide a safe and healthy working environment for employees while preserving the general environment and health of people living outside the premises;
- provide healthy and environmentally friendly products and services;
- ensure the human rights of the entire staff;
- build up social capital and contribute to local community development.

Management, working jointly with employees and their trade unions, needs to develop basic, mutually agreed, principles, processes and standards as the basis for the effective health, environment and safety management system.

Industrial organizations such as the International Council of Chemical Associations (ICCA) (<http://www.icca-chem.org>) and European Chemical Industry Association (CEFIC) (<http://www.cefic.org>) actively promote not only development of HES management, but also reporting by enterprises on their health, environment and safety performance.

Occupational health practice is a major part of health, environment and safety management (HESM) in industrial and other enterprises. Occupational health services are to provide a technical advice, but they can not replace executive enterprise management in providing political leadership to establish an effective health, environment and safety management system.

Occupational health services, particularly those services delivered by multidisciplinary teams, are expected to play a major role in initiating, developing, implementing, monitoring and assessing good practice in health, environment and safety management in all type of enterprises.

## **5. INTERGOVERNMENTAL BODIES AND INTERNATIONAL ORGANIZATIONS PROVIDING POLICY AND LEGISLATIVE GUIDANCE ON OCCUPATIONAL SAFETY AND HEALTH IN EUROPE**

WHO Member States in the European Region receive guidance in occupational health and safety from different intergovernmental and international organizations. Although there is a high level of agreement in the advice received from these organizations, they perceive health and safety at work from different perspective. This is why managers of modern occupational health services will find it useful to follow developments in these different organizations.

In the United Nations system, two specialized agencies are directly concerned with occupational safety and health and address it as a whole: the International Labour Organization (ILO) and the World Health Organization (WHO). Both organizations cooperate effectively with all Member States of the European Region. The Twelfth Session of the Joint ILO/WHO Committee on Occupational Health recommended closer collaboration between WHO and the ILO, particularly at regional and national levels [32]. The need for collaboration between WHO and ILO was also noted in the Declaration of the Third Ministerial Conference on Environment and Health [62].

### **5.1 International Labour Organization**

One of the main tasks of the ILO is to protect workers against occupational illnesses, diseases and injuries arising out of their employment (<http://www.ilo.org/public/english/90travail/cis>). This concerns the broader subject of a safe and healthy working environment embodied in the ILO international standards. The main focus of the ILO's activities in the occupational safety and health field is on the provision of international guidelines and legal frameworks for the development of occupational health policies and infrastructures on a tripartite basis (governments,

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employers and workers) and practical support for the improvement in the workplace. There is growing awareness in ILO member states that improvement in working conditions and the working environment is essential for sound economic, social and sustainable development.

Progress in preventing occupational accidents and diseases and in protecting workers' health, and efforts to combat occupational hazards and to improve the quality of working life have always been and continue to be a priority objective to which the ILO devotes special attention and substantial means of action. These include standard-setting and operational activities, tripartite technical meetings, development of training programmes, dissemination of information and technical cooperation. ILO conventions, recommendations and resolutions in the occupational safety and health field represent international agreements between nations on issues affecting workers' health. There are over 60 such international agreements aimed at the protection and promotion of workers' health and at the improvement of working conditions and the working environment.

ILO policy on occupational health and safety is essentially contained in its two international conventions and their accompanying recommendations. The ILO Occupational Safety and Health Convention (No. 155) and its Recommendation (No. 164) of 1981 provide for the adoption of a national occupational safety and health policy and prescribe the actions needed at national and enterprise levels to promote occupational safety and health and to improve the working environment. The ILO Occupational Health Services Convention (No. 161) and its Recommendation (No. 171) of 1985 provide for the establishment of occupational health services which will contribute to the implementation of the occupational safety and health policy and which will perform their functions at the enterprise level. In 1998, the ILO published technical and ethical guidelines for workers' health surveillance [63].

These instruments provide for a comprehensive approach to occupational health that includes primary, secondary and tertiary prevention and is consistent with general principles of primary health care such as equity, accessibility and affordability. They indicate the manner in which occupational health services should be delivered to the working populations and propose models for activities organized in the workplace. They also require occupational health and safety specialists to catalyse an interaction between various disciplines in order to promote cooperation between all partners in preventive action. These instruments also provide an organizational framework wherein occupational health professionals can efficiently deliver quality services to ensure workers' health protection and health promotion and contribute to the overall health of the enterprise.

## **5.2 World Health Organization**

The well known WHO health for all policy (<http://www.who.ch>) has been adjusted to meet public demands in the twenty-first century at the European [51] and global levels [64].

Stressing that occupational health and healthy work environments are essential for individuals, communities and countries, as well as for the economic health of each enterprise, the forty-ninth World Health Assembly endorsed the WHO global strategy for occupational health for all at its plenary meeting on 25 May 1996 in Geneva.

The global strategy ([http://www.who.int/peh/Occupational\\_health/occindex.html](http://www.who.int/peh/Occupational_health/occindex.html)) proposes the following major objectives for action [34]:

- strengthening of international and national policies for health at work;
- promotion of healthy working environment;
- healthy work practices and health at work;

- strengthening of occupational health services;
- establishment of appropriate support services for occupational health;
- development of occupational health standards based on scientific assessment;
- development of human resources, and
- establishment of registration and data systems; and strengthening of research.

Based on the recommendations of European meetings and consultations with the other international organizations, the work of the WHO Regional Office for Europe (WHO/EURO) (<http://www.who.dk> and <http://www.who.nl>) is focused on:

- participation in development of the European occupational health information system;
- integration of quality assurance methodology into management of multidisciplinary OHS;
- participation in the development of good practice in health, environment and safety management in European workplaces through the integration of experience of occupational health, workplace health promotion and environmental health;
- education and training in and dissemination of information about occupational health impact assessment;
- development of guidelines on procedures to improve health and safety at work to be used as reference standards by Member States.

### **5.3 European Union**

The European Commission (<http://europa.eu.int/>), in the Community Programme 1996–2000 on Health and Safety at Work [65], noted that the legislative framework adopted by the

Community provides a basis for exchange of information with other individual countries or groups of countries (action 11). It further noted that an effort will be made to intensify cooperation in various areas of safety and health at work with international organizations such as the ILO and WHO, not just to facilitate the exchange of information and avoid duplication of work, but more particularly to ensure the consistency and efficiency of actions. Specialized EU programmes, such as PHARE and Tacis, contribute considerably to improving national policies and infrastructures in occupational safety and health in countries outside the EU.

The Community Programme on Health and Safety at Work (1996–2000) and the directives on occupational safety and health adopted either by the Council of the European Communities or by the European Commission are very important for international strategies and guidelines and have a great impact on national OHS policies and legislation in many European countries, not just the 15 member states of the European Union. In addition to the health and safety at work programme, the European Commission, within the programme of Community Action on Health Promotion, Information, Education and Training, has promoted the European Network on Workplace Health Promotion. The Liaison Office of the network is in the Federal Institute for Occupational Safety and Health, Dortmund, Germany [46,49].

The framework EU Council Directive (89/391/EEC) on the introduction of measures to encourage improvements in the safety and health of workers at work [2], defines employers' responsibilities in: provision of all necessary information concerning safety and health risks and protective and preventive measures (Article 10), obligation for consultations and participation of workers in accordance with national laws and/or practices (Article 11), responsibility for training workers (Article 12) and health surveillance (Article 14). The directive also states that the employer shall enlist competent external

protective and preventive services or persons if appropriate services cannot be organized for lack of competent personnel within the undertaking (Article 7). Thus the framework directive greatly strengthens the concept of using OHS to improve working environments and workers' health. The European Trade Union Technical Bureau for Health and Safety has assessed the application of EU legislation on occupational health practice [66].

### ***European Foundation for the Improvement of Living and Working Conditions***

The European Foundation for the Improvement of Living and Working Conditions was set up in Dublin in 1975 and now covers 15 EU member states (<http://www.eurofound.ie>). It is financed by a subsidy from the general budget of the European Union. The structure is tripartite, with every member state having three members on the Foundation's administrative board. The Foundation is not a research institute as such. It works through national agencies, with the aim of studying factors to improve the working and living conditions in the member states in the middle- and long-term perspectives.

### ***European Agency for Safety and Health at Work***

The European Agency for Safety and Health at Work began work in Bilbao on 15 September 1996 with the objective of encouraging improvements, especially in the working environment, in the protection of the safety and health of workers (<http://www.eu-osh.es>). The aim of the Agency is to provide the EU's bodies, member states and others involved in the field with technical, scientific and economic information of use in the field of safety and health at work. One of the roles of the Agency will be to collect and make available information on safety and health matters from and to third countries and international organizations (WHO, ILO, etc.).

#### **5.4 International Commission on Occupational Health**

The International Commission on Occupational Health (ICOH) and other NGOs of occupational health professionals have important roles to play in disseminating knowledge, sharing experience and improving qualifications of occupational health and safety professionals in member states. Quality aspects of OHS practices come under the remit and research areas of interest of the ICOH Scientific Committee on Health Services Research and Evaluation in Occupational Health.

#### **5.5 International Social Security Association**

The International Social Security Association (ISSA) consists of government and nongovernmental institutions and agencies in 127 countries. There are three main areas of interest: social insurance, public assistance, and social welfare and services. ISSA also carries out international activities aimed at prevention of occupational accidents and other occupational risks. The Association has developed its prevention concept linking together prevention, rehabilitation and compensation as components of social policy.

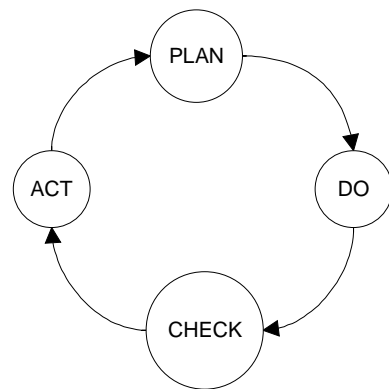
### **6. EXISTING QUALITY MANAGEMENT STANDARDS**

Management is usually defined as the act, art or manner of managing, or handling, controlling, directing. The other meaning – “person or persons managing business, institution, etc.” – will rarely be used in this document. Management, both as a process and as individuals taking decisions, is thus extremely important for implementing health, environment and safety policy in enterprises. It is decisive for the implementation of recommendations from occupational physicians, safety engineers or other members of occupational health teams. The management culture is also crucial in determining the extent to which employees are involved in designing and implementing health, environment and safety policy.

Quality management is management of the important processes in production/servicing such that the desired quality of the product is achieved for as long as necessary and at optimal cost. The main idea is to improve all the processes leading to the desired quality of the final product, instead of selecting the products with the desired quality at the end of the production process and discarding those without the desired characteristics. The characteristic features of the product/service have to be established (desired quality features) and communicated to all those who may have an impact on them. Each stage throughout the production process must then be looked at to assess how it should be carried out so that the product always has the same, prior-established characteristics. In this way losses due to bad products would be minimized.

The quality of design of the product and the quality of the raw materials are also essential for the desired quality of the product, in addition to proper control of manufacturing, storage or product distribution processes. The desired characteristics of the product should be agreed with customers and be a part of the contract with them. Complicated sets of prescribed managerial procedures, often called quality management standards, have slowly developed and been recommended for use in order to assure the desired quality of the product or service. Such standards provide advice on managerial procedures to control product design and development, production, final inspection and test, installation and servicing. Special training is usually required to understand the specific terminology and the rationale justifying various procedures and to acquire the skills to apply the recommendations of a chosen quality management approach in an enterprise, even in an OHS.

There are several terms in quality management that are virtually synonymous. The earliest approach was simply quality improvement. The Deming circle [67] presented in Fig. 1 best explains this concept.

Fig. 1. The Deming quality improvement circle<sup>a</sup>

- **Plan:** suggestions for improvement have emerged during workplace survey and have been used for planning
- **Do:** plans are forwarded to the responsible people in the workplace to take action
- **Check:** results of planned action are evaluated
- **Act:** reasons for non-compliance with plan help to improve a workplace survey process, its reporting and presentation of suggestions

<sup>a</sup>The Deming quality improvement circle (left column), and an example of its application in OHS (right column).

Source: Walton, M. [67].

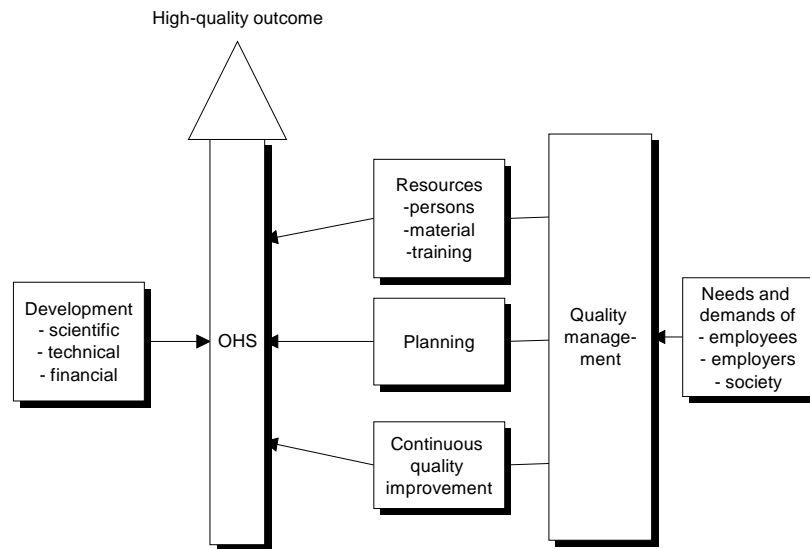
The quality circle is a never-ending process. Each stage is under constant scrutiny and after the reasons for eventual quality flaws have been analysed, corrective measures are taken, the effects evaluated and the change either accepted or altered and the effects checked again.

In Japan, the term total quality control is used. Because in western industry quality control has a different meaning, the term in North America became total quality management. The Juran Institute advocates strategic quality management; the term now most commonly used in health care is continuous quality improvement [68,69].

All of these terms refer to “a structured system for creating organization-wide participation in planning and implementing a continuous improvement process to meet and exceed customers needs” [68]. Fig. 2 illustrates how such a structured system can also be used in OHS. A management system, including in OHS,

consists of the organizational structure, procedures, processes and resources needed to achieve agreed objectives.

Fig. 2. Determinants of a quality management system in OHS



Source: Husman, K. et al. Working paper for Stockholm meeting.

In customer-oriented quality work (as in OHS) it is essential to define the customers and their needs and demands, recognize and document existing processes, and collect and analyse data on work processes. This will help to improve the management processes.

Quality management standards and approaches have gained popularity as ways of making management more efficient, more oriented towards satisfying customers' needs, and increasing customers' confidence that enterprises which have implemented such systems are more reliable in delivering products or services of an agreed quality.

Implementation of quality management standards in the management of an enterprise may be verified by specially trained auditors, after which the certification body may issue a

certificate that the management of the enterprise has complied with quality standard requirements.

There are, however, other approaches which are based on self-assessment and not intended to be used for certification of the enterprise's quality management. In some countries the OHS are given advice on the use of specific quality standards to improve their management systems (see section 7.3), while in others the decision depends more on the services themselves.

### **6.1 International Organization of Standards (ISO) quality standards – 9000 series**

The International Organization for Standardization's (ISO) (<http://www.iso.ch>) ISO 9000 series of standards, which were first issued in 1987 and updated in 1994, are probably the best known quality standards. They originated in the industrial and trade contexts; although they are increasingly being used in the service sector it is premature to state that they are best suited to meet the needs of OHS. The present ISO 9000 series of specifications and standards documents has proliferated into a large number of separate but interrelated documents within an overall structure which is today difficult to penetrate in its entirety. Technical developments and the requirements of the market mean that they are now in need of revision.

The ISO has recognized the need for a broader perspective on occupational health and safety. However, since the international Workshop on Occupational Health and Safety Management Systems Standardization (held on 5–6 September 1996 in Geneva) indicated that there was little support from the main stakeholders for ISO to develop international standards in the field of occupational health and safety management systems, the ISO Technical Management Board decided that no further action should be taken in this area (resolution 6/1997). On the other hand, the Board has invited ISO member bodies to report to the ISO central secretariat on the development of standards in

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this field at national and regional level for subsequent publication in ISO bulletins.

The continuing review of the ISO 9000 series is being handled by ISO Technical Committee No. 176 (Quality Management and Quality Assurance) in coordination with the Environmental Management Technical Committee, the aim being to achieve greater compatibility with the ISO 14001 environmental management system standard. As part of this revision, it is anticipated that a draft new ISO 9000 standard will be published by the end of 1999 [70]. The fundamentals of quality thinking and the basic conceptual approaches to quality will, however, remain unchanged.

The present standards require a declaration by a supplier of a service (product) of a well defined quality policy, the establishment of a quality book of standard operational procedures. The ISO standards emphasize the importance of using the common ISO-based vocabulary. Many terms used in the quality management documents have specific meanings and applications rather different from the generic definitions found in dictionaries (Annex 1).

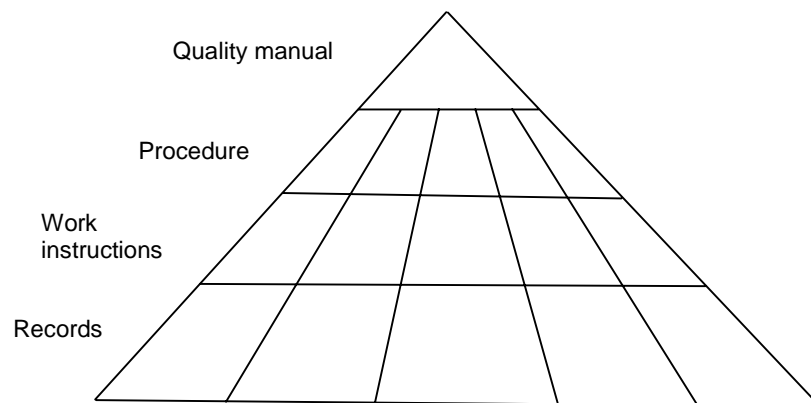
As competition in the field of OHS is increasing, and providers are more often required to make written agreements, the possibilities for misunderstanding are likely to be fewer if the ISO standard vocabulary is adopted as a common language. The number of companies with quality systems (usually based on the ISO standard) is increasing both in industry and in the service sector. If the OHS providers have a quality system based on the same standard and they master the common vocabulary, the basis for cooperation with client enterprises is significantly improved.

### ***Documentation of the quality system***

Documentation of the quality system is carried out through the quality manual, operational procedure documents and work instructions (Fig. 3). Guidance for preparing a quality manual is

given in ISO 10013 – Guidelines for developing quality manuals. If the quality system (ISO 9001, 9002) is to be certified, each point of the standard in the quality manual must be covered. The contents of the quality manual do not have to be in the same order as in the standard. It is often better that the system is described in the same order as the processes. Even those points which are not applicable must be mentioned.

Fig. 3. Documentation of the quality system according to the ISO standard



The criteria for a good quality documentation system are that:

- it meets the standard's requirements
- it corresponds to the needs of the organization
- it is easily understandable
- it is available where needed
- the instructions are updated.

### ***ISO quality standards 9001–9004***

The ISO standards that could be applied in OHS are ISO-9001 or 9002 and ISO 9004-2.

ISO 9001 (Quality systems – Model for quality assurance in design, development, production, installation and servicing) and

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ISO 9002 (Quality systems – Model for quality assurance in production, installation and servicing) allow certification by the external certifying body of the quality system implemented by the OHS (together with the company's quality system or independently). The basic difference between these standards is that ISO 9001 includes design and development activities, while ISO 9002 does not.

The difference between these two standards and ISO 9004-2 (Quality management and quality system elements. Part 2: Guidelines for services) is that ISO 9004-2 cannot be used as a basis for ISO certification, but they provide useful advice as to how to implement a quality system in OHS.

## **6.2 Environmental management standards**

There are two related and generally accepted tools in Europe for managing environmental issues in industry. The European Commission's Eco-Management and Audit Scheme (EMAS) is a voluntary scheme to register sites which have established an environmental management system (such as ISO 14001) and produced independently verified public statements about their environmental performance. The scheme was established by EC regulation 1836/93 and came into operation in April 1995. It applies to manufacturing sites and those engaged in waste disposal, recycling, mining and power generation. In particular, EMAS requires independent verification and public disclosure of environmental performance by enterprises [71]. The other environmental management tool is based on the ISO (and CEN) 14000 family of international standards for environmental management systems [72].

## **6.3 Other methods for quality improvement**

There are many well known quality systems. In the United Kingdom the best known is the British Standard 5750 published in 1979, and in the United States the Malcolm Baldrige National

Quality Award System (<http://www.quality.nist.gov>). Both describe the implementation and surveillance of quality assurance systems in various types of industrial enterprise or service. By issuing BS 5750, the British Standards Institution demonstrated that one standard could fit the needs of many users, which encouraged the ISO to issue its quality standards 9000 series in 1987.

### ***European quality awards***

The European Foundation for Quality Management (an initiative by major European businesses) has developed a model [73] for the self-assessment of total quality management, with the following nine elements:

- leadership
- people management
- policy and strategy
- resource management
- process control
- people satisfaction
- customer satisfaction
- impact on society
- business results.

This model is based “on the simple premise that processes are the means by which the enterprise harnesses and releases the talents of its people to produce results” [73]. To receive a European quality prize a company must demonstrate that its approach to total quality management has contributed significantly to satisfying the expectations of its customers, shareholders, employees and society at large for at least the past few years (<http://www.efqm.org/award.htm>).

### ***Clinical and medical audit***

The terms “clinical audit” and “medical audit” are used to describe the systematic criterion-based review of the work of health professionals [74–77] (<http://www.kingsfund.org.uk/hqscurrent/>,

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<http://www.nice.org.uk/>, <http://www.show.scot.nhs.uk/dtc/dtc04/CSBS.htm>). They apply to work undertaken by physicians, nurses and other paramedical professionals (e.g. physiotherapists) and cover a range of health disciplines, which may be defined differently in various European countries. The structure (representing resources), processes (what is done) and the output (what has been achieved) of health care can all be audited by auditors from either inside or outside the organization, allowing for a distinction to be made between internal and external audits. An audit observes the practice and compares it against the standard. This implies that agreed standards must be set and implemented before the audit. Such an audit has an important role in at least three respects:

- in applying essential and specific clinical and epidemiological parameters to quality audit and quality improvement;
- in permitting a detailed quality audit to be undertaken while respecting confidential clinical data;
- additionally an audit at its best can offer those audited educational opportunities by providing a critical evaluation of current practices.

### ***Professional improvements***

Some quality improvement methods emphasize professional conduct [38–40,78,79] (<http://www.gmc-uk.org/>). Activities such as the existence of a code of conduct, well described vocational education and training [80–83], interprofessional consultation and/or assessment, a registration and re-registration system for professional experts based on continuous education principles and the development and implementation of professional guidelines (documents which describe how to act in a specific field of professional interest) should be considered. International professional organizations such as ICOH and the European Association of Schools of Occupational Medicine (EASOM) play an increasingly important role in this area. There is a global tendency towards encouraging and strengthening the occupational health professions (e.g. occupational health physicians, safety

engineers, occupational hygienists, occupational health nurses, work organization specialists and ergonomists). In part this professionalization of the specialties is highlighted by the increasing tendency towards the commercialization of OHS.

Professional guidelines, professionals' standards and a professional code of conduct are instruments to improve the competence and identity of occupational health professionals and to support the independence of each of the professions vis-à-vis other actors in the field of occupational health. As long as there is a lack of legal support for the competence requirement, the respective professional groups have to identify their own fields of interest and describe their core competences. Occupational health professionals can thus resist those influences which may undermine their professional standards. In some European countries the pressure for commercialization of OHS has highlighted these tensions.

## **7. APPLICATION OF MANAGEMENT STANDARDS TO OCCUPATIONAL HEALTH**

In general, a distinction has to be made between the quality management of occupational health and safety in the enterprise and the quality management of occupational health services.

The first is related to the responsibility of the employer with regard to company policy on occupational health, safety and (in some countries) welfare of the employees. In most European countries the employer (often the management of an enterprise) is responsible for meeting legal requirements as regards occupational health and safety and the control of risks to health. The quality management of all health and safety aspects in an enterprise is internal to that enterprise, although in some countries governments support the application of quality management standards (see sections 7.1 and 7.3).

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The second one deals with the quality of occupational health services and its management.

### **7.1 Guidelines relevant to quality management of occupational health in enterprises**

Some European countries have defined standards for occupational health and safety management systems to be used by enterprises. The Spanish Association on Normalization and Certification has issued a set of pre-standards on prevention of occupational risks: UNE 81900- 81902 based on ISO 9000 standards. In the United Kingdom, British Standard BS 8800 (Guide to Occupational Health and Safety Management Systems) has been published under the authority of the British Standards institutions, and came into effect on 15 May 1996 [84]. It includes two approaches, based on:

- HSG65, Successful Health and Safety Management
- BS EN ISO 14001, Environmental Management Systems ISO 14000.

HSG65 is published by the United Kingdom Health and Safety Executive and gives guidance on successful health and safety management to advise directors, occupational health and safety professionals and employees what should be done in enterprises to comply with the law [85]. Both the British and Spanish standards are based on general principles of good management and are designed to enable the integration of occupational health and safety management within overall company management. In Germany, the Arbeitsschutz Management und Audit Scheme has been developed in the Federal State of Hesse. Finally, the European Commission has published a tool facilitating self-audit and decision-making in safety and health at work designed to help the owners of small and medium-sized businesses [86].

It could be expensive, and frequently unworkable, to develop separate quality management systems for different aspects of a

company's overall management such as product quality, production, budgeting, marketing, environment protection, health promotion, occupational health and human resources management. Integrated approaches can provide companies with synergy and make it easier to implement them [55,56]. So far the integrated comprehensive approach has only been developed in Norway and Sweden, where there is internal control legislation, i.e. mandatory management systems for environment, health and safety for enterprises [58,87].

## **7.2 Guidelines relevant to quality management in occupational health services**

Often the enterprise is not capable of handling occupational health and safety issues using only its own human resources. Therefore, on the basis either of legal regulations, an agreement with the trade unions or private voluntary considerations, employers in many countries make contracts with OHS or occupational health professionals. Commonly, occupational health professionals organize themselves into OHS units or organizations. When they are not a part of a large company, these are themselves service enterprises with their own legal entities. Most of such services are expected to be independent of the enterprises they serve. The OHS can be considered as providers of services such as medical examinations, consultations, advice and consultancy both to the employer (as the decision-maker and supplier of occupational health) and the employee as the consumer.

Where guidelines on quality management of OHS exist, they are in most cases based on ISO 9004-2 for the quality of service provision and made operational in terms of ISO 9002 or 9001. Such guidelines either generically or specifically for OHS exist in a number of European countries (see section 7.3). They include guidelines for good occupational health services practice in Finland [88], and guidelines on quality and audit in occupational health prepared by the Faculty of Occupational

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Medicine at the Royal College of Physicians in the United Kingdom [89].

In Sweden, specific guidelines for quality assurance in OHS have been published in a report issued by the National Institute for Working Life [90]. The Swedish Association of Occupational Health Services (a national branch organization for this service sector) is responsible for the implementation of the system, which leads to formal certification by an officially accredited certifying agency [91]. This system is in essence based on the ISO 9002 standard with supplementary components and modifications drawn from the Swedish quality award. In cases where clinical care and medical treatment is supplied by the OHS, that part is covered by the separate national quality standard issued by the National Board of Health and Welfare [92].

In the Netherlands, there is a legal requirement for the certification of the safety, health and welfare services under the new Working Conditions Act which came into force on 1 January 1994 [11]. At present, the Minister of Social Affairs and Employment awards certificates to safety, health and welfare services and monitors the quality of services. It is intended that the private sector will take over this task in future. To get certification, such a service must have a quality system as the basis for its operation. The requirements for this system are comparable with that laid down under ISO 9001.

The scope of the OHS is set out in the contract with the employer. They are, or may be, in two parts: those services required by law, and those (e.g. a drug or alcohol abuse programme or other health promotion activity) [46–50, 93–95] that are supplied or assisted by the OHS following negotiation between the employer, employees and the OHS. The enterprise has to have a clear health, environment and safety policy and targets to be able to take advantage of the second kind of service offered by the OHS.

### **7.3 Occupational health quality management in selected Member States**

This section contains contributions submitted by the participants in the WHO Workshop on Quality Management in Occupational Health Services held in Stockholm on 20–22 November 1997.

#### ***Netherlands***

Dr P. Biemans, Directorate of Working Conditions, Ministry of Social Affairs and Employment, The Hague

#### ***Introduction***

By 1988, the Dutch Ministry of Social Affairs and Employment had four years' experience of executing quality standards for occupational health and safety services (OHSS). By applying quality standards to OHSS the Government guarantees, at the input side, a high quality level of occupational health and safety care. This section highlights experience with the certification of OHSS. From this experience some considerations follow that could be taken into account when constructing or putting into effect a quality system or a system for the certification of OHSS.

#### ***Background***

In 1994, the Dutch Government implemented the Framework Directive (89/391/EEG) in the Dutch Working Conditions Act. One consequence was that every employer was obliged to enlist the assistance of a certified external or internal occupational health and safety service. The minimum mandatory support consists of risk assessment, sickness counselling, periodic work-related medical examinations and a surgery for occupational health problems (the basic package).

Because of the mandatory nature of this support, the Government decided to guarantee a certain level of quality of occupational health and safety assistance. A certification scheme was devised, a project office for certification of OHSS was set up in the Ministry of Social Affairs, and all OHSS had to be certified to provide the basic package to employers.

In order to guarantee the quality of OHSS the law lays down requirements regarding their expertise, how they operate, the equipment available to them and how they are organized. Screening is carried out in three phases: (i) expertise and organization, (ii) quality system, and (iii) provision of expert assistance by the OHSS. As regards expertise, the service must have at least one expert in each of occupational medicine, industrial hygiene, and safety and labour/organization. As regards phase (ii), the OHSS must base its services on a quality system for which the operational requirements are comparable with those laid down under ISO 9001 and are supplemented by specific requirements laid down in the Working Conditions Act and a Decree. Phase (ii) requires an audit at the OHSS and phase (iii) requires one at the OHSS' customers. If an OHSS meets all the requirements it gets a certificate valid for up to four years. During this period an annual audit is conducted to ascertain whether the service still satisfies the requirements. Another full assessment is made after four years.

By early 1998, 112 OHSS had gained a certificate: 88 of them independent services (with a total of about 350 offices) and 24 internal services in big companies. Twelve independent and 30 internal services were still working towards certification. About 27 requests had been cancelled by the OHSS themselves, mainly because of mergers. In early 1998, about 92% of employers had contracts with OHSS, covering about 94% ( $\pm 5\,800\,000$  employees) of the workforce. This meant that many of the companies still needing to get a contract were those employing fewer than 10 people.

### *Expertise*

In most OHSS, physicians (in total  $\pm 1900$ ) outnumber other experts, but the numbers of safety engineers ( $\pm 300$ ), occupational hygienists ( $\pm 250$ ) and labour/organization experts ( $\pm 200$ ) are increasing at a faster rate. At the end of 1996 a total of 8033 persons were employed by the OHSS.

The services provided by the OHSS primarily reflect the employers' demands, which are strongly geared towards the supervision and control of individual cases of sickness-absence or disability. The newly created labour/organization experts experienced particular difficulty in entering the market, but there are enough examples of OHSS which have managed to deal with this problem.

### *Quality system*

A positive development has been noted in terms of the organization and implementation of quality systems in the OHSS themselves. On occasion they have sought external assistance or trained their own staff to work as quality managers or internal auditors. Many OHSS had great difficulty drawing up quality manuals. About 20% of the quality handbooks were judged inadequate, and at least 80% needed one or more improvements.

Examples of some of the main shortcomings are:

- insufficient assurance of the services of the right experts and the right kind of skills, for example with regard to risk assessment;
- many OHSS still needed to formulate or document the systematic evaluation of the service and the products provided.

### *Challenges in applying quality standards*

- According to the OHSS, small companies in particular have a problem with paying for them. Possible solutions to cut the expense for small companies lie in the development of standard methods for risk assessment for certain branches of industry, collective contracts between OHSS and organizations of small-scale enterprises, and problem-solving at the level above the individual company.
- Some quality standards relating to expert assistance may be at odds with employers' wishes, for example in connection with risk assessment at the workplace. If the OHSS does what the employer/principal wants (checking risk assessment from

behind a desk) it may lose its certificate. It is a challenging task for OHSS to convince employers that such demands are in their own interest (better quality of advice on risk assessment when checked at the workplace).

- The OHSS have to be convinced that they must do everything to improve quality instead of doing everything not to lose the certificate.

During 1997 the Ministry of Social Affairs and Employment started a project to externalize the certification of OHSS. A leading role in this was being taken by the Branche Organizatie Arbodiensten (BOA – professional association of OHSS), in cooperation with employers' and employees' organizations. During 1998 the Project Office for Certification of OHSS was to hand over its files to one or more private certification institutions. The BOA drew up a new protocol for certification, based on legal requirements, which the private institutions were to enforce. One advantage was that the OHSS would have a more direct influence on the certification protocol, and the direct participation of the OHSS would result in a better understanding and acceptance of the quality demands.

### **Germany**

Dr Andreas Fahr, Gillette Deutschland GmbH, Berlin

#### *Introduction*

Since 1995, the implementation of occupational health quality assurance programmes to define standards of good practice and methods of implementation has been discussed by a working team of experienced occupational health physicians in Berlin. The aim is practical: to find ways of improving quality without creating too much useless paperwork or too many bureaucratic procedures. A wide range of problems and questions has arisen in these discussions, some of which are still open. The focus has been on the quality of medical and consulting work, not on how companies could improve their occupational safety and health performance by an occupational health management system.

### *Current situation*

The quality of the structure is partly assured by the regulations on the training of occupational health physicians, implemented and supervised by the General Medical Council. In addition, the Berufsgenossenschaften (employers' liability insurance associations) and the Government's Industrial Inspection Board have defined criteria for authorizing physicians to carry out preventive medical check-ups. These criteria refer to technical equipment, the extent of the medical examinations and the mode of documentation. There are no criteria for other occupational health issues such as, for example, ergonomics, consultations for employers and employees, health promotion or risk assessment. This consolidates the predominance of medical check-ups in the daily routine.

In the last two years, no coordinated action has been taken at federal or regional level for the implementation of ISO 9000 standard instruments in OHS. In some larger companies with their own services, the medical centres have been certified in accordance with an ISO 9000 standard together with the companies themselves. Some supra-regional OHS have also been certified in accordance with ISO 9000, for their internal procedures only, which does not necessarily introduce standards of good occupational health practice. Another initiative has been the establishment of an association of supra-regional OHS whose members are committed to meeting certain quality criteria. There is no provision for audits.

In 1995, the Federal Ministry of Labour asked the Verband Deutscher Betriebs- und Werksärzte (VDBW – German Society of Occupational Physicians) to implement a quality assurance system.

### *Important issues and problems*

#### *Customer orientation*

There is no clear definition of the customer in relation to OHS. Apart from the employer, who commissions and pays for OHS

suppliers, the employees and the national authorities may have different priorities and views. It is not enough just to meet the customers' demands. It is important to define standards of good practice that do not depend solely on those demands. That is why we disagree with certification in accordance with ISO 9000 series, which only requires that what is claimed to be done is done, but does not set standards defining what should be done.

#### *Focus of the quality system*

A distinction has to be drawn between the internal quality of an OHS and the external work and influence on the working conditions of an enterprise. A highly effective and well organized service does not guarantee a safe and healthy working process. If the customer does not accept the OHS' proposals, the service will not be successful. An audit of an OHS can check its structure, processes and procedures but not its results. The OHS must show that it has given good advice and pointed out the risks or hazards, but it is not responsible as to whether the enterprise follows its suggestions.

In order to check the results, an occupational health management system would have to be implemented and the enterprises (not the OHS) audited. This could only be done by federal or EU authorities, not by a self-governing body of physicians. However, the authorities do not seem to be interested in this.

#### *Quality circles*

In two German Länder quality circles of occupational health physicians have been established to initiate improvements in processes and procedures. These circles seem to be highly effective when they are guided and orientated towards defined objectives.

#### *Market mechanisms/dumping prices*

Over the last five years, the prices for OHS have been falling. A major problem when providing a quality seal for OHS is whether customers will accept reasonable prices for good quality. As OHS

are mandatory, employers often do not see the advantage they can gain from them and buy what they think is the best: the cheapest solution. A quality assurance system can contribute to the market image in soliciting the advantages of high standard OHS, but it cannot prevent dumping prices. In order to achieve this it would be necessary to establish a fixed scale of fees, as is customary for all medical services in Germany.

### *Planning*

A registered society under the leadership of the German Society of Occupational Physicians was established in 1998 with the aim of setting standards of good occupational health practice covering all kinds of occupational health activities, and auditing occupational health physicians or services on a voluntary basis. The society has an advisory board composed of representatives of the employers' federations, trade unions, employers' liability insurance associations and the General Medical Council, thus assuring the acceptance of the quality seal. Auditors (well experienced occupational health physicians) are nominated and trained by the society.

Audits would be carried out every three years. In addition to the major criteria, non-fulfilment of which would be grounds for refusing the seal, a sample of minor criteria have been defined describing desirable procedures and activities. These minor criteria are not essential for the award of a certificate, but are intended to initiate a long-term process of improvement.

### ***United Kingdom***

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### *Introduction*

The extent and nature of quality management of OHS in the United Kingdom have not been comprehensively surveyed. However, there is significant activity besides that which has been formally documented, ranging from professional peer

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review to the implementation of quality management systems of the ISO type, as well as other approaches.

Probably only a small proportion of OHS in the United Kingdom perceive quality assurance as a high priority issue. Many do not, and of these, a substantial number would probably consider it to be an unwarranted imposition, for which they can neither understand the need nor the mechanics. There is probably a bias in quality management in OHS favouring the larger and more successful companies – just as these are more likely to have a well resourced OHS, they are also likely to implement quality assurance in relation to the OHS. However, the majority of the workforce in the United Kingdom would, by many standards, not be deemed to have access to an adequate OHS – so a strategy to improve quality assurance in relation to OHS must achieve more than simply improving the situation in the larger and relatively well resourced companies.

*Measurement of current practice and achieving agreement on standards*

Although a number of studies have been conducted to review current attitudes and practice [96,97], a lot more effort will be needed to obtain a comprehensive baseline of current practice over the whole sphere of OHS delivery. In many contexts it has been shown that there is a wide diversity of practice between OHS, and between different categories of occupational health practitioners ostensibly working to achieve the same end. Often there is scientific evidence to justify that a particular practice is lacking. When that practice or policy, however widespread, is accepted uncritically as a quality assurance standard or as an audit criterion, health outcomes might suffer rather than benefit. Sometimes standards which are easy to measure, such as the speed with which an OHS responds, are addressed at the expense of consideration of the quality of the response [96]. Inadequate evidence-based standards of practice in occupational health remain fundamental weaknesses.

Some standards are being developed in the United Kingdom, based on a consensus of professional good practice and in the context of broad guidance from the Royal College of Physicians Faculty of Occupational Medicine [89]. However, consensus documents are short-term measures, pending a formal evidence-based approach. The long-term approach advocated mainly by the academic community is to conduct and update a range of reviews based on a critical appraisal of extant evidence, supplemented by original research where the available evidence is lacking. These would extend all the way through the reviews of management systems on the one hand, to Cochrane reviews at the more medical/professional/scientific end of the spectrum [77].

#### *Quality management systems and professional peer review*

There tend to be two approaches which often evolve independently and do not necessarily interact as often as they should: the ISO 9000-type quality management system, and professional peer-review-based methods. The ISO 9000-type certification has been pursued and obtained by a few of the larger companies which tend to apply quality management to the whole of their undertaking including their in-house OHS. Such certification has also been achieved by some OHS acting as service providers to a range of clients who therefore see the "Quality Assured" label as being important to attract and retain customers. Unfortunately such a label does not necessarily address the quality of OHS process or output. For example, there have been instances where a Quality Assured certificate has been awarded to an OHS which did not use appropriate validated health surveillance techniques such as questionnaires, or whose quality of output (e.g. of professional advice on sickness absence or on rehabilitation) had not been addressed either by in-house quality management systems or by the external auditors. Therefore, certified quality management systems that merely confirm that specified systems are in place, without addressing the scientific, epidemiological and clinical validity of the delivery of OHS, are not deemed adequate.

Professional peer review is practised internally or externally, including in some purchaser–provider contexts. It tends to focus both on high standards of professional process and output but may be weak in determining the management systems of the OHS as a whole. Some special schemes have also been developed such as the King’s Fund Organizational Audit which is applied in the health care sector and which includes some elements, mainly of the structure, of OHS within its scope.

Professional competences in OHS are an important part of quality management, and in the United Kingdom there are now highly satisfactory mechanisms and bodies to ensure competence and training in relevant disciplines such as occupational medicine, nursing, hygiene and safety.

### *Conclusion*

Quality management in OHS is limited to a minority of organizations which have well resourced OHS. They may tend to emphasize structures and policies, or adopt an approach which may be poorly customized to meeting occupational health needs. Some good scientific research, as well as steps to ensure appropriate professional competences, are being undertaken. It is essential to apply fundamental needs and evidence-based principles so as to help achieve and maintain quality in OHS. Efforts must be made to improve the availability and quality of OHS for the majority of the workforce.

### ***Current status of quality assurance in Polish OHS***

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### *Background*

The former economic system in Poland was based on different control procedures and mechanisms. Their common denominators were surveillance and accountability – the most important tools for a centralized socialist administration. Over 20 parliamentary acts and ministerial directives and instructions,

many of them still in force, regulated the different kinds of surveillance. The main task of any inspector was to find as many faults and deficiencies as possible and to punish the persons considered responsible for them. The inspectors were also subject to supervision and their superiors did not approve of any who failed to detect any faults. This is why there is so much resistance to inspection and assessment, especially on the part of medical personnel.

The quality of medical services in the health care system was mainly a function of the specialist supervision system, which has remained unchanged since 1982. It works on three levels: national, regional and district (*voivod*). The Minister of Health and Social Welfare appoints national and regional specialists and the districts appoint district specialists. There are 33 medical specialties, including occupational medicine, to which these specialists have been appointed. For each specialty there are 1 national, 10 regional and 49 district specialists.

Quality assurance of laboratory services goes back over 40 years. The body responsible for surveillance of diagnostic laboratories has been the Polish Association of Laboratory Diagnostics. Occupational hygiene laboratories have also been incorporated into the quality assurance system.

### *OHS and legal regulations*

The OHS are an exception in the health care system with respect to the extent and rate of reforms. The Economic Activity Act (1988) allowed the foundation of private health care units, the Health Care Facilities Act (1991) introduced non-public health care units, and the Labour Code Amendments (1991, 1996) made employers cover the costs of prophylactic examinations and introduced the post of an authorized physician in OHS. The instructions of the Minister of Health and Welfare on prophylactic examinations (1997) created a standard for prophylactic examinations depending on the kind of hazardous agents in use at the workplace.

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At present, OHS personnel consist of authorized physicians (service providers) who render a required range of prophylactic services. Employers (purchasers and clients) cover the costs of the examinations and the employees are clients of OHS, according to official standards. Thus almost all the elements necessary for implementing quality assurance in the OHS are in place.

### *Quality of OHS and the supervision system*

The system established by the Occupational Health Services Act (1997) also provides for the quality of services in OHS. The Act identifies two levels at which OHS function: the pluralistic primary level (authorized physicians who may work in public or non-public health care units or have their own practices) and the district level where state-owned occupational health institutions function.

District occupational health centres give consultations to, and carry out inspections of, OHS primary units, and are responsible for postgraduate education in occupational health. Inspections cover the course, scope and quality of medical services and health care, as specified in the Act. The manager of the district occupational health centre sends the OHS primary unit a post-inspection report indicating any faults found and their sources or causes and suggestions as to how to deal with them. If significant faults are found, the manager refers to the ordering party a motion to subject the contractor to the rigours stipulated in the agreement; at the same time he sends to a locally competent plenipotentiary with professional responsibility in either the district chamber of physicians or that of nurses and midwives a motion launching legal proceedings on the basis of professional responsibility.

The quality of health services in district occupational health centres is controlled by the research institutes in occupational health.

The Occupational Health Services Act (1997) regulates the different aspects of OHS, including quality assurance. It is too

early to evaluate the effects of this Act, but during the preparatory work for its discussion among OHS professionals led to the beginnings of a recognition by some OHS units at primary and district levels of the most important issues covered by the Act. Some elements of the quality assurance system have been implemented in several regions.

***Risk prevention as a competitiveness factor in companies in Spain***

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Numerous incentives can be cited in support of the occupational health and safety (OH & S) management standards. Prevention-oriented occupational and environmental health programmes should be integrated with the design of industrial processes and not considered as separate entities. As such, the OH & S management standards should be compatible with the scope of ISO 9001, with the net effect of minimizing the number of internal and external audits to which companies are subjected. By harmonizing the philosophy of the ISO 9000 and 14000 series, a new OH & S management standard could address the logistical and financial barriers associated with multiple internal evaluations.

Companies may benefit from the evolution of complex intercountry philosophies to a single health and safety approach. Exchange of expertise (in the same company) in health and safety, resulting in substantial cross-training, might be encouraged since OH & S professionals would be using similar procedures to resolve similar problems: for instance, the ISO 9000 series does not specify how companies must design quality systems, nor would the OH & S management standards, so innovation would be encouraged. Benefits favourable to small enterprises could also be built into the system.

As noted earlier, many firms are already showing a preference toward using suppliers with, or conforming to, the principles coupled to ISO 9000. But other incentives could be built with OH & S management standards.

The contractual language could require that trade partners be OH & S management standards registered to be considered for major business contracts. Corporate insurance premiums could possibly be reduced by participation in an OH & S management system.

At international level, the World Trade Organization (WTO) supports the creation of, and participation in, development of international conformity assessment standards. The WTO also suggests that when asked, developed countries should assist developing trade partners in their efforts to conform with the standards. If the spirit and intent of the WTO is applied to OH & S management systems, developing countries could be provided with time and technical assistance, without fear of trade retaliation, to develop strategies for conforming that are suitable to local social and political conditions.

The utility of OH & S management standards as consensus standards could benefit workers throughout the world. The development of these standards could alleviate some of the inequities inherent in safety and health regulations that differ from country to country. Neither do these standards pre-suppose either a reduction in the standard of wellbeing already reached or a loss of capacity in trade unions' collective negotiations. Workers' safety should never be jeopardized in collective negotiations.

On the other hand, good performance in preventing occupational risks minimizes the causes of work-related accidents and ill health. Companies should attach the same importance to the achievement of high standards of OH & S as they do to other key aspects of their business activity. For these reasons, and in

order to achieve benefits in OH & S management, a properly structured approach must be adopted of which the more important elements are the following:

- definition and documentation of the policy;
- definition and documentation of the responsibilities of all staff managing preventive activities;
- definition and documentation of planned action;
- measurement and control of the activities according to defined standards;
- evaluation of the OH & S management system with the relevant audits.

With these principles in mind, the Spanish Association for Normalization and Certification (AENOR) started in September 1994 making the first draft of OH & S management systems based on the philosophy of the ISO 9000 series. There was some difficulty because it was necessary to convince interested parties to apply the positive experience of the ISO 9000 series to prevention risks. After 2 years and 20 meetings, more or less, and with a lot of hard work, AENOR published the following UNE pre-standards in June 1996:

- UNE 81900:1996. Prevention of occupational risks. General rules for the implementation of an occupational health and safety management system;
- UNE 81901:1996. Prevention of occupational risks. General rules for the assessment of an occupational health and safety management system. Audit process.
- UNE 81902:1996. Prevention of occupational risks. Terminology.

In order to reach the necessary consensus at national level, the following entities participated in the drafting of such standards: the Ministries of Labour (through the Institution of Safety and Hygiene) and of Health and Consumers, employers' organizations

and trade unions, mutual benefit societies, laboratories, specialist companies in this field and AENOR.

However, taking into account the lack of knowledge of many companies (mainly SMEs) in the application of quality criteria to the prevention of risks, the Technical Committee considered it necessary to help them by drafting UNE 81905:1997: Prevention of occupational risks. Guidelines for the implementation of occupational health and safety management system.

The above-mentioned pre-standards are in line with Spanish legislation in this field, European Framework Directive (89/391/EEC) and their particular regulations. Article 7 of the directive on Protective and Prevention Services set out in Royal Decree 39/1997 dated 1997-01-17 (which has no equivalent at European level) took the view that prevention of occupational risks in companies must be integrated into all their activities and decisions in technical processes, organization of work and working conditions, at all levels of management.

Obviously, to integrate preventive action into all levels of a company means that this is done throughout the hierarchy and that the obligations are assumed by all and include preventive action in each activity undertaken or ordered and preventive action in each decision adopted. Thus preventive action in companies must be integrated into their general management as into any management system; as a consequence they must be considered as quality and environmental management systems.

The UNE pre-standards on OH & S place special emphasis on four fundamental items in order to establish and maintain an effective OH & S management system:

- the responsibility of senior management
- the necessity for documenting the system
- the prevention of risks
- the continuous improvement cycle (Deming wheel).

***Experience with quality development in Sweden***

(Bosse Lundgren, Swedish Association of Occupational Health and Safety (FSF), Örebro)

***The occupational health quality model***

In 1993, the Swedish Government instructed the Swedish Work Environment Fund to support the development of a quality system for occupational health. This project was carried out by:

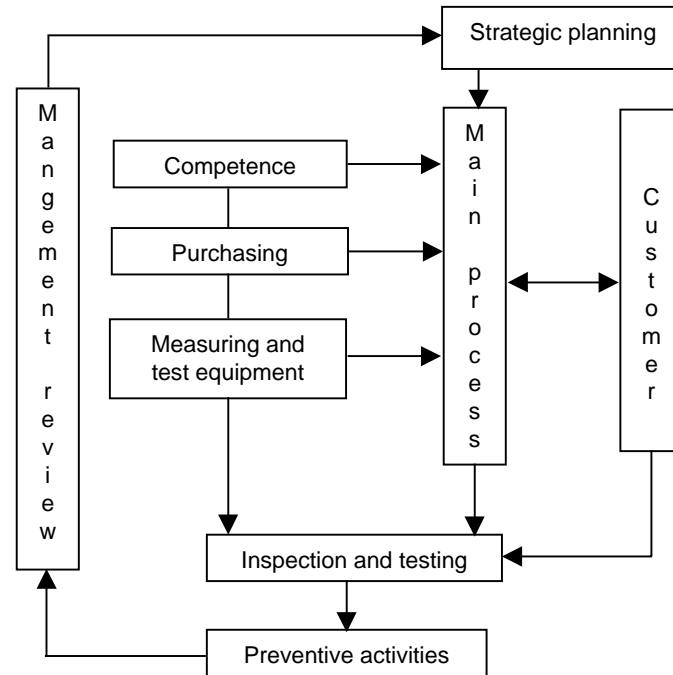
- the Swedish Work Environment Fund
- the National Board of Occupational Health and Safety
- the various parties in the labour market
- the Swedish Association of Occupational Health and Safety.

The quality model was based on ISO 9001/9002 and the Swedish quality award (SQA) [98]. The latter's procedures were used to analyse and identify the organization of occupational health units and how they cooperate with customers, and to identify specific demands for competence and evaluation as a complement to the ISO standard (Fig. 4).

The project also defined [91] the term "occupational health services" to imply operations that:

- are primarily active in the fields of working environment and vocational rehabilitation;
- act in a professional and independent way vis-à-vis employers and users;
- in accordance with the agreed services, offer the employer their competence to identify and describe the connections between the working environment, organization, productivity and health;
- based on such a comprehensive view, propose measures to be taken and actively participate in the implementation of these.

Fig. 4. Quality design



### *Implementation*

Since October 1995, the Swedish Association of Occupational Health and Safety has run a development programme to support occupational health units in drawing up a quality system based on the occupational health model. About 160 of 350 such units had participated in the programme. Three units had been certified, two of them in accordance with the occupational health model, and 55–70 units were expected to be certified by the end of the year.

The development programme, based on the occupational health model, lasts for 7 days spread over 7–8 months. Between the meetings which constitute the programme participants analyse and describe their own activities and operations, then document

each step of their quality systems. At the end of the programme they have a documented quality system.

### *Experiences and problems*

To devise and implement a quality system means that an organization must have goals and the resources to manage this work. The person responsible must be able to put one day aside every week for the first 7–8 months to participate in the programme. After that the amount of time can be reduced but not the involvement.

In the few cases where there have been failures, the problems can be seen as a question of leadership and/or lack of resources.

For most occupational health units, the implementation of a quality system has meant that they have improved relations with the customer and at the same time increased their profitability and competence. The staff of the unit know what to do and who is doing it. There are so many positive effects, both internally and externally, that the investment in the quality system often pays off when the system is implemented.

### ***Review of the quality management of occupational health services in Belgium***

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#### *Introduction*

The concept of controlling the working of the OHS has been present from 1965. It was organized on two levels: (i) at national level, the Ministry of Labour was responsible for accreditation and surveillance of the services through its medical inspection service for occupational medicine, and (ii) at enterprise level, through joint committees for occupational safety, health and hygiene in the workplace (which included representatives of employers and the trade unions) in each enterprise with at least 50 workers. Although this control was also aimed at improving

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the quality of the services, the main emphasis was laid on formal control of conformity with the legal regulations.

### *Developments*

Legislation regarding, and the organization of, occupational health and safety has been thoroughly revised to implement EU Framework Directive 89/391. The regulation on the General Organization of Labour Protection (1946) has been replaced by the law on the Wellbeing of Workers at Work (4 August 1996). The most important change concerns the integration of the existing services for occupational safety and occupational health into one multidisciplinary Service for Prevention and Protection. Employers are responsible for choosing whether to set up an internal service or to affiliate to an external service. As a result of these changes, a major reorganization of occupational health and safety is taking place, resulting in fewer services offering a wider range of activities.

The new law pays particular attention to the control and improvement of the quality of the services, as required by the laws of 27 August 1998. This is now being implemented by the services. The existing government control system has been almost entirely kept in being, as well as surveillance at enterprise level by the joint committees for prevention and protection. The external services must be accredited every five years by the Minister of Labour, following a proposal of a mixed commission of social partners and experts. The departments for medical surveillance (the former OHS) of both internal and external services need separate accreditation by regional ministries of health, on the proposal of another mixed accreditation commission. Another new criterion is that each service must develop and prove its quality management policy. The medical or technical inspection services or the accreditation committees can assess the quality of the services. The possibility of an external auditing system has also been considered.

### *Planning*

The accreditation of the Service for Prevention and Protection should be finished before 1 January 2000. It is unclear how the Government will combine its policy of control with the new quality management policy. There is a growing interest and effort on the part of the services and in organizations for occupational health professionals to develop an appropriate methodology (e.g. guidelines) for quality management in the OHS.

## **8. IMPLEMENTING QUALITY MANAGEMENT IN OHS**

Implementation of quality management in OHS depends on policy and action taken by a variety of stakeholders with an interest in good outcomes of workplace health management. Stakeholders who should cooperate in this joint strategy include:

- government ministries and enforcement agencies (health, labour, environment, economy, finance, etc.);
- employers and their organizations, policy-makers and management leaders in industry, agriculture and other economic sectors;
- employees and trade unions;
- financial and insurance institutions;
- OHS, cleaner production centres, environmental health services, and environmental and social consultants;
- NGOs and associations of professionals in occupational health and safety, health promotion, environmental health, environmental protection and economic and social development;
- research, education and training institutions, including those responsible for quality management training and quality certification.

Government institutions seem to have a particularly important role in encouraging others to improve workplace health management.

## **8.1 Role of government agencies**

These agencies create legislative and political frameworks which determine the needs for and demands from OHS. Since the structure of governments and governmental institutions varies considerably between countries, the main types of role will be discussed below.

### ***Enforcement of health and safety legislation, monitoring of hazards and health outcomes, and modification of the law according to new societal needs***

The absence or inadequate enforcement of a law can lead to a lack of interest by the social partners in a workplace in investing in improving health and safety at work and may seriously affect the rules governing competition between enterprises. National legislation and infrastructures should be adjusted to reflect the changing nature and sizes of enterprises in order to redirect technical and financial support to SMEs. Governments set minimal requirements for the protection of the health and safety of employees, in which OHS play a crucial role by supplying health and safety audits to employers. Monitoring is essential for decision- and policy-making.

### ***Developing and implementing national policy for improvement of health and safety and managing the environment in enterprises***

In collaboration with employers and employees' organizations and concerned NGOs, governments should develop national policies with measurable goals and schedules for continuous improvement in comprehensive occupational health, if possible covering all aspects of health, environment and safety (HES) management in enterprises. Progress toward these goals should be periodically monitored and made publicly available and the strategies revised accordingly.

In developing policy, accountability, transparency and the use of self-control and self-regulation should be observed. Self-regulation should only be applied to measures that exceed the legislative requirements.

The role of local authorities in developing health policies for the workplace is growing as a result of the decentralization of government power in many European countries. Local authorities could strengthen their public health and environment policies by collaborating with enterprises, and the latter could benefit through participating in local HES programmes.

The need for action was noted by participants in the Third Ministerial Conference on Environment and Health, in the London Declaration [62]:

We recognize the importance of instituting workplace measures to meet public health needs and goals, and the right of workers to be involved in the decision-making process on those measures. We will promote good practice in health, environment and safety management in enterprises, in collaboration with stakeholders in our countries such as local authorities, enforcement agencies, business (including small and medium-sized enterprises), trade unions, NGOs, social and private insurance institutions, educational and research institutions, auditing bodies, and providers of prevention services. The current regulatory frameworks and economical appraisal related to health and safety should be, if necessary, strengthened for this purpose and self-regulatory mechanisms (voluntary initiatives and agreements) should be used as complementary measures. We invite WHO and the International Labour Organization to work together to assist countries in developing processes, involving all stakeholders, for implementation of environmental practice which also promotes public health, and to develop close cooperation with the European Commission to assist the candidate countries for membership of the European Union to meet their obligations.

Enterprises have a major impact on the health of the nation going far beyond prevention of occupational injuries and diseases. The concept of preventable disease at the workplace creates the possibility for involving enterprises to a greater extent in promoting health and working ability [5,36]. Thus, a national policy should create economic and social incentives for enterprises to improve HES. It should also encourage the development of tools for economic appraisal of HES in enterprises. The opportunities for enterprises to externalize the costs of poor practice in workplace health management should be diminished. National policy should encourage local authorities to provide support to enterprises located in their areas for the improvement of their workplace health management.

### ***Education and training***

Occupational health professionals, employers and employees need to have a sound understanding of the benefits of good practice in HES management in enterprises. They should know the basic principles used to control and act at the workplace on occupational, environmental, and social and lifestyle determinants of health, and on the social value of cleaner and safer production for health and sustainable development. Government agencies have a key role in supporting the national and local infrastructures necessary to achieve that goal. The principles of quality management should be part of the education and training curricula of all professionals working in multidisciplinary occupational and environmental health teams.

### ***Research and development***

Government research and development programmes should be capable of providing scientific data and the products required for developing, monitoring and assessing efficient HES management at national, local and enterprise level. These programmes should also allow for the assessment of existing and proposed managerial approaches for improving workplace health management.

## **8.2 Identification of demands and needs in occupational health**

Quality management applied to health care in general and to OHS in particular relies on three general principles. First, the success of an organization depends on meeting the expectations and needs of its customers. Second, quality is produced as a result of processes in which the causal relationships are complex but possible to grasp with careful collection and analysis of data on work processes. Third, most employees are motivated to try hard and succeed. It follows that most flaws in an organization come from the processes, not the workers, who want to do their best but are hindered by inappropriate processes.

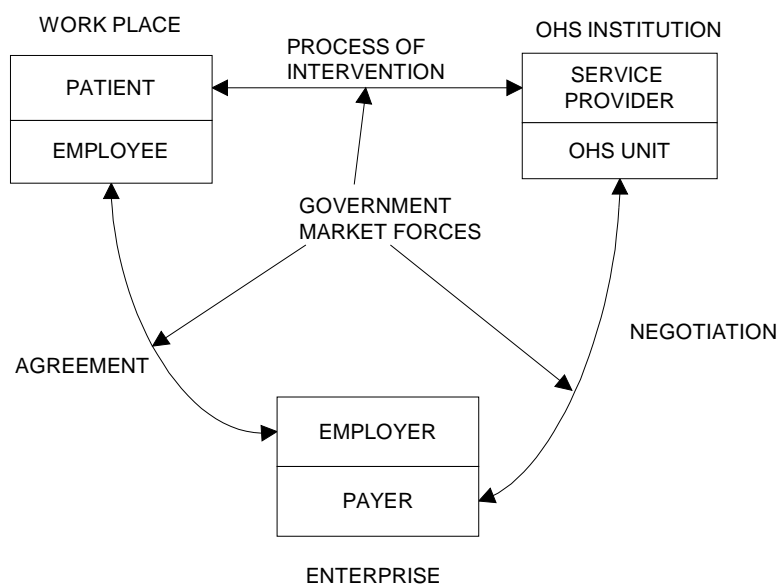
In health care the stated and implied needs of customers are usually called demands. In addition to being sensitive to these demands, the task of occupational health professionals is to identify, assess and, eventually, satisfy real occupational health needs at workplaces, which are not necessarily the same as the customers' (or stakeholders') demands even if these can help in ascertaining the real needs.

Exposure to carcinogenic chemicals, radiation and other factors endangering fertility are examples of situations where it is important for occupational health professionals to communicate their assessment of occupational health needs to customers, which might then stimulate the customers to make appropriate requests. Musculoskeletal problems often give rise to requests for physiotherapy when the real need is to improve ergonomics or even to reorganize the work. In situations where the customers' demands and the occupational health professionals' assessments of the needs are not the same, it is essential for the professionals to provide information and advice to customers in order to reach agreement on any necessary action. However, it is crucially important that experts continually bear ethical considerations in mind when they are prioritizing the functions

of OHS, so that reasons derived from occupational health professionals do not themselves unduly affect decisions.

The various stakeholders have different needs and demands in occupational health. Quality in OHS may mean different things to different actors and client groups (Fig. 5). Despite this diversity, client satisfaction has been widely accepted as one of the main aims and criteria of the (health care) services.

Fig. 5. Participants in OHS and a schematic overview of their interaction



Occupational health is rather complex, because it has different backgrounds, different aspects and various actors who function as stakeholders. At the enterprise, occupational health policy and its carrying out is commonly the responsibility of the employer acting with the commitment of the employees (represented in the working council or health and safety

committee). An essential part of the policy may be provision for the enterprise of professional OHS. These services are in most cases based on the health care system. Employees in this system can also be patients or consumers of the OHS, which in some way acts as a care provider.

Needs assessment is determined not only by the specific concerns of the workplace but also by legal requirements at national or supranational level. These requirements reflect the expectations of the wider stakeholders in society. A wider compliance with the legal framework is implicit in all service contracts, thus OHS providers must consider the existence of and issues in such implicit demands.

### **8.3 Quality as result of the managerial processes, use of evidence and satisfying demands**

In determining the specific processes to be undertaken and the parameters for their quality management, a hierarchical approach has to be followed. Clearly legal requirements must be observed, although this does not preclude research and debate with a view to revising legislation. Secondly, evidence based on research must be systematically sought, evaluated and applied. Where the evidence base is limited a consensus on good professional practice must be sought. All this must be effectively communicated to the customer to permit consultation and dialogue. In situations where legislation or scientific evidence do not point to a specific workplace hazard, customers' preferences become correspondingly more important determinants of the process to be followed. Occupational health professionals must be aware of the differences between the perceptions of important stakeholder groups with respect to the meaning of "quality". A distinction can be made, for convenience, between professional quality, management quality and customer or client quality. For customers of an OHS, quality is a question of whether the direct beneficiaries of the service perceive the service to be giving them

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what they expect. Quality in the eyes of an occupational health professional relates to two components:

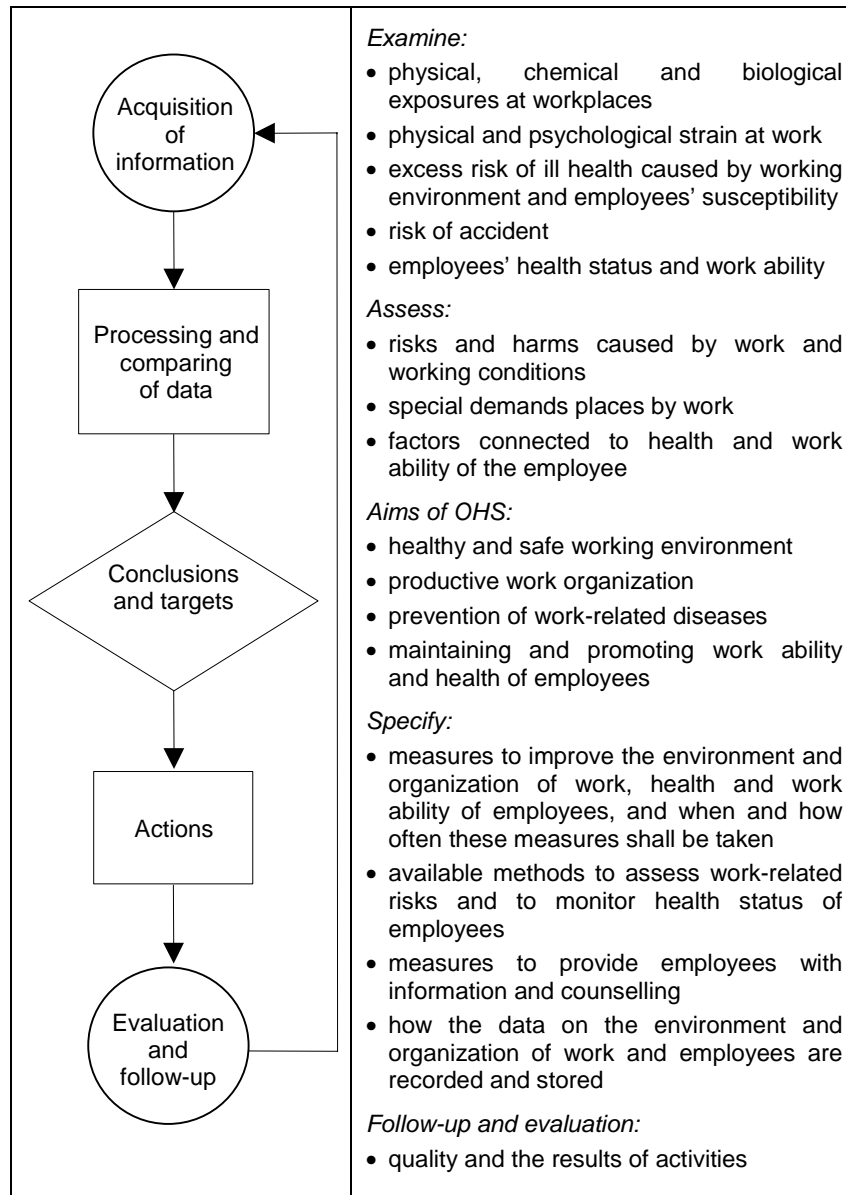
- outcome – whether the service meets the professionally assessed needs of its clients;
- process – whether the service correctly selects and carries out the techniques and procedures which the occupational health professions *in toto* believe meet the needs of clients.

There may be considerable difficulty linking a health outcome to a process carried out by an OHS, especially when there is a significant time lag between the process and intended outcome. This is why the quality of the process itself, maintained over a long period, may give a warranty that the expected health outcomes could be achieved. Thus it is important to apply health management procedures and processes suggested in quality assurance standards.

Quality in the view of management refers to the selection and deployment of resources in the most efficient way to meet client needs, within limits and according to directives.

While health outcome is the final parameter of concern it has to be borne in mind that health outcomes are not solely or necessarily primarily determined by the quality of the OHS, but are also greatly influenced by the attitudes, behaviour and responses of employers, workers and society. An example of processes used by an OHS is given in Fig. 6.

Quality in OHS can have different meanings to various customer groups and to health professionals (Table 1). Despite this diversity, customer satisfaction has been widely accepted as one of the main aims of the health care services. Several studies in the area have shown the interactions between customer satisfaction and the outcome of health care. The intermediating factors have been, for example, the patient's state of mind, health behaviour, continuity of care and compliance with therapeutic measures.

Fig. 6. Example of general processes used in OHS<sup>a</sup>

<sup>a</sup>Conceptual model in left column and corresponding tasks of the OHS according to legislation in the right.

Source: Decision of the Finnish Council of State 950/1994 [99].

Table 1. Different aspects of structure, process and outcome of OHS seen as quality features by various stakeholders

Stakeholder	Structure	Process	Outcome
OHS professionals	–Premises –Equipment –Staff	–Professional performance	–Clinical data –Morbidity –Mortality
Employee	–Accessibility –Continuity –Acceptability	–Communication –Information	–Quality of life –Satisfaction
Management of OHS	–Efficiency –Safety	–Referrals –Prescriptions –Tests	–Costs –Complaints –Incidents
Company/enterprise management	–Cost-benefit –Validity for reimbursement or lower insurance premium	–Adaptability –Flexibility –Speed	–Good working environment and culture –Increase in productivity and quality –Reduced personnel costs related to ill health –Conforming to legal requirements
Societal stakeholders	–Cost-benefit –Coverage –Legislation	–Evidence- or evaluation-based judgements	–Effectiveness –Working culture conducive to health and safety

One reason for complexity in the OHS system is the variety of stakeholders with differing needs and demands. The stakeholders should be differentiated from the different aspects of quality when the quality aspects of the service are evaluated. Why is quality evaluated? In whose interest is quality assessed? Which part of the service delivery (structure, process or outcome) is assessed? Depending on the answers to these kinds of question, the quality aspect of the service to be assessed can be defined (Table 1).

Health examinations are a typical routine process in OHS that can be broken down into different phases and evaluated (Table 2). The experience gained from quality improvement

work in Finland and the Netherlands suggests that the occupational health personnel improved their teamwork, customers were better oriented in the processes, and there was an ability to consider even complex performances as linked processes.

Table 2. An example of process control in OHS: health examinations

Requirements for the service provided	Key process variable	Requirements for the process	Process control	Verification
Appointment times are kept	Appointment booking, interview by the nurse, consultation with OHS physician	Appointments scheduled correctly, both the nurse and the physician keep their schedules (other personnel if appropriate)	Procedure documentation	Follow-up samples, follow-up with automatic data processing appointment system, customer satisfaction surveys
Correct recommendation is given based on health examinations	Right conclusions are drawn	All needed knowledge and expertise is used when drawing the conclusions	Team work, possibility to consult other experts	Audit
The given instructions are implemented in practice	The way of giving and contents of the recommendations, follow-up	Recommendations are given in an understandable way to a person who is able to affect the problem/item in question	Procedure documentation	Audit, customer satisfaction surveys, follow-up of the implementation of the recommendations

Evaluation of outcome in health services runs into several difficulties, one being the time often needed before the effects appear. Hence, evaluation of processes becomes important. Quality in the OHS processes can be divided into scientific-

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technological quality (e.g. clinical performance) and perceived quality (e.g. communication, information). The latter may be more important to employees, and the former to health professionals, but both aspects have significance for all categories of customer.

The final outcome or the benefit of occupational health management at work supported by multidisciplinary OHS is reduced morbidity and mortality, increased working ability and improved health of employees. It is difficult to express these types of outcome only in terms of financial benefits. On the other hand, it has been shown in several enterprises participating in the European Union Workplace Health Promotion Network that implementation of the workplace health promotion programme is often linked with increased productivity and efficiency in production or servicing [49].

## **9. QUALITY MANAGEMENT IN OHS – AN ISO 9002 EXAMPLE**

In order to support the enterprise and the working community for whom the OHS is working, they should be well acquainted with the use of quality management approaches and standards to enhance their competitiveness by improving the quality of their service. In fact, OHS competing for customers should be able to provide evidence that they offer a high quality product. New types of preventive service should be able to demonstrate their utility value for the development of health and quality of life in the workplace where transparency and the participation of stakeholders is valued and considered important. One of the prerequisites for the provision of a good service is the development of a quality management system in the OHS. In addition, appropriate internationally accepted indicators and criteria of workplace-related health outcomes should be identified so that the performance of the OHS and the national occupational health system can be measured and an evaluation

made of the results of the quality management implemented [5,7,13,23,36]. Preventive activity should be appraised from an economic point of view, including cost–benefit analysis, which is beyond the possibility of most enterprises and thus needs to be supported by governments. Improvements in the efficiency of OHS should therefore by no means be limited to a formal development quality management system.

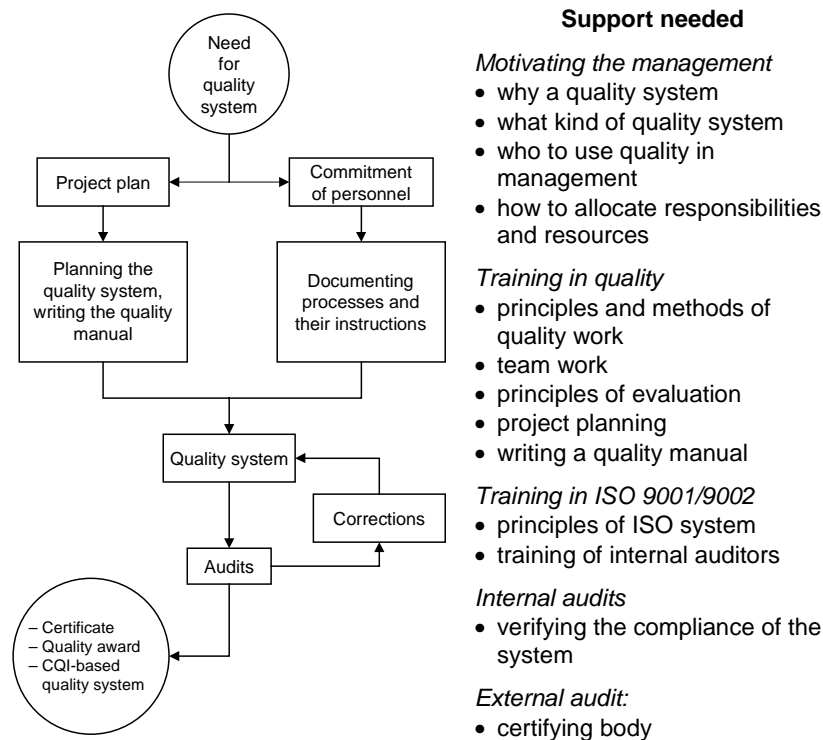
The implementation of quality improvement of services and quality management can draw on standard systems for quality assurance such as the ISO standards and guidelines. The participants in the workshop held in Stockholm explored the use of the ISO 9002 standard (which has been used in this document to illustrate the type of managerial procedures to be applied in order to improve management of the OHS) as a point of departure. However, other quality standards or approaches can also be used to achieve the same objective. Experience so far is too limited to enable the best standard or approach to be selected.

The principles of quality management in production and services may also, if judiciously and skilfully applied, bring significant benefits to quality approaches in OHS. This approach is also to be seen as a contribution to the continuing debate in Europe on, and the trend towards, integration of systems for management of production and of health and safety systems in enterprises. The ISO standard can be used as the basis for any quality system whether or not the OHS wishes to pursue an external quality registration in the form of a certificate for compliance with a quality standard. The quality system requirements are complementary and not an alternative to the stated accountability of the service. The standard specifies the requirements, which determine the elements of quality management systems, but it is not the purpose of the ISO 9000 system to enforce uniformity of quality.

The standard is generic and independent of any specific industry or economic sector. The design and implementation of a quality

system will be influenced by the varying needs of an organization, its particular objectives, the products and services supplied, and the processes and specific practices employed (Fig. 7).

Fig. 7. Developing a quality system in occupational health services<sup>a</sup>



<sup>a</sup>The conceptual model is shown in left column and the actions or support needed in the different phases in the right (Antti-Poika 1997, personal communication).

## 9.1 Review of the content of ISO 9002

The purpose of this section is to provide guidance on the implementation of a quality system in OHS. ISO standard 9002 has been used for reviewing the elements of a quality system.

The numbering of the following sections (4 to 4.20) is identical with the ISO 9002 standard, but not all subsections have been commented on. In practice the original ISO or other relevant standards should be used when quality management is implemented. Section 1 of the ISO 9002 standard describes the scope and field of application, section 2 refers to related ISO standards, and section 3 refers to definitions.

### ***ISO 9002, section 4. Quality systems requirements***

#### ***ISO 9002, 4.1. Management responsibility***

The quality system must, in design and implementation, be the responsibility of the most senior management of the organization in question. Management here means the top executive management of the enterprise, corporation, organization or institution. If the OHS as a separate enterprise has a quality system of its own, management is the management of the OHS. If the quality system of the occupational health unit is part of a wider quality system, it is the management of the whole organization.

##### ***4.1.1. Quality policy***

Management should define its policy, including objectives and commitment to quality. It should ensure that the quality policy is understood, implemented and maintained at all levels of the organization.

Quality policy must be relevant to the goals of the organization and the expectations and needs of the customers. The management has to decide what this means in the organization.

Quality policy should define the working principles as decided by the management. All occupational health staff have responsibility for quality and its application to everyday work.

The value of a quality system to an organization and its customers depends mainly on the successful definition and

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follow-up of organizational goals. Quality objectives are part of strategic objectives.

The working principles can be defined according to good occupational health practice.

#### *4.1.2 Organization*

##### *4.1.2.1 Responsibility and authority*

In an OHS, quality involves the activities of all employees. Everybody should have documented procedures and understand their responsibilities and authority, especially in relation to internal and external customers. Tasks, responsibilities and authorities can be described by organization flow-charts and matrices. Documentation of responsibilities is a prerequisite for teamwork in an OHS.

Close collaboration with organizations and bodies outside the OHS means that responsibilities shared between the OHS and, for example, safety personnel and personnel management need to be documented.

##### *4.1.2.2 Resources*

Resources include appropriately qualified or trained personnel, premises, equipment, computer programs and funding.

The OHS should have written procedures for the selection of new employees that meet their stated criteria.

##### *4.1.2.3 Management representative*

The management representative is the OHS quality manager who should have defined authority for ensuring that the quality system is established, implemented and maintained in accordance with the standard, and reporting on the performance of the quality system to the OHS management for review and as a basis for improvement of that system.

#### *4.1.3 Management review*

Reviews can be part of other regular meetings where the issues stated in the standard are discussed.

The quality manual describes who should attend management reviews, the frequency at which they should be held (at least once a year, preferably twice) and the issues to be discussed, for example, the minutes of previous reviews, the results of internal and external audits, feedback from customers, collaboration with subcontractors, meeting of quality objectives, summary of corrective and preventive action, the applicability and efficiency of the quality system, conclusions and proposals for further development.

#### *ISO 9002, section 4.2. Quality system*

This describes the structure of the documentation of the quality system and its supporting documentation.

##### *4.2.1 General*

The structure of the documentation includes the quality manual, procedures, operating instructions and records.

##### *4.2.2 Quality system procedures*

Description of the quality system with reference to the chapters of the quality manual and practice guidelines, of the control of the processes and the quality documents. The procedures define all the activities in the process and should be indicated in the manual (see Fig. 3).

##### *4.2.3 Quality planning*

The aim of quality planning is to ensure that the quality objectives are planned and met in all circumstances. Other quality plans could be needed if circumstances change rapidly and the customer needs new services or if a temporary project needs to be implemented.

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### *ISO 9002, section 4.3. Contract review*

The contract may be implied (e.g. doctor–patient consultation) or specified as defined in the documentation of the contract between the OHS and the customer. The purpose of review is to establish that the service achieves the stated requirements agreed with the customer.

Contract review deals with how offers, agreements and orders are managed, made and amended. It aims to secure an adequate description of demands, iron out discrepancies between the offers and the orders or agreements, secure the fulfilment of contractual agreements, and see how amendments are made and how the staff involved are made aware of them. Records of such reviews should be maintained.

In OHS, this section applies, for example, to contracts with employers, insurance companies and rehabilitation centres. Contracts with patients comprise making appointments. For such processes, procedures should be established to ensure that the patients are directed to the right place at the right time.

The organization should have procedures to verify all tenders for services (including verbal tenders) before giving them to customers. Brochures or other material used in marketing and offers should be listed and described, with a note of how they are updated and whose responsibility this is. The organization must ensure that it is able to deliver the services detailed in the marketing material.

The responsibility and the authority to negotiate, sign and verify contracts should be defined.

OHS must describe, for example:

- how the needs of workplaces are defined and the objectives agreed;
- how to agree on the contents of agreements;

- how to ensure that what has been promised can be done;
- details of confidentiality and the information and statistics given to the employer in, for example, invoices – how the information is given and what and how the employees will be told about the given information, what has been agreed with the employer about securing confidentiality and the independence of the OHS, the principles of pricing, means of and responsibilities in collaboration, and how to amend agreements.

#### *ISO 9002, section 4.4. Design control*

ISO 9002 does not include quality system requirements for design control. The subsection is included to align the numbering of the sections with ISO 9901. Section 10.4 of ISO 9001 refers to the establishment and maintenance of procedures for controlling and verifying the design of new products, new services, research studies or development projects. These are not required by the ISO 9002 standard. Those OHS willing to implement quality management according to ISO 9001 would have to describe procedures and responsibilities related to the design process, e.g. who makes the decisions, what will be designed, who will participate in design work and the relations between the teams involved in design, and how and where this will be verified and documented.

#### *ISO 9002, section.4.5. Document and data control*

##### *4.5.1 General*

The OHS provider should establish and maintain procedures to control all documents and data that relate to the requirements of the quality system. These should include documents originating externally such as professional codes of practice, occupational health acts and other relevant legislative regulations, occupational safety acts, risk assessment policies and ethical principles. The data can be in hard copy or electronic media.

All documents should be noted in a document register.

#### *4.5.2 Document and data approval and issue*

Documents and data shall be reviewed and approved for adequacy by authorized personnel prior to issue. A master list of such documents and control procedures for identifying the current revision status of documents should be established and be readily available to preclude the use of invalid and/or obsolete documents.

There should be procedures that define who has the responsibility for reviewing and approving documents and data.

#### *4.5.3 Document and data changes*

Changes to documents and data shall be reviewed and approved by a person who has the same function or position in the organization as the person who performed the original review and approval, unless otherwise specifically designated. The designated persons shall have access to pertinent background information upon which to base their review and approval.

All concerned must be aware of any changes in documents. To ensure that this happens, such changes should be clearly marked in a document. It is also helpful to know the number of the version and the distribution of the document. Often the staff need separate information or training for this.

### *ISO 9002, section 4.6. Purchasing*

#### *4.6.1 General*

The OHS provider should establish and maintain documented procedures to ensure that the purchased services/products conform to stated requirements.

In OHS, purchased products include bought equipment, medications, instruments and especially test and treatment services, including the use of temporary staff.

#### 4.6.2 *Evaluation of subcontractors*

The OHS provider should evaluate and select subcontractors on the basis of their ability to meet specific requirements. The documented quality system procedures should describe:

- how and according to which criteria subcontractors are selected;
- how their performance is monitored;
- the establishment and maintenance quality records of acceptable subcontractors.

Subcontractors in OHS may include specialist physicians, occupational hygiene services, laboratory, radiological, physiotherapy services, automatic data processing services, calibration services, cleaning services.

#### 4.6.3 *Purchasing data*

Purchasing documents shall contain data clearly describing the product or service ordered, including how the purchasing data are stored. The OHS provider should review and approve purchasing documents to ensure that the service/products meet the stated requirements prior to release or use.

#### 4.6.4 *Verification of purchased service or products*

The OHS provider should establish documented procedures in order to verify the safe installation of purchased products. *Note:* verification by the customer should not absolve the supplier (contractor) of the responsibility to provide acceptable services or products.

#### *ISO 9002, section 4.7. Control of customer-supplied product*

The OHS provider should establish and maintain documented procedures for safeguarding biological specimens and equipment supplied by the customer. Loss, damage or unsuitable material should be recorded.

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*ISO 9002, section 4.8. Product identification and traceability*

The OHS provider should document the process for identifying and tracing a service or product offered to the client at all points of diagnosis or monitoring of the working environment. Where appropriate, the OHS provider should establish and maintain documented procedures for identifying the product/service by suitable means from receipt and during all stages of production, servicing, delivery and installation. Unique identification of an individual product or batches must be available. For the purpose of all ISO standards, the term “product” is also used to denote “service”, as appropriate.

In the documents, procedures should describe how patients’ records are stored and how they can be used to trace data on the patients. There should also be procedures to reflect how patients’ records and samples are identified.

Laboratory reagents, etc. should be identifiable and traceable to clarify whether, for example, non-conforming batches are used.

*ISO 9002, section 4.9. Process control*

The OHS provider should identify and plan the production, installation and servicing processes which directly affect quality and should ensure that the processes are carried out under controlled conditions. These should include the following:

- (a) documented procedures for items relevant from the point of view of quality;
- (b) suitable equipment and working environment;
- (c) compliance with reference standards/codes, quality plans;
- (d) monitoring and control of suitable process parameters and service characteristics;
- (e) the approval of processes and equipment, as appropriate;

- (f) criteria for professional standards, which should be stipulated in the clearest practicable manner (e.g. written standards, representative samples or illustrations, suitable validation of questionnaires and other clinical assessment methods);
- (g) planned maintenance of equipment.

In OHS the processes may include:

- risk assessment due to well defined exposure
- workplace surveys
- workplace health promotion
- health education
- assessment of working ability
- dissemination of information and guidance
- health examinations
- follow-up of disabled workers
- rehabilitation
- first-aid and emergency planning
- accident prevention
- participation in workplace and work process planning
- statistics (illness, absenteeism, etc.)
- individual consultations (illness-related care)
- support services
- planning of new services and marketing (e.g. laboratory, radiological or office services).

The overall goal of OHS must be kept in mind when quality goals are established. Points (a)–(g) of ISO-9002 must be addressed in quality manuals.

The quality policy must be met by all procedure and process documents, which are meant to describe who does what and how during the process. The documents must comply with practice and must not be too complicated. Clear documents are needed to guide new OHS employees, and must be understandable by such a worker.

#### *ISO 9002, section 4.10. Inspection and testing*

##### *4.10.1 General*

The OHS provider should establish and maintain documented procedures for inspection and testing activities in order to verify that the stated requirements for the service are met. The required inspection and testing, and the records to be established, should be detailed in the quality plan or documented procedures.

Services provided by the OHS itself (e.g. health examinations, workplace surveys) as well as purchased products/services are included.

##### *4.10.2 Receiving inspection and testing*

The OHS provider should ensure that incoming service/products are not used or processed until they have been inspected or otherwise verified as conforming to the stated requirements and in accordance with their documented procedures.

In OHS, such products may include, for example, questionnaires, clinical guidelines, laboratory chemicals, medicines, health education materials, personal protective equipment and spare parts, safety information material, first-aid equipment.

##### *4.10.3 In-process inspection and testing*

In-process inspection and testing can be described as part of process control (section 4.9).

#### *4.10.4 Final inspection and testing*

The OHS provider shall carry out all inspection and testing in accordance with the quality plan and/or documented procedures to confirm that the provided service/product has met the stated requirements.

As it may be difficult for a service/products to receive a final inspection, the application of this point is solved by process control, self-assessment or assessment by the client. Final inspections can be made of products such as reports, risk assessment documents and statements by showing the signature of the approving person.

#### *4.10.5 Inspection and test records*

The OHS provider should establish and maintain records which provide evidence that the service/product has been inspected and/or tested in accordance with their stated criteria.

### *ISO 9002, section 4.11. Control of inspection, measuring and test equipment*

#### *4.11.1 General*

The OHS provider should establish and maintain documented procedures to control, calibrate and maintain inspection, measuring and test equipment (including test software) used by the provider to demonstrate that the product/service conforms to the stated requirements.

#### *4.11.2 Control procedure*

All inspection, measuring and test equipment that needs calibration should be identified. Calibration intervals should be defined and the calibration process documented together with the acceptance criteria and the responsible person. Approved identification records of calibration status should be documented and calibration records maintained. Measurement equipment may include, for example, a blood pressure meter, sight meter, audiometer, spirometer, weight scale, noise meter, light meter,

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and different hygiene instruments, questionnaires for pre-employment/pre-placement/health surveillance and clinical assessment protocols.

*ISO 9002, section 4.12. Inspection and test status*

Appropriate documentation should be maintained to identify the status of the process. For example, are all workplace assessments of a given company carried out? Are health checks with follow-up visits or tests completed? Information can be documented in patient/client records, workplace survey reports, meeting protocols, etc.

*ISO 9002, section 4.13. Control of non-conforming product*

*4.13.1 General*

Procedures should be established to document a service/product which does not conform to the stated requirements. Such service/products shall be reviewed in accordance with documented procedures to prevent them from being used unintentionally. Services that do not conform may be identified either by the client or the provider and modified to meet specified requirements or deleted from programmes. The responsibility for reviewing and authority for disposing of non-conforming OHS products should be defined.

*4.13.2 Review and disposition of non-conforming product/service*

Documented procedures must be available for identifying a product or service that does not conform with the requirements. The minimum requirement is a procedure for collecting clients' complaints. Internal reports of such products are raised against the quality system; they should be regarded as development tools and not be used to apportion blame to individuals.

*ISO 9002, section 4.14. Corrective and preventive action**4.14.1 General*

The supplier should establish and maintain documented procedures for implementing corrective and preventive action.

*4.14.2 Corrective action*

The procedures for corrective action should include:

- effective handling of customers' complaints and reports of failures in the quality system;
- investigation of the cause of a service/product not conforming to requirements and recording of the results of the investigation;
- determination of the necessary corrective action;
- application of controls to ensure that corrective action is taken and put into effect.

*4.14.3 Preventive action*

The procedures for preventive action should include:

- the use of appropriate sources of information (e.g. internal audits) to detect, analyse and eliminate potential causes of a service/product not conforming with requirements;
- determination of the steps needed to deal with any problems requiring preventive action;
- initiation of preventive action and application of controls to ensure that it is effective;
- ensuring that relevant information on action taken is submitted to management review.

Preventive action does not mean preventing the repetition of an error (corrective action) but instituting procedures that ensure that problems are foreseen and there is continuous quality improvement.

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OHS units should create procedures by which to foresee problems and to observe improvement targets (milestones).

*ISO 9002, section 4.15. Handling, storage, packaging, preservation and delivery*

*4.15.1 General*

The OHS provider should establish documented procedures for handling, storage, packaging, preserving and delivering the product or service as applicable. These procedures will describe the handling and storage of, for example, medicines or treatment equipment and the mailing procedure for laboratory tests, etc.

*ISO 9002, section 4.16. Control of quality records*

The supplier shall establish and maintain documented procedures for identifying, collecting, indexing, gaining access to, filing, storage, maintaining and disposing of quality records. These records shall be legible and readily retrievable. Measures for preventing damage, deterioration or loss shall be established. These data can be in the form of any type of media. Retention times of data shall be recorded. Procedures for the documents written as part of the process are described here or in point 4.9 (e.g. patient records, workplace survey records). Documentation should include quality standards for these records and how and in which form these are maintained and handled. Security measures shall be addressed to ensure clinical confidentiality of health information. Measurements of outcome, cost-effectiveness, etc., are also included as quality records.

The following quality records are required by the ISO 9001 or 9002 standards, which should be described and documented in writing according to point 4.16 (Control and quality records):

- 4.1.3 Management review reports
- 4.2.3h Records based on separate quality plans
- 4.3.4 Records of contract reviews
- 4.4.6 Design review records
- 4.4.7 Design verification records

- 4.6.2c Records of acceptable subcontractors
- 4.7 Reports of lost, damaged or otherwise unsuitable products
- 4.8 Records for identifying and tracing products
- 4.9 Records for qualified processes, equipment and personnel
- 4.10.5 Inspection and test records
- 4.11.2e Calibration records for inspection, measuring and test equipment
- 4.13.2 Records of review and disposal of products that do not conform to requirements
- 4.14.2b Records of the causes of products, processes and quality systems not conforming to requirements
- 4.17 Records of the results of internal quality audits
- 4.18 Records of training.

*ISO 9002, section 4.17. Internal quality audits*

Audit may be internal (carried out by the organization) or external (carried out by some other agency).

The OHS provider should establish and maintain documented procedures for planning and implementing quality audits to verify whether quality activities and related results comply with planned arrangements and to determine the effectiveness of the quality system. These should be scheduled according to the status and importance of the activity, and be carried out by staff independent of those who have direct responsibility for the activity in question.

The results of the audits should be recorded and brought to the attention of the personnel responsible for the activity. Management personnel responsible for the area concerned should take immediate corrective action to remedy deficiencies found during the audit. Follow-up audits should verify and record the effectiveness of the corrective action taken.

The results of the internal and external audits form an integral part of the management review.

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Procedures should be in place to identify how internal audits are planned and implemented:

- Who are the auditors?
- What are their qualification requirements?
- What is the annual schedule for a comprehensive audit?
- Who does what?
- What are the practical means of auditing?
- How are the results reported and handled?
- How is corrective action taken?
- How is the effectiveness of corrective actions demonstrated?

#### *ISO 9002, section 4.18. Training*

The OHS provider should establish and maintain documented procedures for identifying training needs and provide for the training of all personnel involved in activities affecting quality. In order to ensure the quality of professional performance, quality management systems should identify the competences required and ensure that these are acquired and maintained through training and continuing professional development. Records of training should be maintained.

An orientation programme should be in place to ensure that new members of staff are made aware of their responsibilities in the quality system and that they are made familiar with their work-related procedures.

#### *ISO 9002, section 4.19. Servicing*

This standard is not usually applied in OHS.

#### *ISO 9002, section 4.20. Statistical techniques*

##### *4.20.1 Identification of need*

The OHS provider should identify which statistical techniques are required for establishing, controlling and verifying the capability of the process and characteristics of the product.

#### 4.20.2 Procedures

A method of collecting data on the production of services and for research and development should be designed which allows the use of appropriate statistical techniques. Each unit should decide its own needs for statistical methods. Usually these should be simple procedures by which the data are processed into a more useable form so that it is easier to draw relevant conclusions from them to improve the processes.

### **9.2 Social and legislative perspective for using quality management standards**

A legislative framework, sound social policy and appropriate service infrastructure are needed for protecting the workers' health and safety. Quality management standards should only be seen as tools to facilitate compliance with these legal requirements and policies and with the workplace health policy and requirements set on a self-regulatory basis by the enterprise itself.

Occupational health and safety has an important social mission and cannot be reduced to exclusively management issues. The WHO global and European health for all strategy [34,51] provides appropriate guidance for those responsible for setting health policy at different levels, including the enterprise level. A comprehensive occupational health practice aimed at preventing occupational and work-related diseases and injuries and those that can be prevented in the workplace may contribute to achievement of the majority of targets specified in these strategies.

The creation of national and international labour standards is indispensable for social justice and improving occupational safety and health. These take the form of international conventions and recommendations, such as those of the ILO, which form a baseline for national legislation. There are 182 ILO conventions, about 60 of which deal with occupational safety and health issues.

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Enterprises that implement good practice in workplace health management in order to protect the population at large will choose as a guide for environmental management the International Declaration on Cleaner Production recommended by the United Nations Environment Programme [52] and other preventive strategies such as eco-efficiency, green productivity, and pollution prevention.

Knowledge about socioeconomic, occupational, environmental and lifestyle health determinants is an important prerequisite in planning for the improvement of occupational health and setting targets for the the enterprise in health, environment and safety management. In addition to the prevention and control of occupational accidents and diseases, comprehensive occupational health also aims to prevent work-related diseases (such as cardiovascular diseases and musculoskeletal disorders) and non-occupational diseases preventable at the workplace. The latter are not caused or aggravated by harmful factors in the working environment but are related to lifestyle, environmental or social causes. Comprehensive occupational health should result in better maintenance of working ability, lower sickness absenteeism and increased employability. An OHS professional should be able to play the role of social mediator in difficult relations between employer and employees (for example, during a period of reorganization or reduction of staff).

Since international standards of the ISO type are gaining in popularity in industry as tools to improve competitiveness and customers' confidence, it is natural that customers will seek to extrapolate this approach to include OHS along with all other aspects of their business. However, the extension of generic standards that are not specific to OHS needs careful consideration in order to avoid simply addressing some elements of the processes used in occupational health only because they can be easily measured. Quality standards should focus where possible on the crucial determinants of positive health outcomes.

Thus a proper use of standards should also ensure that:

- where policies exist, these are based on good scientific and social grounds;
- where technical instruments are used (e.g. environmental monitoring or health surveillance equipment) they are maintained and used in accordance with the technical standards and in the context of an appropriately designed strategy for these activities;
- the performance of OHS is evaluated against appropriate criteria based on the quality of the response (e.g. in terms of the validity and effectiveness of diagnoses, prognoses or interventions) related to outcomes of programmes rather than measuring customer satisfaction only which may, taken alone, be a poor indicator of quality;
- validity (sensitivity, specificity and reliability) of instruments such as questionnaires and procedures used for clinical assessments is evaluated, as these may be of even greater importance than technical equipment in determining the quality of OHS.

These concerns must be carefully considered when quality management in occupational health services is planned. The implementation of quality management should not be limited to OHS but should also be integrated into the management system for each enterprise and reflected in the quality policy and practices of senior management of the enterprise.

The advantages of using international standards for implementation of quality systems in OHS include the use of internationally accepted terminology, compliance with standards accepted by commercial companies, and the availability of specialized agencies for training of auditors and occupational health personnel in quality management systems.

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Experience has shown that obstacles to the use of generic quality assurance standards to improve quality of occupational health management include:

- lack of experience (and sometimes resistance to change) among occupational health professionals;
- difficulty in getting joint participation and the commitment of management and staff as a basis for quality work;
- the efforts and investments required for training and practical guidance of personnel;
- failure to distinguish between client quality, professional quality and management quality;
- hesitation on the part of occupational professionals and managers of health services to launch quality programmes because of the cost in resources and time and costs incurred (paper work) combined with uncertainty about the expected returns;
- the need for periodic management reviews and internal and external audits for certification of quality systems;
- the perception among occupational health professionals of quality management systems as tools which increase the burden of work or reduce resources with no rewards or tangible benefits.

## **10. CONCLUSIONS AND RECOMMENDATIONS OF THE WORKSHOP ON QUALITY MANAGEMENT IN OCCUPATIONAL HEALTH SERVICES, STOCKHOLM, 20–22 NOVEMBER 1997**

1. *Conclusion*: National economic and social legislative frameworks, policies and practices in the Member States have decisive impacts on occupational and environmental health practice in most enterprises. The externalization of costs from work-related ill health is an unacceptable burden on society. At

enterprise level, this diverts management attention away from taking preventive action to avoid such costs.

1.1 *Recommendation:* The possibility of externalizing costs associated with poor working conditions should be eliminated. The situation should be changed so that the national economy is protected and attention is focused on prevention by those who are in the best position to prevent work-related ill health – the employers. Short-term benefits, aimed at increasing company profits at the expense of the workers' health, should not be facilitated by national legislation, insurance or employment practices.

1.2 *Recommendation:* Government agencies responsible for enforcing occupational health and public health legislation should take appropriate action to design and implement quality management systems for occupational health practices in enterprises and in OHS.

1.3 *Recommendation:* Steps should be taken to ensure that all employers have contracts with OHS so as to give all employees access to expert technical assistance in the practice of occupational health.

1.4 *Recommendation:* Enterprises should be given economic and other incentives to incorporate occupational health advice and standards into their own policy and management system. The health and environment policy of the enterprise should determine objectives, define essential processes and critical targets, and assure the financial and human resources necessary to act on the health determinants and to improve social and physical environment in order to:

- bring about the greatest gain in health and working ability for all the staff and (taking into account national legislation, culture and practice) also for their families;
- provide a safe and healthy working environment without polluting the general environment;

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- provide healthy and environmentally friendly products and services, and
  - assure human rights for the entire staff and take steps to ensure that the same standards apply to contractors, suppliers and partners to build social capital.

1.5. *Recommendation:* The voluntary networking of enterprises and public establishments willing to support and share experience in good practice in health and environment management should be greatly encouraged by government agencies as an important element of sustainable development.

2. **Conclusion:** Economies in all Member States are burdened with much preventable suffering, illness, work-related disability, premature retirement and death. Social security expenditure is rising in many European countries and there is an increasing awareness of the need to seek cost-containment strategies.

2.1 *Recommendation:* Preventive strategies and health promotion at the workplace should be given priority to reduce the economic burden of temporary and permanent work-related disability from occupational and non-occupational causes, early retirement, occupational accidents and diseases.

2.2 *Recommendation:* Steps should be taken to promote and disseminate guidelines for good practice in occupational health and workplace health promotion. These complementary strategies are conducive to improving the employees' health and quality of life, and give potential for developing employees' skills and increasing their productivity, improving industrial relations and reducing the cost of managing health, personnel and the environment.

2.3 *Recommendation:* International collaboration to share experience with preventive strategies and health promotion at the workplace in the WHO Regional Office for Europe, ILO and ICOH networks and the EU Network on Workplace Health Promotion should be fully exploited and implemented in practice in all countries.

2.4 *Recommendation:* OHS should become more active in health promotion at the workplace and ensure that risks to health which are not directly related to work are also prevented, with a view to enhancing and sustaining working capacity. These issues are to be addressed through comprehensive occupational health strategies. This implies sustained development of knowledge, skills and competence of occupational health professionals.

3. ***Conclusion:*** Multidisciplinary OHS are increasingly being recognized as an essential element of the healthy, environmentally sustainable, social development of workplaces and enterprises with a positive impact on the public health of all society.

3.1 *Recommendation:* The quality management system of OHS should be designed to support continuous improvements in the working conditions, health, working ability and wellbeing of employees and (as appropriate and determined by national legislation, culture and practice) their families. This strategy should be seen as a prerequisite for increasing the competitiveness of enterprises and in accordance with the principles of sustainable social and environmental development.

3.2 *Recommendation:* Current quality assurance methods in OHS should be examined in order to meet generally accepted quality criteria. They should not only meet legal requirements, but be able to respond to the real needs of society and, at the same time, to meet professional standards and the stated or implied needs of employers and employees.

4. ***Conclusion:*** For everyone in work, adequate access to high quality OHS is a necessary element in increasing equity in health and wellbeing within and between nations, and a prerequisite to establishing socially fair and sustainable competition in trade.

4.1 *Recommendation:* Governmental or nongovernmental agencies and institutions responsible for accreditation, certification, licensing and/or supervision of occupational health

services should systematically review the needs and the most appropriate methods of achieving quality management and take steps to ensure the implementation of such quality management in OHS.

*4.2 Recommendation:* The principles of quality management, including the continuous development of competences, should be a part of the education and training curricula for all professionals working in multidisciplinary occupational and environmental health teams.

*4.3 Recommendation:* International consensus documents facilitating the implementation of quality standards for the management of occupational and environmental health in all enterprises and in management of OHS in all Member States should be produced and include quality criteria and indicators on the performance, outcome and impact of the OHS.

**5. Conclusion:** Concerted action by European international agencies and governmental and nongovernmental organizations to bring about a convergence between the practices and approaches of OHS in different Member States would be an important strategy in increasing occupational health equity in the European free market area. International and national auditing of health and environment quality management is a practical tool for such activity. Appropriate internationally accepted standards of workplace-related health outcomes should be identified so that the performance of OHS and national occupational health systems can be assessed and evaluations made of the results of implementing quality management.

*5.1 Recommendation:* To ensure that good practice in health and environment management is based on validated evidence, each Member State should, taking into account international guidance and available scientific and professional literature, initiate a review programme aiming at a critical appraisal of the existing evidence base of OHS practices, supplemented by original research where evidence is lacking.

*5.2 Recommendation:* Regular course curricula for occupational health professionals should be reviewed with the intention of including appropriate instructions and training in the building, functioning, implementation and management of quality systems in the practice of OHS.

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*Annex 1*

**VOCABULARY USED IN ISO 8402 WITH  
EXPLANATIONS FOR USE IN OCCUPATIONAL  
HEALTH SERVICES**

Conformity	Fulfilment of specified requirements.
Customer	<p>Recipient of a product provided by the supplier.</p> <p><i>In OHS: an external customer is usually the company, department or individual worker. It may also be a safety commission, insurance company, government or even society at large. Internal customers are other OHS personnel with whom everyday work is done.</i></p>
Organization	<p>Company, corporation, firm, enterprise or institution, or part thereof, whether incorporated or not, public or private, that has its own functions and administration.</p> <p><i>In OHS: organization providing occupational health services.</i></p>
Process	<p>Set of interrelated resources and activities, which transform inputs into outputs. Resources may include personnel, finances facilities, equipment, techniques and methods.</p> <p><i>In OHS: strategic planning, marketing, work place survey, provision of information and counselling, health examination, maintaining the first aid skills, sickness absence monitoring etc.</i></p>
Procedure	Specified way to perform an activity.
Quality	Totality of characteristics of a service that bear on its ability to satisfy stated or implied need.
Quality assurance	All the planned and systematic activities implemented in the quality system, and demonstrated as needed, to provide adequate confidence that an entity will fulfil requirements for quality.

Quality audit	Systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.
Quality control	Operational techniques and activities that are used to fulfil requirements for quality.
Quality improvement	Actions taken throughout the organization to increase the effectiveness and the efficiency of activities and processes in order to provide added benefits to both the organization and its customers.
Quality manual	Document stating the quality policy and describing the quality system of an organization.
Quality planning	Activities that establish the objectives and requirements for quality and for the application of quality system elements.
Quality policy	Overall intentions and direction of an organization with regard to quality, as formally expressed by top management.
Quality management	All activities of the overall management function that determine the quality policy, objectives and responsibilities and implement them by means of quality planning, quality control, quality assurance, and quality improvement, within the quality system.
Quality system	Organizational structure, procedures, processes and resources needed to implement quality management.
Supplier	Organization that provides a product or service to the customer.  <i>In OHS: occupational health services unit.</i>
Total quality management	A management approach of an organization, centred on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization and to society.