



Good OCCUPATIONAL HEALTH PRACTICE

A guide for planning and follow-up of occupational health services

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A guide for planning and follow-up of occupational health services

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Finnish Guidelines for Good Occupational Health Practice

– an example of promoting development

This book describes the guidelines for occupational health practice in Finland. The legislation on occupational health services (OHS) was recently amended to include the requirement of systematic and goal-oriented OHS. The rapid changes in the work life bring new challenges and development needs in OHS. In Finland, the concept of “Good Occupational Health Practice” was introduced in the amendments, and quality assurance was included in the concept.

The guidelines were prepared using a participative approach, i.e. the experts at the Finnish Institute of Occupational Health and the representatives of numerous OHS units worked in close collaboration.

Since the guidelines were created for the Finnish OHS and based on the Finnish legislation, the reader may not find all the ideas or recommended practices suitable for the situation in his/her country. We nevertheless hope that the following exercise will help in the search for practical tools for the implementation of OHS. Hopefully, this exercise also produced useful instruments for evaluating the performance of occupational health units and for promoting good occupational health practice.

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I **B**ACKGROUND AND PRINCIPLES

- 1** Development of occupational health services
- 2** Principles of occupational health services
- 3** Principles of follow-up and evaluation
- 4** Quality in occupational health services
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- 7** Ethics in occupational health care
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1

Development of occupational health services

Jorma Rantanen

The goal of occupational health services is to protect the health of workers, and to promote the establishment of a healthy and safe work environment and a well-functioning work community. To achieve this goal, occupational health services carry out promotion, preventive and curative activities. Their general aim is to ensure the health of the working population and to support their participation in work life. Thus the occupational health services, via the expertise of health professionals, help to promote the wellbeing and quality of life of the working-aged population, as well as the productivity and quality of work.

International developments in occupational health services

For over 50 years, international organizations have issued provisions and guidelines for the development of occupational health services. In 1950 the World Health Organization (WHO) and the International Labour Organization (ILO) formulated a definition of occupational health services and described their essential contents. The definition was used in ILO's International Recommendation on Occupational Health Services (no. 112), adopted in 1958, as well as in preparing the European Commission Recommendation to the Member States on Company Medical Services in 1962. ILO's recommendation served as the international development guideline for occupational health services for 27 years, until the 71st International Labour Conference in 1985 approved the International Convention on Occupational Health Services (no. 161) and the adjoining Recommendation (no. 171). These have served as important guidelines in the development of occupational health services, especially in the developing countries, and later in the Eastern European countries in transition.

The EU Framework Directive on Occupational Health and Safety (391/89) has been greatly influenced by both ILO Conventions on Occupational Safety and Health (no. 155) and the Convention on Occupational Health Services (no. 161). There is still great need for the continued development of occupational health services both worldwide and in Europe. Only about

10-15% of the 3.2 billion workers in the world are within the scope of occupational health services, and in Europe, services are provided for less than 50% of the 380 million workers. Also in the European Union (EU) countries, the coverage of occupational health services varies greatly: in Portugal and Greece it is 10-13%, whereas in France the coverage is 75%, and in Finland 90%. The EU average coverage is likely to decrease due to the enlargement of the Union to 10 new Members. The Framework Directive, unfortunately, does not provide definitive obligations for the organization of occupational health services, although the necessity to organize preventive and protective services has been spelled out. Therefore the legal basis is different in different countries. In about two thirds of the European countries, occupational health services are regulated by occupational safety legislation or health and social security legislation. The Netherlands have actively modernized their occupational health services and provided detailed regulations on service structures and practices. In the UK and in Sweden, occupational health services are based on a voluntary system. Finland is the only country having a separate legislation on occupational health services.

Development of the occupational health service system in Finland

Finland has had occupational health services since the beginning of industrialization. However, they were systematically developed only after World War II, and especially after the 1960s, at first on the basis of the collective agreements of the labour market organizations. Later, the services have been regulated through legislation.

The Act on Occupational Health Services came into force in 1978, at a time of comprehensive, well-functioning consensus politics, based on income policy agreements by social partners. There was wide consensus on the renewal of work life with the help of modern occupational safety and health policies. First the legislation and occupational safety and health administration on occupational safety were developed to the level of the Nordic countries. After that it was natural to start modernizing occupational health services, which constitute the key service system for the support of the renewal of work life.

The goal of both the original and the reformed Occupational Health Service Acts was to obligate all employers to organize occupational health services for their employees, to ensure a wide coverage of the services for both employees and the self-employed, to ensure that the contents of the services are essentially preventive, and to take into account the needs of work life, to ensure that there is a sufficient number of occupational health personnel for service provision, and to make the establishment of the serv-

ices also economically sustainable. The experiences gained from the occupational health services in Finland have also been used in the preparation of ILO's Convention on Occupational Health Services and of WHO's Global Strategy on Occupational Health for All.

Despite the changes in work life and in society, the Act on Occupational Health Services (734/78) remained basically unchanged for 24 years. It came into effect during the industrial boom, and Finland has since then become a distinctly information and service society. The lower-level provisions were amended in the 1990s to introduce the principles of continuous quality improvement, to include the promotion and maintenance of work ability in the contents of the services and to develop the reimbursement systems. In connection with the ratification of the ILO Convention, the National Development Program for Occupational Health Services was introduced in 1989. It included 18 targets for the further development of occupational health services. The implementation and impact of the Program was evaluated in 1998, and about 75% of the targets were met. A special Committee of the Ministry of Social Affairs and Health made a thorough review and renewal of the Act on Occupational Health Services in 2002. The new legislation moved some of the previous lower level provisions to the level of the Act and addressed especially the new developments of work life, such as fragmentation, short-term employment, outsourcing of services, ageing of the work force and the need to control excessive mental or physical workload. The Governmental Ordinance of 2002 obligates employers to arrange occupational health services, and defines the contents of services in detail. The lower-level regulations provide relatively detailed provisions on conditions of operation, contents, methods and activities of the services, as well as on the competence requirements and training of occupational health personnel. It also requires the implementation of the principles of good occupational health practice, and stipulates the follow-up and of the services and the evaluation of their effectiveness.

The new regulations present occupational health services as a constantly developing process that starts with the recognition and definition of the occupational health needs at a work place, covers risk assessment and risk management, implementation of preventive measures and even provision of curative and corrective measures corresponding to the observed and assessed needs of the work place and workers. More comprehensive objectives for occupational health services were set in the renewed legislation, covering first of all the following:

- ▶ The development of a healthy and safe work environment
- ▶ Promoting a well-functioning work community
- ▶ The prevention of occupational and work-related diseases and injuries
- ▶ Promotion and maintenance of workers' work ability.

These objectives expand considerably the scope of occupational health services. The Governmental Ordinance also clearly defines some essential prerequisites for good occupational health practice, including quality, productivity, collaboration, and multidisciplinary of services, as well as the professional independence of the occupational health personnel.

For several reasons (legislation, compensation system, development goals and programs), the coverage of occupational health services in Finland is among the highest in the world, i.e. about 90% of the employees. The contents of occupational health services are quite comprehensive: they include preventive, promotive, and curative activities. In other countries, except for Sweden and the Netherlands, such versatility in the contents of occupational health services is rare. Also the reimbursement system returning 50% of the costs of services to the employer is unique. In most countries, the costs of occupational health services are not compensated to the employers. Only in a few European countries are occupational health services financed partly or fully through accident insurance or through social insurances. In Finland the reimbursement is conditioned with the compliance of legislation and the proper content of services providing an incentive for good performers.

If one assesses the development of the Finnish occupational health service system today, keeping in mind the original goals, the national development program, and international comparisons, one may conclude that it has been progressive in nature. It has also proven to be a flexible system capable for renewal. From an international perspective, Finland's occupational health service system can be regarded as highly developed, and during the recent years, it has proven to be capable of new developments. Great differences, however, still prevail in the coverage, content and quality of services in different branches, in enterprises of different sizes and particularly among self-employed people. The renewed legislation is expected to respond to these challenges.

Development of the content of occupational health services

The contents of occupational health services need to follow the development of the needs of work life. In Finland, as in many other industrialized countries, occupational health services at first consisted of curative care provided by the public health care system, or mostly by private physicians at the work place or close to it. Preventive activity started to gain ground gradually in the 1960s, but not always in connection with occupational health services, but rather as separate activities related to labor safety and industrial hygiene.

In the Nordic countries, especially in Sweden, a multidisciplinary model of occupational health care was created. It was launched in the 1970s on the basis of collective agreements and in connection with the reform of the occupational safety and health system. In the Swedish model, the emphasis was officially shifted from curative to preventive activity, and from the individual employee to the work environment, but curative activity was also continued. In many other countries, such as France and Denmark, only preventive services have been allowed.

WHO, in the mid-eighties, published a strategy on health promotion, and gradually it began to be reflected in occupational health services (Figure 1). Most of the working populations in the industrialized countries are ageing rapidly. The work is also becoming more mental than physical in nature. The traditional risk and prevention-oriented approach still remains valid, but is not sufficient for all needs of the new work life. These global trends bring up the need to expand the content of occupational health services beyond the traditional risk-and-prevention approach. Therefore the newest substantive element in the Finnish occupational health services is the promotion of the employees' work ability, which also corresponds well to the general WHO health promotion goal, and to the objectives of the WHO Global Strategy on Occupational Health for All.

Figure 1.

Evolution of Finnish occupational health services

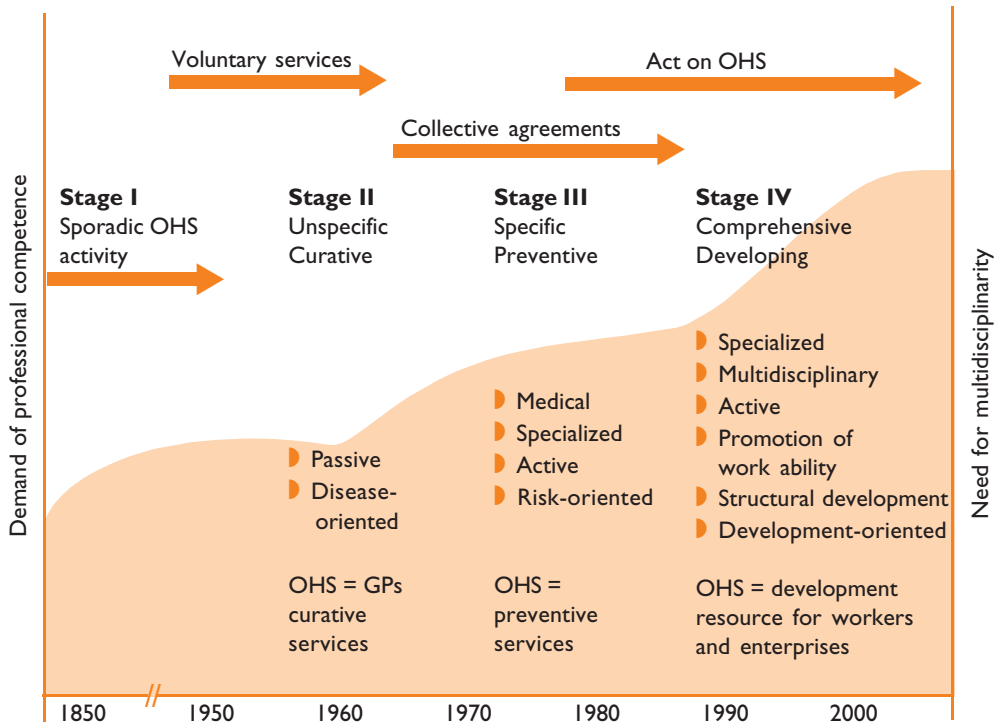


Figure published originally in 'Työterveyslääkäri' I/1998 p. 7.

2

Principles of occupational health services

Jorma Rantanen

Five principles are found in the European occupational health services: a) prevention of health hazards and protection of the employees' health, b) adapting the working conditions to the worker, c) rehabilitation, d) health promotion and e) primary health care. The objective of occupational health services in the Finnish system is to ensure a healthy and safe work environment and the protection and promotion of the employees' health and work ability. In recent times also overall well-being at work has been included in the list of objectives.

Occupational health service provision as a process

Earlier in Finland, occupational health services were regarded as a series of individual actions aimed at recognized needs. The response was often targeted at a single problem or risk factor. Nowadays, occupational health services are seen as a comprehensive process that helps to bring about changes that prevent health hazards, and enhance the quality of working conditions and the employees' health, well-being, and work ability. It is expected that the process leads to the realization of the goals of occupational health services. The process begins with assessment of the occupational health needs, and continues with the planning and follow-up of certain services (including risk assessment and preventive, rehabilitative, curative or health-promotion activities). The final step of the process is documenting and assessing the achieved results (Figure 2).

Contrary to the earlier approach, which emphasized individual risk factors and single corrective measures, the effectiveness of occupational health services is assessed on the basis of their impact on the work environment, the workers' health, and quality of the work community. The process approach fits well the general quality management strategy, as also the quality systems, for example of the International Standardization Organization (ISO), are based on the process model.

Figure 2.

Flow-chart of OHS functions according to good occupational health practice

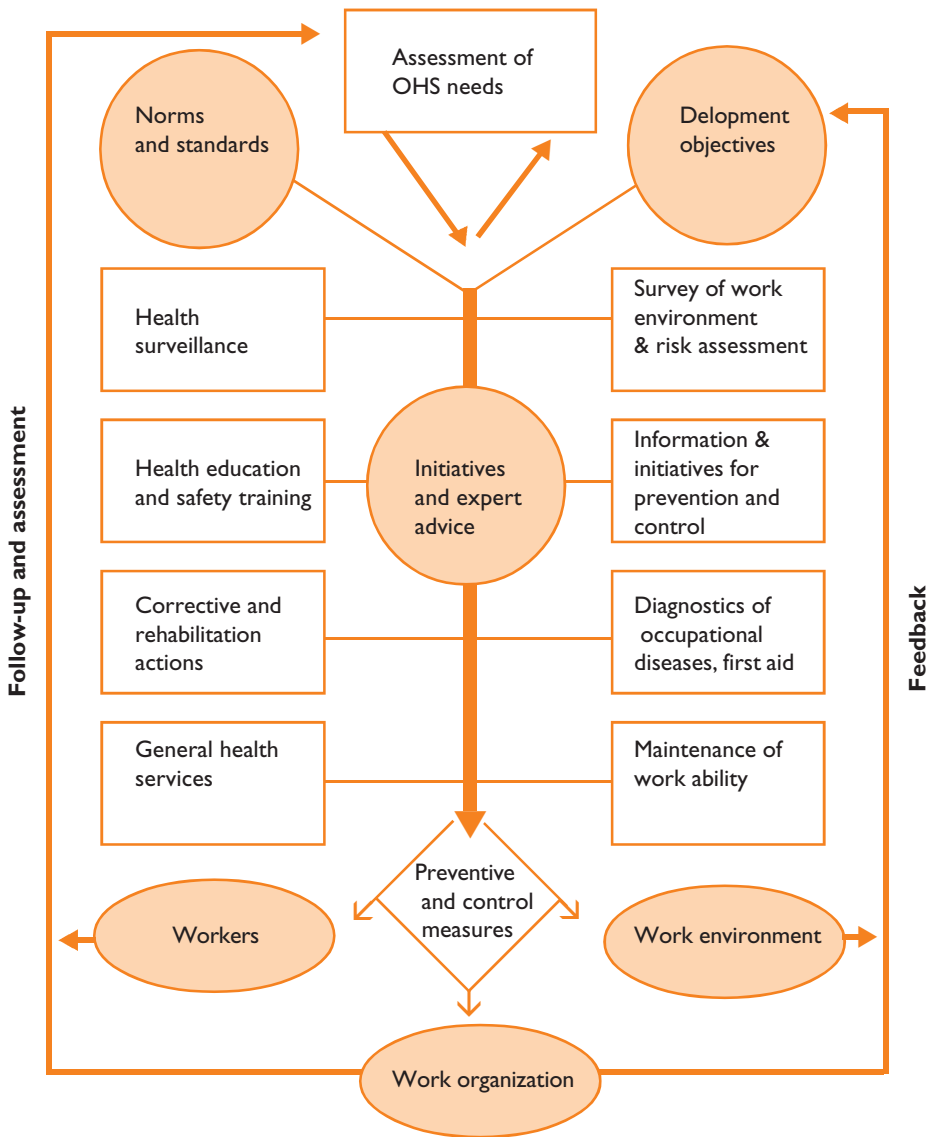


Figure published originally in 'Työterveyslääkäri' 1/1998 p. 7.

The content of occupational health services

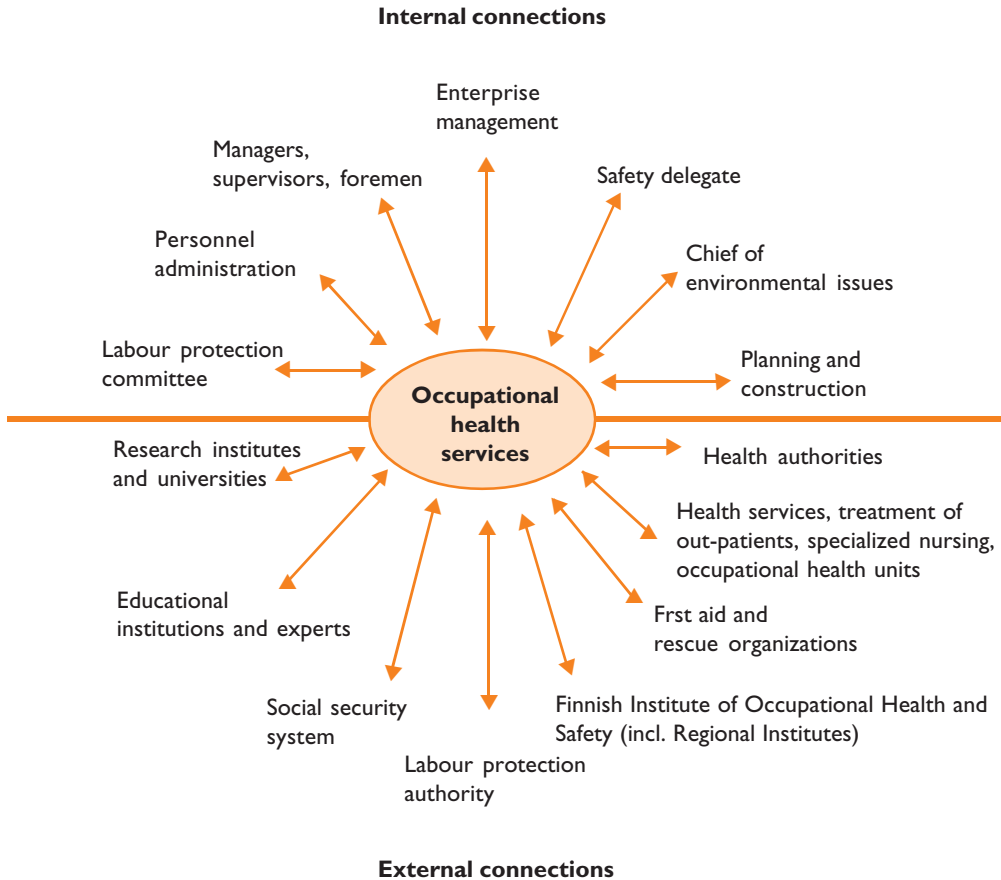
The various types of activities (Figure 3) of occupational health services have a certain priority order. Both the legislation on occupational health services and the National Development Program underline the importance of early prevention, which has also been found to be the most cost-effective activity. Early prevention presents, however a problem: the earlier the prevention is planned, the more the decisions will be made by other instances than occupational health experts. For example, the planning is targeted more at physical and organizational structures and production processes of the enterprise rather than at work, working practices, and even less at individual employees. However, it is still the responsibility of occupational health services to recognize the need for action, to assess health hazards and risks and to make initiatives for risk management, prevention and control actions, as well as to follow up and inform on the effects of work and working conditions on the workers' health and the effects of preventive measures which have been undertaken. When the target of action is an individual worker or groups of employees, the occupational health service is, on all levels, the most important initiator and collaborator with the target groups, individuals and the work place.

The organization of occupational health services

The implementation of multidisciplinary and comprehensive occupational health services requires the use of expertise, not only in health services, but also in different fields of activity. However, due to cost restraints, it is difficult for most occupational health units to establish an occupational health service team that is multidisciplinary enough. In Finland, however, there are two ways of overcoming this problem and ensuring the availability of multidisciplinary expertise: a) the possibility to use the experts of the Institute of Occupational Health and the Regional Institutes of Occupational Health, and b) networking with other expert bodies relevant to occupational health. The Regional Institutes of Occupational Health render their versatile and multidisciplinary services to all occupational health services and work places. The entire service system of the public sector, including the health care sector, is rapidly networking. The same development is evident in the private sector as well. It is imperative for occupational health services to be a part of such networking. Figure 3 presents an optimal situation, in which the network connections are very versatile. Modern telemetric services enable flexible and effective networking solutions.

Figure 3.

The internal and external connections of occupational health services



Challenges for the development of the occupational health service system

Western medicine is traditionally based on the demand of science-based evidence, scientifically validated methods and proof of the effectiveness and safety of all actions which are undertaken by the health service. This demand is also set for occupational health services, although the target of its actions differs from the traditional target of medical care, i.e. an individual patient. The society often through legislation ensures the safety of the population, by setting the demand for evidence-based medicine. However, the society also stresses the cost-effectiveness of the actions and evidence of the benefit from the services. Due to the rapid changes in work life, an evidence base may be difficult. Also, when planning future

projects, such as new production processes, evidence cannot be obtained in advance, and the future needs must be predicted. This puts pressure on the development of prediction methods that are as reliable as possible. The demand for an evidence base sets also high expectations regarding the professional competence of the expert personnel.

Both individuals and organizations, i.e. work places, are customers of occupational health services. An individual's expectations are directed at the quality of the services, and at the confidentiality of individual health data, and the effectiveness of measures undertaken for the protection and promotion of health. People regard human interaction in occupational health services as a major element of the relationship between the client and the occupational health personnel. The communication and interaction skills and ethical principles of occupational health services play an important role in this relationship.

Employers and the self-employed persons expect expertise, cost-effectiveness and confidentiality from the occupational health services. Enterprises may see the benefits of the services differently: some enterprises are willing to develop the services, no matter whether they are economically profitable or not; others expect clear evidence of the economic benefits before they are willing to invest in their occupational health service system. On the other hand, the requirements of the law are non-negotiable: the employer has an obligation to organize services. Occupational health services must take these viewpoints into account and be ready to present convincing evidence of the cost-effectiveness of services, but simultaneously keep in mind that the compliance with legal requirements cannot be conditioned with economic cost-efficiency. In other words, the legislator has seen occupational health services as a value in itself. (Figure 4)

In the future, the rapid changes in work life and the pressure from profitability and quality demands emphasize the importance of results and effectiveness. To ensure the sustainable development of comprehensive health-based occupational health services, guiding principles which are not dependent on short-term contextual or economic factors are needed. The professional independence, values and ethical principles of the occupational health personnel who provide the actual services are therefore of utmost value, as well as the professional quality and relevance of the activities.

Figure 4.

Expectations towards the occupational health service system



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3

Principles of follow-up and evaluation

Kaj Husman

Introduction

Good occupational health practice includes a systematic plan of action and the follow-up and evaluation of the quality and outcome of the action. Occupational health services are an essential part of Finland's primary health care. That is why they should be constantly followed and evaluated by the occupational health units and enterprises, and also on the national level.

Basic elements of follow-up and evaluation

The follow-up and evaluation of occupational health services are based on a system-analytical model (Figure 5), which helps in the planning of activities and the definition of the measured goals. Occupational health services are built on resources, such as personnel, facilities, equipment, materials and know-how. The value of these resources, or input, can be expressed as the cost of the input. In the production process, the resources are combined and converted to various products, services or methods (output).

The fundamental goal of occupational health services is not to produce output, but to produce health. That is why the most important element in occupational health services is the effect of the services rendered (the output). Effectiveness means the change that takes place in working conditions and in the health or well-being of the personnel, resulting from the occupational health services.

Productivity is the relation between output and input that can be improved by lowering the costs, while the output remains the same, or by adding to the output, while the costs remain the same.

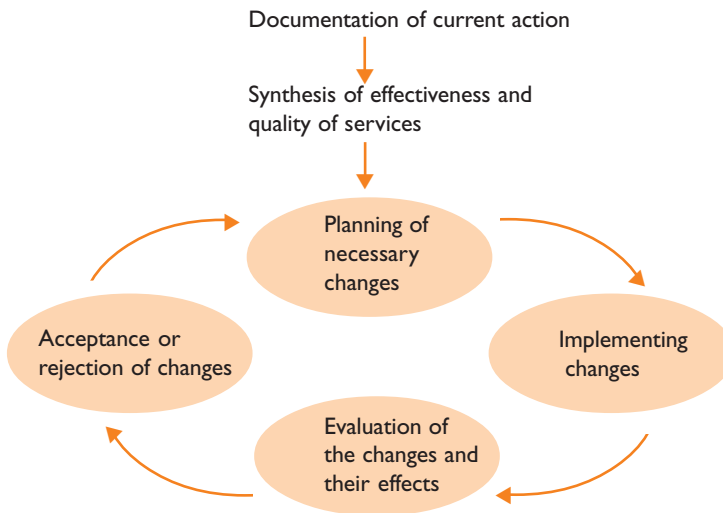
Efficacy is the relationship between the change in health, i.e. effects, and the input (costs) incurred. Often the terms productivity and efficacy are confused. It is also not always realized that although the productivity is as high as possible, it does not necessarily guarantee the efficacy and effectiveness of occupational health care.

A central problem in the analysis and improvement of efficacy is that we do not know enough about the relations between the output (services, methods) and changes focused on a work place or an individual's health. It is usually assumed that by maximizing productivity, efficacy is also maximized. In occupational health services, this is not necessarily true – efficacy can even decrease as productivity increases. That is why more research data on the effectiveness of the methods of occupational health services are needed. When the effectiveness is known, it is possible to plan how the desired impact on the work environment and the employees' health and well-being could be attained with as little cost as possible.

The follow-up and evaluation of occupational health services' begins with planning (see Chapter 10 Action plan). Practical goals must be set in order to enable follow-up and evaluation. The input, process or effects of the service cannot be followed up without adequate documentation (Figure 5).

Figure 5.

The development loop of occupational health services



Follow-up and evaluation of good occupational health practice

The follow-up of occupational health services in Finland is conducted on two levels, i.e. on the national level and on the level of enterprises and occupational health units. On the national level, the follow-up and evaluation of occupational health services is taken care of by the Ministry of Social Affairs and Health and the Social Insurance Institution. The follow-up conducted by the Social Insurance Institution is basic follow-up. Occupational health units supply employers with the information needed for the compensation application, and the employers forward this information in their application to the Social Insurance Institution. The basic follow-up mainly concentrates on input, output, and productivity.

It is essential that the quality and effectiveness of the action is followed up in practice, and that the follow-up is the joint effort of the occupational health unit and its clients. The follow-up is based on the plan of action, the goals set, and evaluation of what is achieved together with the providers of occupational health services and their clients.

Follow-up and evaluation in practice

The same methods are used in the follow-up on the national level and on the level of the enterprises and occupational health units. More detailed follow-up methods can be used when needed.

The targets of the impact measurements are usually people, working conditions and the work organization. The measuring methods used are: e.g. Work Ability Index, Occupational Stress Questionnaire (See Table 4.,page 105) assessment of the level of occupational hygiene, surveys of customer satisfaction, and the decisions of the safety committee meetings. A great number of occupational health units already use this questionnaire. It is important to measure customer satisfaction – the effectiveness of occupational health care suffers if the clients are dissatisfied with the services they have received. Follow-up methods for assessing the employees' well-being are also available. The methods should be scientifically documented and valid, but this is not always the case. It is most important to measure the essential factors, and not those that are easiest to measure. Measuring, as a part of evaluation and development, leads to the improvement of quality.

On the level of the enterprise and the occupational health units, it is necessary to determine the occupational health service needs of the client enterprises. This allows the planning of the individual health care activities needed at specific times. In this way each activity can be prioritized according to the available resources. When estimating resources, one should take into account, not only the information required for the basic follow-up, but also other available health services in the area. Good occupational health practice can be said to be realized when the conditions of continuous quality improvement are met (see Chapter 4 Quality in occupational health services). Either the health unit itself or an outside evaluator can conduct the evaluation of the services.

The duty of an occupational health unit is to conduct basic and detailed follow-up, to produce the required information, and to combine the information gained from these follow-ups for the continuous improvement of the services.

The outputs, effects, and means to measure them (Figure 6), with which the occupational health services are familiar, are not always sufficiently documented. Special attention should be paid to the proposals to improve the work environment. Their implementation is the direct result of the activity of the occupational health service personnel. The documentation and follow-up of the implementation of proposals can be done as a part of the routine procedures of occupational health service. With the help of this detailed follow-up, the occupational health service can, together with the clients, develop their actions further.

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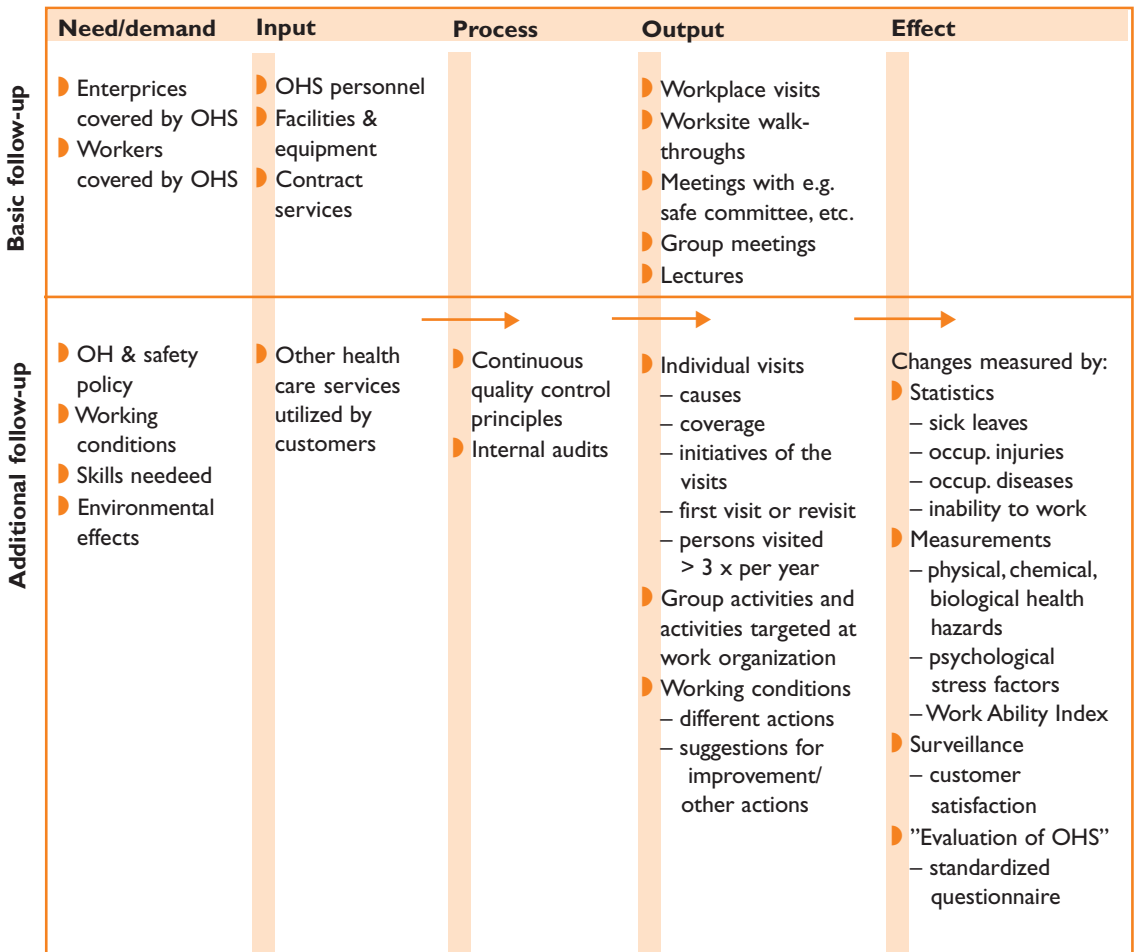
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Figure 6.

Follow-up of occupational health service activities



4

Quality in occupational health services

Mari Antti-Poika

Introduction

Quality in occupational health services equals good occupational health practice. Quality systems can be used as a helpful tool in the systematic steering and follow-up of quality.

Characteristics of good occupational health care

Typical characteristics of good health care are:

- ▶ effectiveness and relevance
- ▶ adequacy and accessibility
- ▶ fluency
- ▶ efficiency
- ▶ good scientific-technical quality
- ▶ perceived good quality.

What do these characteristics mean in occupational health care?

The *effectiveness* of occupational health care can be evaluated by following up the effects of the activity. The evaluation requires that concrete goals have been set for the occupational health services in enterprises. The goals must determine the contents of the activity, and follow-up on meeting the goals must be ensured.

Relevance means that the functions support the goals of occupational health services. The main goal of occupational health services is to prevent work-related illnesses and symptoms, to promote and maintain work ability and health, and to restore deteriorated work ability by actions affecting the work environment, work unit and the employees. Occupational health services provide advice and guidance to employees on healthy working and living habits, support employees in situations that threaten their health or work ability, and help enterprises to carry out health plans suited to their needs.

Adequate activity covers at least all statutory forms of occupational health care. There must be sufficient personnel and material resources, including data processing systems, for the activities in question. The personnel must be sufficiently trained. Occupational health services must have access to the expertise of the necessary professional fields (such as occupational hygiene, occupational psychology, and technical fields), and the experts in different areas must co-operate interactively.

Accessibility includes, for instance:

- ▶ flexible office hours and easy access to the personnel
- ▶ a reasonable waiting time
- ▶ continuity of activity.

Accessibility can be measured, for example, by customer surveys and coverage statistics.

Fluency means, for instance, that occupational health care personnel

- ▶ are co-operative and willing to participate in teamwork in occupational health units and with other groups, such as occupational safety, personnel administration, technical planning, and co-operative bodies at a work place
- ▶ keep up and improve their professional skills, and continuously evaluate their activity, are flexible and develop new schemes of action
- ▶ utilize multidisciplinary in their activity, and consult experts when necessary
- ▶ do not merely point out the problems, but help to solve them within the framework of their own expertise, and search for means to support health in work and private life and for ways to strengthen them
- ▶ make initiatives, and promote health and safety actively at the work place
- ▶ function well and follow agreements and schedules

The fluency of the services can be followed up, for example, with quality systems.

Efficiency means the amount of resources needed for achieving effects. (See chapter 3 Principles of follow-up and evaluation.)

Good scientific-technical quality means that

- ▶ occupational health service personnel make use of the best (scientifically, or based on the experience of general practice) suitable methods, and consult other experts when necessary
- ▶ the professional level of the personnel is guaranteed
- ▶ the personnel are able to use the methods they have chosen, and are able to interpret the results correctly.

Scientific-technical quality can be measured, for instance, by methods of quality control, by self-evaluations or by peer evaluations.

Perceived quality is supported, for example, by:

- ▶ a customer-oriented approach, i.e. occupational health services should be able to respond flexibly to the needs of different customer groups (such as employees, enterprise management and line management). (See chapters 9 Marketing and motivating and 10 Action plan.)
- ▶ good interactive skills, i.e. the occupational health personnel are able to listen to people and take into consideration their needs in the planning of their activity, so that the customers comprehend the goals and consequences of the activity. (See chapters 6 Multidisciplinarity in occupational health services, and 17 Participative planning of work places.)
- ▶ Ethical practice must be ensured. I.e. the occupational health personnel must respect the rights of the individual, promote adherence to ethical principles in the health policies of enterprises. They should be independent and impartial, ensure the confidentiality of the health information, and take care of their professional skills in order to function according to the highest professional requirements. (See chapters 7 Ethics in occupational health care, and 8 Data protection.)
- ▶ good co-operation and a positive work atmosphere inside the occupational health unit.

Quality systems

The basic idea of quality systems

Quality systems are a useful tool in quality management. They include the organization of activity, planning, distribution of resources, and implementation of activities in a way that guarantees quality. Quality systems offer a method for the follow-up of quality and effectiveness stipulated by the Decree of the Council of State (950/94, 7§). A good quality system also supports the continuous development of quality. The comprehensiveness of a quality system depends on the needs of each organization. A quality system must usually be formulated in writing. It can be a quality manual, separate guidelines and instructions, or quality plans.

When drawing up a quality system, the standard of ISO 9001 can be used as a base on which a quality system can be certified, if desired. However, occupational health services do not have to be based on a certified quality system, if no one demands it, and if good quality can be achieved by other means. ISO 9001 is beneficial for the occupational health services, because many enterprises use it as a base for their quality systems. An existing quality system facilitates discussion with enterprises. Other possible approaches are, for example, the principles of ISO 9004:2000 standard and

the criteria of quality awards (such as the American Malcolm Baldrige award or the European quality award). They lay down the general outlines for the development of quality systems, but are not sufficient for the certification of a quality system.

Benefits of a quality system

The benefits of a quality system are:

- ▶ a quality system functions as a helpful tool in the follow-up of the quality and productivity of the activity, as stipulated by the Decree of the Council of State (950/94)
- ▶ guaranteed quality improves the competitive position
- ▶ customer satisfaction improves when the customers' expectations are taken into account
- ▶ work efficiency increases
- ▶ co-operation in a work unit improves
- ▶ participation in the planning of one's own work enriches the work and improves one's motivation to work.

Many customer enterprises have quality systems, and therefore may expect their occupational health units to have them too.

The most important elements of a quality system

The basic elements of a quality system are:

- ▶ responsibility and commitment of the management
- ▶ customer-oriented approach
- ▶ process control
- ▶ managing subcontractors
- ▶ follow-up of quality
- ▶ control and prevention of irregularities in quality
- ▶ continuous improvement of quality
- ▶ follow-up of the implementation and functioning of the quality system.

It is of utmost importance that *the management is genuinely interested* in the development of quality at all levels of the organization. The management with executive power defines its policy for quality and makes sure that it is understood throughout the organization. Procedures are planned in such a way that the requirements defined in the organization's policy for quality will be met.

A customer-oriented approach means that the factors important to the client are recognized and the scientific-technical quality based on the organization's own expertise is defined. A "multiclientele", i.e. individual employees and work communities as immediate clients and the employer as

the paying client, is typical of occupational health services. Because the OHS is partly supported by the society, the society represented by the Social Insurance Institute and the Ministry of Social Affairs and Health can be seen as stakeholders or clients of occupational health services. There may be some divergences and differences of emphasis in the expectations of the different clients. When defining the requirements for quality, one should take into account the expectations of all the client groups equally, and adjust them to suit all interest parties.

Descriptions and guidelines of work processes and procedures are an essential part of quality systems. The *processes are analyzed* so that the features important to quality (and to clients and occupational health services) can be identified. Quality systems need to describe how the procedures essential for ensuring these key quality features are directed and guided. Processes can be guided by, for instance, written instructions, proper instruction in the working methods, training and teamwork. The main processes of occupational health services are, for example, planning of activity and economy, marketing and motivating, work place surveys, health examinations, maintain activities to work ability, curative treatment and different auxiliary activities (reservation of appointment times, laboratory and X-ray services).

The input of all professional groups participating in the process is essential in the analysis and planning of the process, so that all expertise available will be utilized. Participation in the planning of one's own work increases work motivation, and discussion between different professional groups improves the understanding of work entities and increases the appreciation for the work other people do. When the people carrying out the work tasks participate actively in the planning, their commitment to the work procedures agreed upon is stronger, and they need less directions and supervision.

When purchasing *products or services that affect quality*, one must define the criteria by which the subcontractors are selected, how the subcontractors' ability to meet the requirements is followed up, and how the co-operation with the subcontractors is handled. In occupational health services this can mean purchased items (equipment, medications), and in addition, examinations and curative services, and temporary or auxiliary work force purchased outside the occupational health services.

Follow-up systems are created for the continuous follow-up of quality. Quality can be evaluated by following up customer satisfaction, the conformity of processes with plans and instructions, the number of problems solved, and the time used for this, as well as the success of marketing the

services. Follow-up systems should be focused on the most important aspects of quality, so as not to complicate the system too much. Quality systems should efficiently *indicate if services do not meet the quality requirements* or if there are irregularities in the procedures agreed on. Although the irregularities will be corrected immediately, the information on them should be documented, so that similar irregularities can in future be prevented.

A well-planned quality system allows the identification of development needs, thus helping to *improve quality continuously*. Internal quality audits are *conducted at regular intervals to verify* whether the quality systems are implemented and maintained. If it is found that given procedural instructions are not followed, it can be assessed whether more efficient training and initiating activities are needed, or whether the instructions are outdated. Quality systems should not be so rigid that they prevent activities from progressing. From time to time, it is necessary to have innovative discussions in order to create new procedures or improve old ones.

Establishing a quality system

The best way to establish a quality system is to initiate quality improvement projects in areas with the greatest need for improvement or clarification. The first projects may be quite limited, for practical reasons. At the same time, the setting up of other basic elements, described before, should be scrutinized, and the quality system could be a complementary part of them.

There are at least four stages in establishing a quality system:

- ▶ committing all those concerned, defining the objectives of working, and describing the responsibilities
- ▶ training
- ▶ creating and documenting a quality system
- ▶ continuous improvement of quality.

A quality system is usually described in a quality manual. Additional guidelines and work instructions, which must be easy to understand, should be updated, and made accessible to the users.

It is important that as many people as possible can participate in the planning of their own work. The documenting of a quality system is important. The process of putting up the system is equally important because it promotes discussion between different professional groups, and improves the understanding of work entities. Efficient group work techniques should be introduced to increase the efficiency of working.

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5

Co-operation in occupational health services

Matti Lamberg

Introduction

Co-operation between the employer and the employees creates opportunities for the successful planning and development of occupational health services. When making decisions necessary for the implementation of good occupational health practice, the employer should act in co-operation with the employees or their representatives on issues concerning the general guidelines, contents and coverage of organizing occupational health care, and the evaluation of the effects of occupational health services. In their everyday activities, the occupational health personnel have several channels of co-operation both inside and outside the work place (Figure 3 p.14). According to the amendment to the Occupational Safety Act, a work place must have an occupational safety program for promoting safety and health. The occupational health service personnel should function as experts in preparing the program. The plans for occupational health care and the promotion of work ability are included in the activity program.

Statutory forms of co-operation are defined in the legislation on co-operation, occupational safety and occupational health services, and in collective labour agreements. However, the laws merely regulate the forms of co-operation — not the willingness for participation, nor the productivity of co-operation. The laws require marketing of occupational health services and co-operation with the management of an enterprise or an institute, occupational safety organization, professional departments, and the entire personnel, and with expert institutes and occupational safety authorities. Co-operation is needed especially when there are limited, problem-focused projects that are intended for decreasing hazards in the work environment, for improving ergonomics for planning and carrying out activities to maintain work ability, and for improving the psycho-social well-being of the entire work unit.

Experiences gained from occupational health services and occupational safety indicate that the help of expert organizations is not enough to create positive changes in the work environment. The participation of numerous co-operative parties is needed for the improvement of the work environment. The general acceptance and appreciation of this activity is also important.

The major decisions affecting the safety, hygiene, and work atmosphere of the work place are made by the enterprise management, the planning personnel and the personnel administration. The safety goals and the objectives of the occupational health services cannot be met if these parties will not commit wholeheartedly to a health-oriented activity.

The support given by the occupational health personnel in developing the working conditions is emphasized in small work places which do not have their own occupational safety organization.

Legislation

Co-operation in occupational health services is regulated in the Act on Occupational Health Services . According to this law, decisions on starting or changing a statutory activity, or on some other essential matter affecting the organizing of a statutory activity, must be submitted to the occupational safety committee. If there is no occupational safety committee, the decision must be made together with the occupational safety representative. The content and coverage of occupational health services, and the evaluation of occupational health care, are included within the co-operation area of occupational health services.

The professional activity of the occupational health service professionals is beyond the scope of co-operation, and it is supervised in accordance to the legislation on exercising a profession. This is meant to secure the expert help of professionals according to the ILO occupational health service agreement.

According to the Health Insurance Act, reimbursement to the employer for arranging occupational health services is paid only if the employer has given an opportunity for the occupational safety committee, or to the occupational safety representative, to make a statement on the reimbursement application.

The forms of co-operation have varied from the formal approval of an activity plan to active participation in various projects, for example, activities for maintaining work ability and for developing psycho-social well-being, and improving the overall well-being of work communities.

Improving the co-operation in occupational health services has been a central topic of discussion in the development of occupational safety and occupational health service legislation. The concept of co-operation defined in the EU directive on occupational safety, and implemented in occupational health services, is similar to the co-operation defined in the Occupational Safety Act. However, the directives especially mention that the employer is guaranteed the liberty to choose how the occupational health services are produced, as this is not a part of the co-operative procedures. On the other hand, the general organizing of occupational health services, including contents and coverage, is a part of it.

Co-operation between occupational health services and occupational safety authorities

The reform of the Occupational Safety Act in 1987 gave also statutory grounds for co-operation: continuous follow-up on working conditions (work place surveys as a part of it), ergonomics, reproductive health, protection of the genotype and the fetus, and psychological protection are dependent on co-operation, the expertise of the occupational health service personnel, as well as their co-operation with the safety delegates. Later, regulations on the occupational safety program and on systematic activities to promote work ability have increased the need for co-operation.

In practice, forms of co-operation can be, for instance, mutual training events, work place visits, negotiations, exchange of information, and other consultations where the different educational backgrounds and expertise can be utilized for solving common problems (see Chapter 6 Multidisciplinarity in occupational health services and Chapter 17 Participative planning of work places).

The experiences on common training events have been positive; they have brought up different points of view and an understanding of different ways of proceeding. Joint negotiations have been arranged, for instance, with county administrative boards, regional institutes of occupational health, and the management and professional personnel of health care units which

offer occupational health services. The negotiations have focused on organizing regional occupational health services, on resources, and on cooperation.

The negotiations and projects can concern either the functioning of the occupational health services of the entire federation of municipalities etc., or work places that have been found problematic by both the occupational safety district and occupational services. The problems can relate to either hazards or stress factors in the working conditions, or to difficulties in communicating with the work places, or to both. Because the resources are limited, joint efforts to prioritize health problems could be focused on finding these problematic work places, and on agreeing about how to proceed.

Even a well-organized exchange of information can help: an occupational health care unit can get a hold of occupational safety check-up records, which are public documents — as long as they don't contain information on the enterprise's financial situation, which they usually don't. Reports on work place surveys conducted by occupational health services, and annual reports and plans of activity are occupational safety documents, and therefore a safety inspector has a legal right (Act on the Supervision of Occupational Safety) to get them from the employer for inspection. Such reports can, for example, contain notes of defects on which the occupational safety inspector can comment and give instructions, and advise the employer on how to correct the defects. Ultimately, the occupational safety district can give an order obligating the employer to correct a defect or eliminate a hazard.

When suggesting the correction of the same defects, the occupational health personnel can use their expert authority and get support also from the authority of an occupational safety inspector or an occupational safety district authority.

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6

Multidisciplinary in occupational health services

Kirsti Launis

Introduction

Hierarchic organizations are being increasingly flattened and starting to function as a network. An occupational health care unit is now even more concretely a part of an enterprise's network of experts. The traditional co-operation partner has for a long time been the occupational safety organization. In large enterprises, also the occupational health services have been integrated into the planning network. The occupational health service unit is also a part of the enterprise's personnel administration, and their mutual co-operation is becoming even closer. For example, the professional skills of the employees, and the development of these skills are an essential part of the maintenance of the employees' work ability.

Networking is taking place both inside and outside enterprises. The borders of networking organization may even become indistinct. The networks are different in a large enterprise's own occupational health care unit than, for example, in the occupational health service unit of a small health care center. Both kinds of networks have their advantages and disadvantages. It is important that each unit builds its own co-operative network by starting with the clients' needs and its own resources. The rapidly evolving information technology, for example e-mail, facilitates the use of ever larger co-operation networks. When working in a network, occupational health professionals and other experts must be prepared to face differences in opinion and uncertain decisions, to learn from others, and lend their own expertise for the use of others.

An individual health professional or one professional group cannot cope with a co-operation challenge alone. In an occupational health care unit, the different skills and know-how must be tied together smoothly. When the development of work means more than simply achieving old goals more efficiently, it is important to integrate several different points of view, and to create new expertise areas and their combinations. In many work units the working habits and co-operation practices have over the years become safe and familiar routines. In order to create something new together, the occupational health personnel must, from time to time, develop their own procedures as well.

From co-operation between individuals to a well-functioning work organization

Instead of continuously learning individuals or professional groups, the emphasis is now on learning organizations. Some central principles of a learning organization are: constructing common models of thinking, creating common visions of key activities, and team learning based on interaction. Team learning has been found to be a challenge especially for highly educated employees, whose personal career and professional skills have shaped the perception of their own work role. In addition to individual professional development (from a novice to an experienced professional), the work in occupational health services requires the development of cross-disciplinary professional skills. As specialization, on the individual level produces increasingly detailed, deep-going answers to ever more narrow and specialized questions, the cross-disciplinary expertise that grows in networks questions and renews also the traditional formulation of questions.

The expertise within an occupational health care unit is multidisciplinary and versatile — ranging from the specific know-how in occupational medicine and occupational psychiatry to rehabilitation and the psycho-social well-being of entire work units. The value of this expertise does not decrease, it rather increases in a learning organization, but it is utilized in a new way. The individual workers in an occupational health care unit also have a great deal of practical experience on what works locally and what does not. A health care unit must be able to use this versatile expertise together. The options in working alone are narrow and do not lead to renewed activity (Figure 7).

Figure 7.

Alternative working strategies for a work unit

	Working as a group		
Tackling problems as they come along	Discussing problems and solutions to them together, sharing common experiences	Tackling and analysing problems together, and trying out novel solutions in anticipation of future situations	Investigative, proactive coping style
	The individual contemplates problems as they crop up, and looks for solutions by him/herself	The individual looks at his/her own work, and tries to search for and anticipate novel solutions	
	Working alone		

Making analyses and trying out new approaches together raises an individual health care worker's work motivation when he/she sees his/her work in a wider context. The continuous development of an individual's professional skills is still an important prerequisite, but a holistic view gives perspective to the activity. Working closely together is common everyday practice in many occupational health care units. The goals and strategies of the work are set and revised together at regular intervals, and increasingly also clients participate in this planning. Very often at work places, such activities as planning, repairing, or projects for maintaining work ability, new procedures, and models of co-operation, are developed together (see Chapter 17 Participative planning of work places, Chapter 12 Maintenance of work ability, and Chapter 16 Occupational health support for work communities).

Flexible distribution of work and a developing network require revision of co-operation models

A hierarchical organization and traditional learning methods emphasize sharply delineated roles. A learning organization and networking, on the other hand, tend to break these rigid roles that often restrict development. In a learning organization, the distribution of work is flexible and boundaries can be crossed easily.

Some boundaries that can hinder co-operation in occupational health services are: 1) boundaries between different professional groups in an occupational health unit, 2) boundaries between an occupational health unit and other expert functions, 3) boundaries between occupational health services and client groups, and 4) boundaries between occupational health services and other health care and occupational safety and employment authorities. Flexible models of activity are established in the joint meetings of the different parties, and the distribution of tasks is agreed upon. However, meetings and discussions are not always enough to create new ways of proceeding. It is also important to do things together, to participate in the same events, to switch over to work in the other person's area, etc. An expert will face uncertainty, as well as differences in opinions, attitudes, etc. Tackling such situations often requires a new way of proceeding. Examples of these situations are: the occupational health personnel having to work occasionally in different departments of an enterprise, or transferring traditional health services from health care centers to the work units. Boundary crossing is often mentioned in team and network literature as a prerequisite for developing new ways of co-operation.

In order for the integration of different kinds of expertise to actualize, and not remain an empty phrase, it is important that an occupational health unit recognizes ways in which the flexible distribution of work can be promoted.

Work distribution models that are flexible and cross the traditional boundaries between professions are, for example:

- ▶ Creating common models of activity, instead of emphasizing the way of thinking in one's own professional group. In team meetings, experts often look at the matters at hand from the standpoint of their own work or the field of expertise they represent. Issues that would involve interfering in the other person's work or field of expertise are purposefully avoided. This guarantees in return a kind of professional integrity. In teamwork situations like this, the problem is often ascribed to the lack of a common language, which, however, always reflects the lack of shared thinking models needed for directing the activity, as well as a disintegration of opinions.
- ▶ Putting oneself in another person's position broadens the perspective on the issues at hand. For instance, when occupational health personnel discuss the situation of the clients or the client enterprises, it is often agreed in the group that someone should try to look at the issues from the client's point of view during the whole discussion. This is often a much more effective way of learning to understand different points of view than to ask the other party to join the discussion, and at the same time to hold on to your own point of view. In training events, putting yourself in another person's position is called a sociodrama or simulation. Also in everyday situations at work, it is possible to put oneself in another person's position for a while, and try to look at things from a different point of view.
- ▶ "Tacit knowledge" in work teams. Some people are quiet in teamwork situations, even if they have significant, experience-based knowledge on the issue in question. Ways of co-operation which can be traced back to the traditions of functioning in a hierarchical organization can be overcome in many ways. Turns can be taken in arranging meetings and in preparing the issues, and people can take different roles in teamwork situations. Also cards or stick-on notes, etc., can be posted on the wall to help people bring forward their opinions. These methods are described in books on teamwork and creativity, and suitable alternatives can be found for various purposes.
- ▶ Overcoming cliques and conventionality. Many multidisciplinary work groups have learned to avoid issues that cause tension in the group. This can lead to discussing matters in general, instead of focusing on the actual events that people really mean. Groups do discuss values, goals and general principles, on which they try to find consensus on an abstract level. On

the other hand, the real values, contradictions and differing points of view connected with concrete events and situations are not discussed nor analysed. The desire to preserve the consensus culture is greater than the desire to evaluate and integrate different viewpoints and alternative ways of action.

- ▶ Concrete trials and utilization of differences. Team work should not be mere discussion of principles or agreeing on the distribution of routine tasks. New practices in the flexible distribution of work in a team can be achieved only by working together. Instead of, and in addition to, documenting general principles, concrete decisions must be made. We are often told that we should tolerate differences better. However, the question is not only of toleration, but of being able to make use of differences in concrete situations. This means that different viewpoints are not immediately labelled as right or wrong, but are discussed and evaluated without bias or prejudice.
- ▶ A learning organization regularly revises its own procedures, i.e. the 'script' of its co-operation practices. Although it might seem that the team is working smoothly together, it should from time to time ponder which issues are dealt with together and how they are handled. In this way everyone gets an opportunity to participate in putting the script together.

Issues that should be dealt with together are, for example:

- ▶ Plans for the development and training of a work unit, new ways of action, and the building of co-operative networks
- ▶ A unit's co-operative networks and their functioning
- ▶ Problems and the anticipation of problematic situations, handling difficult questions
- ▶ Routines, co-ordination of tasks, and flow of information.

Although different issues require different ways of dealing with them, the following is a general check-list:

- ▶ Does everyone have an opportunity to prepare for the topics to be discussed by producing, collecting and receiving relevant information on them?
- ▶ Does everyone have the opportunity to participate in the mutual discussion of common issues? For example, meeting times agreed on well beforehand, and adhered to?
- ▶ Is the manner of discussing issues such that the bringing up of different viewpoints is encouraged, and they can be evaluated as issues, regardless of whose opinion it was?
- ▶ Are the decisions recorded, and are they carried out?
- ▶ Are joint trials assessed together, and are solved problems reported?
- ▶ Are representatives of external networks invited to the meetings, if necessary?

The plan of action for occupational health services should include an account of what has been planned to do together and how different things are to be done together.

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7

Ethics in Occupational Health Care

Mari Antti-Poika

Introduction

The same ethical principles are followed in occupational health care as in general health care. Due to the role of occupational health services, particular pressure regarding ethical conduct is directed toward occupational health personnel. It is important that the occupational health personnel recognize and take into consideration the ethical problems that are connected with their work.

As a part of everyday life, ethics affects the values, attitudes, and the manner in which one interacts with clients and co-workers. Ethics cannot be treated as a separate entity. Ethically acceptable activity is also effective and of high quality. Absolutely correct, exact ethical instructions cannot be given in this manual, which offers only guidelines. Ethical choices always involve decisions that depend on the situation in question, on one's own conviction, on autonomic choices, and on self-control.

The ethical principles of occupational health care are:

- ▶ following good occupational practice
- ▶ maintaining and promoting the employee's health and work ability, and prevention of work-related health hazards in particular
- ▶ anticipating possible risks related to the procedures of occupational health services, so that they will not harm the employee's health or have negative effects on his/her position in the work community (Hippocratic Oath, see also Chapter 14 Health examinations, section Ethical aspects)
- ▶ respecting human rights and dignity of the human being
- ▶ independence and impartiality
- ▶ ensuring secrecy of data

Good Professional Practice

Good professional practice requires good professional skills from the occupational health personnel. Good professional skills enable one to use the resources efficiently, in the right way, focusing on the right things. This implies, for example, that unnecessary examinations are not conducted.

The methods and procedures chosen should be advantageous enough in relation to the possible disadvantages. In occupational health care, the disadvantages are rarely life-threatening, but they can have other negative effects, such as losing one's job, losing one's profession, lowered income, unnecessary fears, or a false sense of security. Weighing the pros and cons is part of the professional skills.

The continuous maintenance of professional skills is necessary for maintaining quality in occupational health services. Although the judicial responsibility for the training of occupational health personnel lies with their employer, it is the responsibility of the occupational health personnel to plan their own training and actively take initiatives to maintain their professional skills on a high level.

The professional credibility of the occupational health personnel is maintained when they keep within the limits of their own expertise. The occupational health personnel also have to inform openly about the problems that cannot be solved by means of health care.

Prevention of health hazards and maintenance and promotion of health and work ability

It is the duty of occupational health personnel to try to influence the enterprise management in such a way that the personnel policy of the enterprise promotes the employees' health and work ability, and to try to help in the realization of such a personnel policy.

The goal of occupational health services is to promote a healthy, safe work environment and the individual resources of the employees, and to adjust the requirements of the work environment to the employee's resources in the best possible way. The primary goal is to improve the working conditions, and this cannot be bypassed simply by improving the employees' efficiency.

There are many ethical problems connected with health examinations (see Chapter 14 Health examinations). Pre-employment medical check-ups are generally approved as ethical when there is a specific health risk connected with the work, or when the work puts special requirements on health. Even then, it is difficult to reliably screen, with the methods available, persons who are at special risk. In the future, it may be technically possible to screen for individual, for example genetic, predisposition to diseases. Since the development of an illness usually depends on several factors, the screening

does not necessarily prevent from becoming ill or retiring prematurely. Instead, well planned and conducted health examinations can help to find susceptible persons who need special activities for health promotion, focusing either on the employee, or the work environment.

Respecting human rights and dignity of the human being

The clients of health services must be treated equally and impartially regardless of age, sex, social status, political views, outlook on life, nationality, ethnic background, nature of illness, or the reason that has led to the client relations.

Health services must be administered justly, respecting the clients' dignity and individuality. There must be an equal and confidential interactive relationship between the occupational health personnel and the client, taking into consideration the client's personality and life situation. The Act on the Status and Rights of Patients also includes regulations on patients' rights to self-determination and for to be informed. From an ethical standpoint, it must be borne in mind that the law alone does not necessarily guarantee the rights of patient groups which are in the weakest position, and that, in addition, the help of health care personnel may be needed to inform on and interpret their legal rights.

Health services are required to give people enough information, so that they can make decisions and choices affecting their lives based on this information. Occupational health services must also support the customers in health-promoting choices. However, people must be allowed to make decisions concerning their own lives without any outside pressure (see Chapter 13 Information and guidance).

The employees' participation in the health examinations is voluntary (except for work entailing special health risks, where pre-employment and periodical check-ups are stipulated in the Occupational Health Care Act and in the Decree of the Council of State 1672/92). Participation in health campaigns must also be voluntary. Occupational health personnel must make sure that when giving their consent, the employees know sufficiently about the possible consequences of the procedures (informed consent, which is voluntary, detailed and a conscious expression of will).

The scientific research conducted on the clients of occupational health care or their health records must follow the ethical requirements for scientific research. Participation in research must always be voluntary. The study subjects must be informed of the goals and the content of the research, and

of the possible advantages and disadvantages (to them and in general). The right to privacy and secrecy must also be ensured. All medical research on humans must be submitted to a regional ethics committee for preview (Medical Research Act 488/1999).

Independent and impartial position in an organization

Occupational health personnel must be professionally independent of their employer (Decree of the Council of State 950/94), even though the employer pays for the services. Occupational health personnel are not to be the employees' representatives either. They are independent experts who make the decisions based on facts and available scientific information.

To guarantee impartiality, it is advisable to make an agreement with the employer and the employees on the ethically sound principles of action. The independence of the occupational health personnel can be stated in the work contract, if wanted. Confidential co-operation with all the parties at a work place is the best way to guarantee procedures in which everyone's point of view is sufficiently considered.

For ensuring the secrecy of data, see Chapter 8 Data protection.

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8

Data Protection

Mari Antti-Poika

Introduction

Confidentiality is the ethical cornerstone of occupational health services (see Chapter 7 Ethics in occupational health care). The same regulations and ethical principles are followed in occupational health services as in other health services. Because occupational health services are based on the co-operation between the employer and the occupational health personnel, who nevertheless have an independent position, it is especially important to accept the requirements directed at ensuring the protection of health data.

The regulations on data protection are often considered to be bureaucratic and to hinder activity. On the other hand, it has to be accepted that people must have the right to decide what kind of data (except those based on the provisions of an Act) they allow to be processed (collected about them, and where they allow it to be transferred). It would often be of great help if enterprises and occupational health services had a clearly defined policy for handling employees' health data, accepted by all parties, known by all, and meeting the legal requirements. Occupational health services can well be the initiator in developing a well-functioning system.

Important principles:

- ▶ Collecting only data necessary for the purposes of occupational health services. The data must be correct. Sensitive data can be included in the patient files without the patient's consent only if it is absolutely necessary for counseling and treatment (see section Information content of the data p.45).
- ▶ The patients/clients must know what kind of data are collected about them and for what purpose, and also where and for how long the data are retained, and who has access to them. The subject should be informed at the moment of collection, at the latest.
- ▶ Giving one's consent for data processing (except obligatory data) must be expressed and voluntary. Voluntariness must always be ensured. This means

that when giving their consent, the employees are also aware of the consequences of participation in, for example, health examinations or programs maintaining work ability (see Chapter 7 Ethics in occupational health care).

- ▶ The consent of the patient/client is always needed if data are delivered to a third party. As an exception, some authorities have a specific provision on access in an Act. In order to acquire the client's informed consent, it would be a good idea to develop a flexible and easy procedure as a part of the regular occupational health services. Usually the client's consent must be in writing, and it must be specified what information the consent concerns, and to whom and for what purpose the consent is given (Personal Data Act, Act on the Openness of Government Activities).
- ▶ Enterprises and occupational health services have to have clearly defined guidelines for handling the employees' health data. These procedures comply with the legislation, are approved by all parties, and are known by all.
- ▶ The data in patient records must be well protected against unauthorized access, against accidental or unlawful destruction, manipulation, disclosure and transfer.

The Council of Europe agreed in its 1997 Convention for the Protection of Human Rights and Dignity of the Human Being the Application of Biology on and Medicine.

In 1997 the Council of Europe issued Recommendation, No. R(97)5, on the protection of medical data. The International Labour Organization (ILO) issued a code of practice on the protection of the workers' personal data in 1996. The European Parliament approved the Directive on the protection of individuals with regard to the processing of personal data and on the free movement of such data on 24 October 1995.

Collection of the data and storage of patient records

Information Content of the data

According to good occupational health practice, only such data that are lawful and necessary regarding the employee's health, the safety of working conditions, or the administration of occupational health services can be processed. The content of the patient records must be appropriate. Careful choice of words is especially important when describing psychological problems or, for example, conflicts in work communities.

The names of other persons, such as co-workers or superiors, must not be entered on the patient records. Data on any business secret of an enterprise must not be recorded in the patient records either.

The recorded data must be correct. According to the instructions of the Ministry of Social Affairs and Health, any information which may be incorrect must be corrected and the incorrect information transferred to the background information file, so that both the incorrect and the corrected entry can be found later. The name and status of the person who made the correction, as well as the date of entry, must be indicated in the records. In case history systems based on automatic data processing, the data must be secured so that no unauthorized changes can be made to them.

Other sensitive data, than those relating to the state of health, illness or handicap or treatment or comparable measures can be entered in the patient records without the patient's consent only, if the information is needed for counseling and treatment. Other sensitive data may reveal, for instance, the person's race or ethnic origin, social, political or religious views, trade-union membership, criminal acts, consequences of a crime, disability, sexual inclination, and use of social and welfare services.

As regards data delivery, it is practical to group separately the data that can be handed over based on an Act without the patient's consent, and those based on other requirements. The grouping of the data is also useful in automatic data processing and in archiving.

Occupational health service contracts

When making an occupational health service contract, the personal data forwarded to the employer for invoicing must be defined clearly and agreed upon in accordance to the legislation. The procedures must be defined before the data collection, so that the obligation to maintain secrecy and privacy will not be broken. In the contract, all the data on occupational health services, which can be delivered to the employer must be defined, as well as the manner of the data delivery. The employees must be informed of these procedures, for example, upon beginning employment, and everyone must be aware of them.

Delivery of data

General principles in health care

According to the law on the patient's position and rights, a health care professional or a person who works in a health care unit, or carries out its tasks, must not give out information in patient records to outsiders without the patient's written consent. An outsider is some other person than the one who participates in the care of the patient, or responsible for tasks connected with the health care unit. The obligation to maintain confidentiality continues even after the employment or work task has ended.

With the patient's consent, data can be given to another health care unit or health care professional who undertakes the patient's examination or treatment. Orally given consent marked in the patient records is sufficient when the patient's further care is arranged.

Health data can be given to a court, another authority, or a community that has a legal right to receive the information. Such communities are, for example, the National Authority for Medicolegal Affairs, data protection authorities, the Social Insurance Institution, an appeal authority determined by the sickness insurance law, pension insurance companies or institutes, accident insurance companies, and the appeal authority mentioned in the accident insurance law.

A note will be made in the patient record about the delivery of data and the reason (law, the patient's written or oral consent, or consent apparent from the context). When delivering patient record data, it must be ensured that only those data necessary for the defined purpose are delivered.

Every health care unit must have a system that makes sure that the regulations and procedures concerning secrecy and privacy are known by all employees, including substitutes. It must also be defined, who decides on delivering the medical data. In addition, procedures, by which the data are handed over, must be created. Attention must also be paid to technical and organizational measures for securing the medical data during the transfer. When using new data transfer techniques, such as data transmission networks, e-mail and fax, their data security must be guaranteed with cryptographic methods. For instance, a fax must not be used without making sure that the data are handled confidentially also at the receiving end.

Special issues of occupational health care

Detailed information about an employee's state of health cannot be given out without the consent of the person concerned. The obligation to give information to the employer and the labor protection organization mentioned in the Act on Occupational Health Services (743/78) concerns only information necessary for improving the employee's health and the working conditions. However, even in this case the information has to be given out in such a way that a family's or an individual's secret is not revealed. The obligation of occupational health personnel to maintain secrecy concerns also the business secrets of enterprises.

The regulation of the Council of State on health examinations in occupations with special health risks is based on the Act on Occupational Health Services. It states:

- ▶ The physician must give the employer a written statement of the conclusions made on the basis of the health examination for the part concerning occupational safety and health services. If necessary, the statement should include a recommendation of safety measures based on the examination.
- ▶ The labor protection committee of the workplace and the authorized labor protection delegate have the right to see the statement upon request.
- ▶ If a person whose work involves a special health risk goes to work for another employer in a job entailing the same risks, the occupational health physician in the previous work place must give the data on the person's health examinations to the new employer's occupational health physician upon request. If the same record contains also other data, the person's consent is needed for their transfer.

For other work than that with special health risks, the employer, the labor protection committee of the work place, and the authorized labor protection delegate have the right to obtain only information that is relevant to the improvement of the employees' health or safety, and to the working conditions.

On the basis of the Act on Occupational Safety Supervision, the physician must notify the occupational safety district authority of an occupational disease or some other work-related illness or disorder.

Recommended procedures

In the pre-employment examination, the employer is to be informed only whether or not the person is suitable for and capable of the work in question. Possible restrictions in work ability must be stated without revealing any confidential information about the person's state of health.

To ensure data protection, the best way is to issue a statement about the inability to work, restrictions in work ability, or referral to a health care unit, to the person examined, who will then forward it to the employer. In some enterprises the statement is forwarded directly by the occupational health services to the employer. In this case, the consent of the employee is needed for transferring the information, and this may be obtained at the same visit on a consent form. Special attention must be paid to ensure that the patient/client understands the content of the statement and its possible consequences.

Work placements due to limitations in the ability to work often require oral consultations with the employer's representative. A suitable solution is often easiest to reach in discussions where the person in question is present. The permission of the employee in question is nevertheless always needed for the discussions. It is recommendable to discuss and agree with the employee beforehand on what information can be given to the employer. Finally, it is the patient who decides what is to be kept secret. Especially in the personal contacts with the employer, it is important not to reveal or indirectly confirm matters that are to be kept secret.

The surveillance of sickness absenteeism varies from one enterprise to another. Because the surveillance of absenteeism is an important means of monitoring the personnel's health, it is recommendable to develop procedures that meet the legal requirements. In this way also other sick leave reports than those written by the occupational health personnel come to the knowledge of the occupational health unit.

In order to eliminate errors in patient records and to maintain a co-operative relationship, it is a good idea to inform the patient (worker) about the data in the patient records during the visit when the results of the tests and their meaning are explained. Further action is also decided together with the patient.

Data storage

According to the regulations of the Ministry of Social Affairs and Health, health records are usually stored for 10 years after the patient's death. A sample of the records is kept permanently. The health records of people exposed to asbestos must be stored for at least 30 years (EU Directive 83/477/ETY, article 16). According to the regulation of the Council of State, the employer must keep a list of the employees exposed to biological agents entailing serious risks. The employer must also collect information on exposure, and on accidents, near-accidents and other health hazards. This information must be stored for at least 10 years, and in certain cases up to 40 years.

Patient records can be drawn up either on paper or electronically. Health data must be protected against unauthorized handling, use, destruction, alterations, and theft. Especially in automatic data processing systems, the protection of the data must be ensured. Automatic data processing systems containing information on patients require a separate data security software that includes the control, follow-up and supervision of, for example, the use and transfer of patient data.

The purpose for which information is collected in special projects determines how and for how long the information is stored. There must be a plan for the storage, and it must be explained to the person concerned.

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9

Marketing and motivating

Jukka Uitti

Introduction

The goals of occupational health services (see Chapter 2 Principles of occupational health services), i.e. the prevention of health hazards, the protection and promotion of employees' health, the promotion of their work ability, and rehabilitation are the basis for planning and marketing services. The service idea reflects the needs of the client group that the organization wants to fulfill, as well as the available resources and means. The marketing of occupational health services also includes informing about the benefits of the services in such a way that the employer and the employees know the legal requirements of the services, and their own possibilities to participate in the implementation of the occupational health services. The outcome and benefits are directed at both the individual clients and the workplaces within the scope of the occupational health services.

Marketing involves maintaining, creating, developing and utilizing lasting client relations in such a way that the goals of all the parties concerned (enterprise, client, society, etc.) are met. Marketing is an integral part of an occupational health unit's activity, and it must support the goals of the entire organization. Marketing is a prerequisite for achieving a desired impact. On the other hand - a positive impact is already marketing.

Target groups of marketing and segmenting clients

Target groups

Marketing is a central part of every health professional's daily work in the occupational health unit. A marketing plan and corresponding marketing activities are needed.

Along with the structural changes in work life, there will be an increasing number of enterprises employing one, or only a few people. Small enter-

prises, as well as the self-employed present a challenge to health services, because their work culture and procedures are completely different from those of large enterprises. Small enterprises, which are lacking in the tradition of occupational safety, will in the next few years become the largest potential new client groups. Small enterprises and the self-employed, as well as consulting enterprises, housing enterprises, taxicabs, and new entrepreneurs health care can be reached best through their own organizations.

The needs of individual clients depend on, e.g. their age, sex, and profession. This information, can be used to plan the occupational health services described in the activity plan of each company. The activity plan must indicate the goals of the activity, follow-up and evaluation according to the target groups and procedures. The client is shown the effectiveness of the activity on the individual, work unit, and enterprise level. This part of the activity plan is a part of marketing. This kind of marketing is especially important when a contract has been made with a new client enterprise, but there are not yet any experiences of activity and co-operation. Also continuous revision of the activity plan is a part of long-term marketing.

Segmenting and recognizing needs

Occupational health services must have the readiness to direct different service entities to different clients. That is why it is good to segment, or group, the clients into different groups. An appropriate service entity can be planned for clients with similar needs.

The clients can be divided, e.g., as follows:

- ▶ Users of services
 - client organizations (work communities, employers, enterprises)
 - individual clients (employees, entrepreneurs)
- ▶ Interest groups
 - supervisors, and the management of one's own organization the management of the health care centre, medical centre, and enterprise, the board of an association, etc.
 - other health care organizations and their staff (other out-patient health care, specialized hospitals, rehabilitation institutes, and expert institutes)
- ▶ Public administration
 - the National Pensions Institute, the ministries, research institutes, labour safety authorities
 - other local and national decision-makers
 - various organizations and associations
- ▶ The media (especially the press).

Also the co-operation partners in the client organization, such as supervisors, the personnel administration, the work safety organization, etc., can be regarded as clients. The employees of an occupational health unit and their permanent co-operation partners can also be considered to be each other's clients (see Internal marketing).

Enterprises can be seen as present or potential clients at which marketing is directed. Enterprises can also be grouped according to their line of business, geographical region, size (less than 10 employees – large enterprises), and manner of approach (statutory approach – comprehensive occupational health agreement). (See also Chapter 10 Action plan).

It is very important in marketing to find out the needs of all the clients. The clients are not always aware of their need for occupational health services. This means that in order for these needs to be recognized, continuous interaction, and at the same time a deepening trust, are required. It is most important to recognize those needs of the various segments which the occupational health services believe they are able to satisfy.

Segmenting can be different in different units, and it can vary at different times. It is natural to emphasize different matters in a marketing plan at different times; the input into different client segments can vary. The input can be affected by the professional expertise and experience (developing a service/product) as well as the client's assumed motivation level. A marketing campaign can be directed especially at clients who are not very interested in occupational health care matters.

Internal marketing

Internal marketing means that everyone in their own units knows what good service is. In other words, the business idea has been internalized. Leadership skills, an inherent part of quality management, help create a positive service culture and spirit, and subsequently, high work motivation and satisfaction with one's work. The management and the personnel together develop a customer-oriented approach which is a prerequisite of effective occupational health services. Sometimes it can be difficult to change the values and procedures of an organization, therefore the commitment of the management is essential in creating a productive service culture.

The value and importance of long-term client relations is emphasized constantly. If the first contact is handled well, the client's trust in the high quality of the services is ensured, and the client will return. It is the management's duty to show that the unit's success is based on this trust and

good service. The management continuously strengthens the commonly shared view of the unit's purpose.

The development of the personnel's versatile skills is related to marketing and the development of the service products. The personnel are taught to market through training and informing. At its marketing is a part of the daily work routines, without the need for any separate marketing activities. Good leadership creates and maintains a good service spirit.

The fluency of work and the service readiness of an organization improves, if one regards one's fellow employees and co-operation partners as internal clients. New forms of service, i.e. products, are developed together, in the group. This means that the marketing activities are also planned together.

External marketing

Professional skills, expertise, and activity that inspires confidence are the basis for marketing. The occupational health personnel can approach client groups with similar needs, offering services that have been created through the experience and expertise gained in a certain field. Each occupational health unit plans and sets the prices for their services. The service products are based on the clients' needs, and new products are planned together with the segmented client groups. The services should be based mainly on scientific evidence, research, and practices that have been found to work well.

An occupational health unit can realistically evaluate its segmenting by cross-tabulating different industrial branches with the services offered by the unit. Finally, the resources and development potential of the unit determine how extensive the segmenting should be, and how wide a range of products can be offered.

It is important for the occupational health personnel to participate in the public discussion on occupational health issues. It is also necessary to co-operate with the media, especially the press, in order to emphasize the importance of the health and work ability of the working population. Occupational health units could co-operate locally and, for instance, provide lectures at entrepreneurs' gatherings. Occupational health personnel could collaborate with their local and national organizations and networks, so that also other health care organizations and decision-makers, would recognize the role of occupational health services as a significant producer of primary health care.

External marketing can be targeted by segments, as follows:

- ▶ In the case of individual clients, an occupational health unit can emphasize qualities that the unit can offer in all client relations. These qualities are, for example, competence, safety, reliability, and client-orientedness.
- ▶ Financial reasons can be pointed out to the client enterprises. The maintenance of the employees' work ability is important to everyone, but it should be borne in mind that small enterprises are interested in sickness absences, and large enterprises are interested also in cutting pension costs. Understanding the fact that occupational health services are an investment in the employees' health, well-being, quality of work, and an improvement of the work climate and of motivation, helps one to see the benefits in a wider perspective than merely as a numerical decrease in sickness absences and premature retirements. The subsequent effects can be seen as an improvement in productivity, when, for instance, production losses (due to errors, substitutes, turnover) decreases.
- ▶ The procedures and significance of occupational health services must be brought to the attention of other colleagues and health care personnel by giving practical examples (in meetings, symposia, articles, etc.).
- ▶ The public administration is interested in the financial aspects of occupational health services, i.e. costs and benefits. Each occupational health unit should make every effort to illustrate the actual costs and benefits. The cooperation between occupational health units and health care organizations can also be an asset to marketing.
- ▶ The general public also needs to be informed about potential work-related hazards. The information, however, should be popularized and easily comprehensible, presenting sensible and moderate views. This kind of information can also be used to influence decision-makers.

Concrete information, i.e. own examples of positive results of the effectiveness, costs and benefits of the occupational health unit's own activity, can be presented to the client segments mentioned earlier, especially to representatives of the enterprises. Expenses incurred by e.g. sickness absence and premature retirement should be calculated and proportioned to the client's reality with the use of examples (examples 1-2 are based on economic values and can be applied to marketing).

Example 1

The effect of occupational health services on absenteeism costs*

The cost of one hour's absence for a person earning FIM 50 per hour

FIM	50	hourly wages
	30	social security and other costs
	<hr/>	
	80	
	80	cost of hiring a substitute (1 h)
	80	general costs 50%
	<hr/>	
FIM	240	the real cost

Conclusion: If occupational health services can decrease the absences of one employee by three hours per year, these services are free for the employer.

*The example illustrates short-term financial benefits.

Example 2

Other effects of occupational health services?

1. Adding to working hours:

- flexible services with sufficient use of time, e.g. health examinations at work places
- personnel familiar with the work places, work, and working conditions can estimate the length of sick leaves better than other health care personnel

2. Promotion of work ability:

- the occupational health personnel know the work places, and after working as a personal doctor/nurse they also know the employees, and are able to estimate their health hazards, based on long-term experience.
- the occupational health personnel have the ability to evaluate and suggest corrective measures at the work place to improve the work ability of the aging workers

3. Effect on productivity as a by-product

- the occupational health personnel have methods for measuring the employees' quality of life, work environment, and coping resources, as well as tools for improving them and for providing psychological support, consequently affecting productivity.

The clients do not usually know what occupational health services can actually accomplish. Some enterprises could purchase even more services, if the occupational health personnel informed them about the services. This kind of information is especially important to the client who is responsible for covering the expenses. A brochure describing the services can be prepared, but marketing based solely on a brochure is no longer sufficient. The marketing of expert services is especially a matter of personal sales work. Agreements on practical procedures should be made in the client contacts. Today work-place walk-throughs have a special importance to clients. The occupational health service agreement can be revised at certain intervals; current matters and needs can be discussed, and feedback received. When needed, the services can be supplemented with new activities, and follow-up agreed on.

A couple of meetings are held free of charge with the representatives of new, potential client enterprises. In the first meeting, the client's needs can be charted, and the services and procedures explained. At the second meeting, an agreement is drawn up; it will be revised in accordance to the activity plan made later on. It is often it is appropriate to select first activities that interest the employer or the work community most. As confidence is gained, also more problematic activities can be started. For instance, in a large enterprise, the occupational health service people can not hope to solve the problems of a single work unit until the development needs of the management have been satisfied. After this, the development needs of the rest of the enterprise can be charted.

Evaluation of Effects and Results

The tangible goal of marketing occupational services is to improve the productivity of an occupational health unit. Thus, the effect of marketing must be reflected in the evaluation of the results and the quality of the activities of an occupational health unit. The evaluation frame, from which an occupational health unit can follow its activity (input, output) and productivity impact, can be used also to scrutinize the effect of the marketing activities. When comparing the baseline and follow-up situations, one may use methods that shed light on the three main dimensions of quality: customer satisfaction, the perceived benefit of the activity, and economic efficiency (productivity, effectiveness). Customer satisfaction, the health unit's profitability, and the atmosphere of the co-operation can be seen as the most important follow-up measures.

From the ethical point of view, it is important to market activities which can be delivered, which suit the client's needs, and which have been agreed

on together with the client (see Chapter 7 Ethics in occupational health care and Chapter 8 Data protection). In order to make sure that the activity is ethical, it is necessary that the occupational health personnel discuss together the benefits of different procedures, and evaluate the practices together with the client. If short-term productivity is aimed at, it is possible that such activities are selected which yield a low profit in the long run. Long-term results are nevertheless of most significance in creating long-lasting client relations. Such client relations are built on confidence that is not shaken by fluctuations in the economy.



II **G**UIDE TO PRACTICAL OHS ACTIVITIES

- 10** Action plan
- 11** Work-place surveys
- 12** Maintenance of work ability
- 13** Information and guidance
- 14** Health examinations
- 15** Assessment of work ability
- 16** Occupational health support for work communities
- 17** Participative planning of work places
- 18** Accident prevention
- 19** First aid readiness and operation in a catastrophe
- 20** Environmental protection

10

Action plan

Helena Taskinen

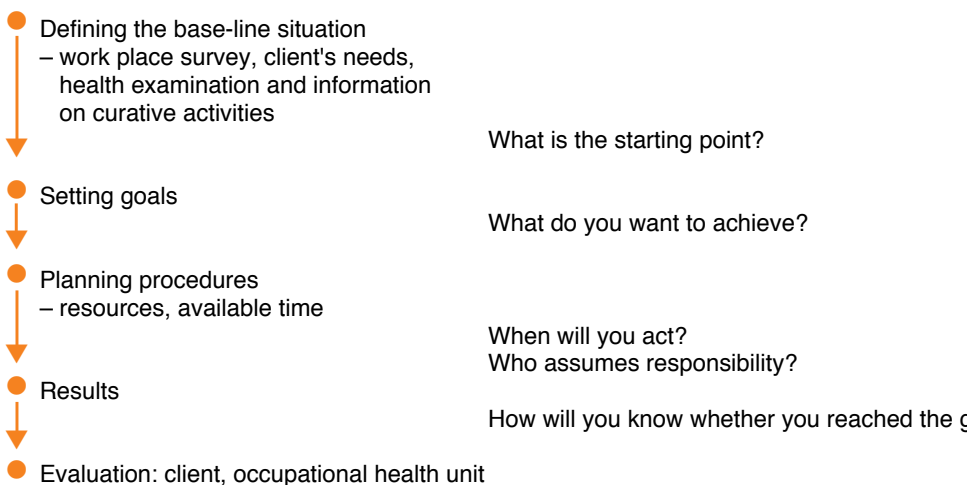
Introduction

In Finland the action plan is the backbone of the activities in occupational health services. It is also an important appendix document to the plan of activities in the work safety of an enterprise. With an action plan, it is possible to realize the central goals of good occupational health practice, as well as the target-orientation, follow-up and evaluation of the activities (figure 8).

The *goal* of occupational health services is a healthy and safe work environment, well-functioning work groups, the prevention of work-related diseases, and the maintenance and promotion of the work ability of workers.

Figure 8.

Comprehensive planning of activities



The implementation of the goals is followed up by comparing the progression of the plans at different time points during the period of activity. In addition to the realization of the goals, the effects on health, work ability, and the environment are evaluated. Statistics, surveys, customer inquiries, etc. can give a picture of the perceived effects (see section Follow-up, evaluation and development of activity p.75).

Evaluation of needs and possibilities

The client's needs and expectations

The client of occupational health services is, for example, an enterprise, an individual employee or a group of employees, the management, personnel administration, line management, and the work safety organization. Customer-orientation means that the client's needs for occupational health services are determined together with the client enterprises, and the set goals are based on these needs. The clients of occupational health services expect tailored services, i.e. services that suit their individual needs. The occupational health personnel's expertise as regards the content of the services is used in interpreting the needs into procedures, priorities, and choice of service options. Complying with the needs of work places may also require development of the occupational health services and the skills of the personnel.

In Finland, good occupational health practice emphasizes the needs of the work place and the employees in the implementation of occupational health services. Often the needs vary, depending on the point of view:

- ▶ the visions of the enterprise management: development plans, experienced problems, e.g. bottlenecks in production, and turnover of the workforce related to the employees' health and work ability
- ▶ needs of the employee (in the role of an employee and a private person)
- ▶ needs of the work community
- ▶ needs observed by the occupational health personnel (from sickness and accident statistics, work place surveys, findings in health check-ups, work atmosphere surveys, etc.)
- ▶ needs reported by the safety representatives and stakeholders
- ▶ needs based on the law, other regulations or contracts.

How to determine the client's needs?

The contract negotiations with a new client form a sound basis for client-oriented planning in occupational health services. Questions may be prepared beforehand to get a client-oriented discussion started. The answers to these questions should give a picture of the enterprise's visions for the future, goals and policies in personnel, administration, recent changes in production or plans of change, bottlenecks in production, key personnel groups, problematic situations, etc. Examples of such questions are given in the following list. A picture of the enterprise's occupational health service needs and goals is formed on the basis of the discussion.

Example 1

Questions to the management of the enterprise to help launch the planning of the occupational health services:

What kind of changes have been made recently in the production?
Are changes planned in the future?

How do the changes affect the personnel policy? Will there be a need for more employees, or will cut-backs have to be made? Will the need for training increase?

What is the enterprise's personnel policy? What kind of goals regarding the personnel's health are in line with the enterprise's public image?

How could the work environment be improved?

How can the work content be improved?

How could the work organization be improved?

Which of the needs are most urgent?

What is the time schedule that can be agreed on by the enterprise and the occupational health services as regards the implementation, cost estimate and delegation of responsibilities for the activities?

Is there need for an agreement on how to follow and evaluate the effectiveness and the results?

The occupational health personnel and the representatives of the client enterprise should meet in person at least every 1–3 years. The results of the activity are discussed during the meeting, and further measures are agreed on. If it is not possible to arrange a meeting with the representatives of all the work places, information on needs and wishes can be collected with a questionnaire. The following examples of activities can be recommended as solutions to the needs of the work place.

Example 2

Questions that are helpful in charting the occupational health service needs of a work place

“How important is it that the occupational health services offer the following services to your enterprise/personnel?” The level of importance can be marked with numbers, e.g.:

1 = very important, 2 = important, 3 = difficult to say, 4 = rather unimportant, 5 = not needed, and 6 = I would like to know more about the service.

Service

1 2 3 4 5 6

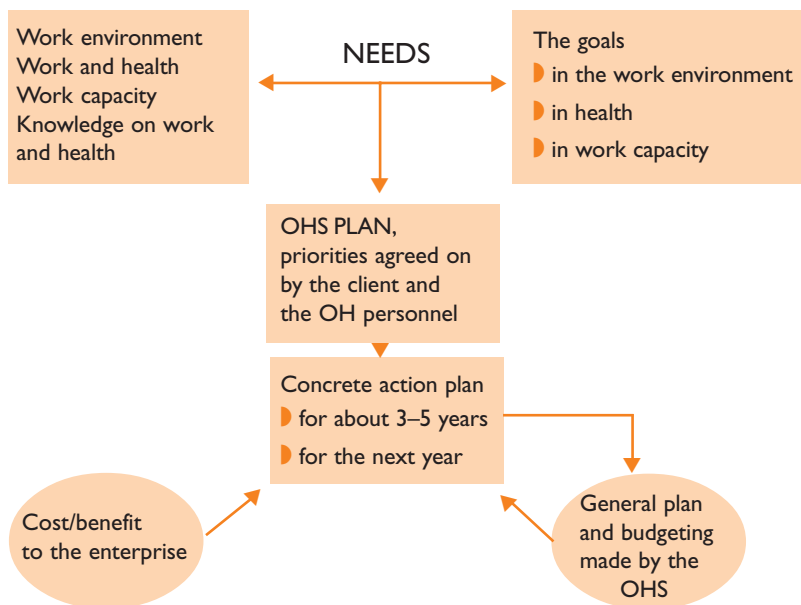
- ▶ Work place survey (walk-through)
- ▶ Assessment of accident risks
- ▶ Ergonomic inspections and guidance
- ▶ Participation in the planning of the work environment and work content
- ▶ Participation in the teaching of new employees
- ▶ Information to groups about the risks at work, safe working methods, self-care, e.g. stress management, weight problems, how to quit smoking, etc.
- ▶ Assessment of first-aid readiness and participation in planning it
- ▶ First aid courses
- ▶ Support to the work community in times of change and development
- ▶ Support to the work community in their efforts to solve problems
- ▶ Health examinations
- ▶ Individual follow-up of work ability and referral for rehabilitation
- ▶ Individual support in coping with problems
- ▶ Activities to maintain work ability
- ▶ Instructions to individuals by an occupational health physiotherapist
- ▶ Curative treatment of acute illnesses
- ▶ Curative treatment and follow-up of chronic illnesses
- ▶ Neck and back ‘schools’
- ▶ Other problems, that occupational health services could tackle:

The client's wishes, as expressed in the questionnaire, often require further handling, specification, and prioritization. Wishes can also be heard during work place walk-throughs, and at events organized by occupational health services. They may be voiced at feedback discussions of, for example, work atmosphere surveys, at individual meetings (health examinations, group check-ups), and at meetings of co-operative bodies (e.g. safety committee).

The goal of the planning is to ensure that the occupational health services answer an actual need, and that they are grounded on a realistic basis, i.e. that the necessary resources are available (Figure 9).

Figure 9.

Starting points for planning occupational health services, and the limits set by the resource. An action plan can be part of an enterprise's occupational safety action plan



From the planning of activities to an action plan

The planning should be based on the following information, which can be acquired from the following sources:

- ▶ observations during work place walk-throughs and during contacts with clients
- ▶ issues brought forward by the safety committee
- ▶ ideas picked up in training or from other occupational health units (ideas are collected in an ‘idea box’ for the next year’s action plan)
- ▶ recent research results
- ▶ follow-up on the suggestions from the work place surveys; postponed matters are taken up in the next plan
- ▶ areas of emphasis agreed on earlier
- ▶ new problems that have arisen during the year of activity
- ▶ possible changes in the legislation or in important contracts
- ▶ new ideas created at ‘innovation meetings’.

Work places and occupational health services have a great deal of useful information to support the occupational health activity (Table 1 p. 68). This information can, however, be dispersed in different places, making it difficult to see the overall picture. But the information can be useful in preparing a new activity plan. Needless to say, the information is emphasized differently at different work places, and all information is not always necessary.

Planning occupational health services in small and medium-sized enterprises

The organization of occupational health services for several small enterprises consumes more resources than the occupational health services of a large enterprise employing the same number of people. If the available resources are greatly disproportionate to the number of enterprises in need of services, there is no simple solution to the problem. Grouping clients, and offering services to different client groups by turns, may be the only options, if resources cannot be increased.

The grouping of clients helps to focus the available resources. The services planned for a certain type of client group can be offered to other similar clients (see Chapter 9 Marketing and motivating). The grouping can be based on, for example, the line of business, the type of workplace or task, the level of the enterprise’s interest in development, or geographical proximity (the same building, the same village, part of town, etc.).

Table 1.

Background information for the basis of good planning

Object of clarification	Background information
Nature of the client enterprise or organization	<ul style="list-style-type: none"> ▶ business idea, type of production plant or enterprise, and branch offices ▶ location, services available nearby ▶ ownership ▶ company policy, management ▶ development views
Working conditions	<ul style="list-style-type: none"> ▶ occupational hygiene, e.g.: <ul style="list-style-type: none"> – adverse physical, chemical, and biological factors – hazards to reproduction or to the fetus ▶ ergonomic situation ▶ working hours ▶ psychological stress factors in different occupations, accident risks
Personnel	<ul style="list-style-type: none"> ▶ number of employees and duration of employment ▶ sex and age distribution ▶ level of education and professional structure ▶ number of foreign employees ▶ turnover and stability ▶ recruiting policy ▶ guidance of new workers ▶ continuous professional training
Morbidity	<ul style="list-style-type: none"> ▶ sickness absenteeism ▶ accident statistics ▶ disability pensions ▶ occupational diseases
Information on health, work ability, well-being or health behavior	<ul style="list-style-type: none"> ▶ inquiry on health status ▶ discussions on health issues ▶ personnel accounting ▶ attitude towards physical activities in the enterprise ▶ Work Ability Index ▶ Occupational Stress Questionnaire
Needed readiness	<ul style="list-style-type: none"> ▶ the need for personal protective equipment ▶ emergency / first aid readiness ▶ psychosocial support in case of sudden crisis
Other	<ul style="list-style-type: none"> ▶ risk of catastrophe ▶ the enterprise's environment protection policy ▶ possible development needs ▶ new regulations, instructions (e.g., good occupational health practice) ▶ the latest research results

A common basic program and service entities with a similar content can be planned for workplaces in the same line of business, as the unit's own clientele, or together with occupational health units operating in other municipalities (e.g. occupational health units in different hospitals). Such lines of business are, for instance, similar industrial enterprises, garages, hair salons, bakeries, construction companies, property management enterprises, schools and hospitals.

The interest in development can be

- ▶ great: the enterprise desires the support, or even the participation, of the occupational health services in its development work
- ▶ mediocre: the enterprise is interested in considering or carrying out activities suggested by the occupational health services
- ▶ minimal: the enterprise tries to minimize or even avoid contact with occupational health services

Enterprises can be divided, in addition to their interest in development, also by their development stage (change process, construction stage, downsizing, etc.) or by some other characteristic. If the enterprise is willing to use the occupational health services to support its development process, the planning of the activity is easier, when the needs of the enterprise are known. In those enterprises that do not believe they need occupational health services, the importance of occupational services in developing the enterprise's functions, in addition to the legislated obligations, is emphasized.

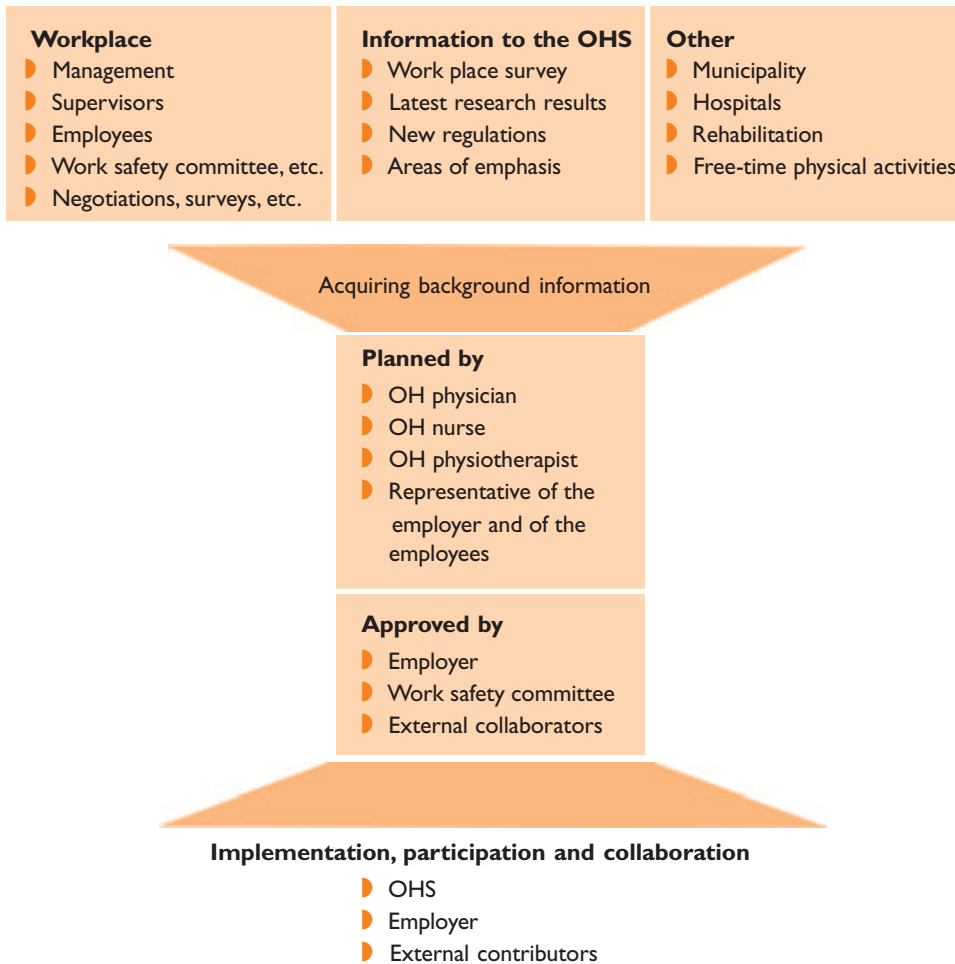
The planning team

The team planning the activity consists of a representative of the employer (the manager of the enterprise and possibly the chief of occupational safety matters), a representative of the personnel (occupational safety representative), occupational physician, occupational nurse and occupational physiotherapist (when available) (Figure 10). The occupational safety committee can also give important background information for the plan. In addition, a psychologist, an occupational hygienist and similar experts, a shop steward, support persons for those having problems with intoxicants, a co-operation committee, the enterprise's safety chief, or the representative of the municipality's rescue organization may be needed in the planning process.

As the planning may require co-operation, the planning team can be in touch with those responsible for the enterprise's recreation activities, the chief of training or development, personnel services administration, a sports club, etc. The municipal health care center may also be contacted when bigger health events are organized.

Figure 10.

The 'hour-glass' of the planning process



Action plan

Form

In Finland the regulations stipulate detailed and concrete recording of plans. The plan must also indicate how the information is disseminated, and how the information of the occupational health services is recorded and filed. These requirements are considered on Model Sheet 1 p.79 of the occupational health service plan. An action plan can also be written in free form. Each occupational health unit can use the Model Sheet as a basis, and prepare one that suits its activity best, altering the number of headings or the size of 'boxes', or attach, e.g., cost-benefit calculations.

The Model sheet can also be used as a check-list. Model Sheet 1 is divided into two sections: basic activity, and a detailed plan for the next planning period. The permanent, basic information, long-term goals, etc. are recorded in the basic activity section. The concrete plans of the following period of activity (e.g. 1 year) can be recorded in the second section (a detailed plan). In the follow-up of the activity based on the regulations the columns reserved for recording the achieved goals can be useful; a yearly summary can be drawn up quickly. An example of a result action plan sheet (Model Sheet 2 p.83) is also given at the end of this chapter. It is a good idea to concentrate on the layout and comprehensibility of the action plan, because the action plan, too, is a part of the marketing of occupational health services.

Content and coverage

The action plan covers the statutory occupational health services in Finland according to the Act on Occupational Health Services, and also optional activities, other than statutory health care and curative services. The essential statutory occupational health services are preventive activities. They are described in detail e.g. in chapters 11 Work place surveys, 14 Health examinations, 13 Information and guidance, and 19 First aid readiness and operation in a catastrophe. In Finland, the employer is entitled to reimbursement paid by the Social Insurance Institution for the costs of the occupational health services used by the employees, depending on the coverage agreed upon. Statutory preventive activity, according to the Act on Occupational Health Services, belongs to reimbursement class I. The employer is also entitled to reimbursement for the costs of curative and other health care that he has arranged (reimbursement class II). The coverage of the occupational health services is agreed upon in the contract between the enterprise and the occupational health unit.

The goals of occupational health services

The law stipulates that occupational health personnel follow good occupational health practice. Its basic principles are as follows: “The goal of occupational health services is a healthy and a safe work environment, a well-functioning work community, the prevention of work-related illnesses, and the maintenance and promotion of the employees’ ability to work”. The content of the action plan is determined by the hazards involved in the work, the physical and psychological stress, and by the individual’s susceptibility of contracting an illness. The content is also determined by the risk of accidents inherent in the work environment, and by the employee’s work ability and functional ability. These factors must be clarified thoroughly in order to plan the necessary procedures. The goals must be described so clearly that it is possible to achieve them.

Description of the enterprise

In the action plan, all the necessary information about the enterprise, a summary of the enterprise's activity, personnel, and the key areas of occupational health services are documented briefly. This short description of the enterprise and its occupational health challenges reveals whether the intended activities are appropriate in regard to the enterprise's problems. A description is necessary so that a possible external party, e.g. the authorities, can evaluate the expediency of the occupational health service based on the action plan and its realization. A description also helps new employees in an occupational health unit to get acquainted with the work places. The enterprise management is an expert on the enterprise's production and activity, and the enterprise is described briefly, for instance, in its annual report or job advertisements. Discussing the characteristics of the enterprise with the management may promote co-operation, especially if the description previous improvements in working conditions or other positive aspects are brought up. The occupational health services then add to the description the most important features of the enterprise that they know. Such features can come up in work-place surveys, in health examinations, etc.

Example 3

A description of an enterprise's occupational health needs and personnel for the action plan (Model I, basic information)

Enterprise X is a modern producer of data communication services, employing 2500 people. The enterprise's maintenance department is responsible for the planning, maintenance and repairs of the building and property. The department employs 135 people (90 men and 45 women), of whom 26 are clerical personnel.

The main health problems are caused by haste and psychosocial stress in the data communication services, by noise, old asbestos-containing materials, and physically loading jobs, such as cleaning in the maintenance department. The insufficient use of personal protective equipment is also a problem.

Measures to improve working conditions

The targets of a work place survey and the methods used are based on need analysis. Detailed plans with explanations and estimated implementation dates are documented in the action plan. It is also useful to document known

future participation in the planning of building or changes, so that the participation is also agreed on with the employer (see chapter 17 Participative planning of work places).

Occupational safety co-operation and the role of occupational health services in the occupational safety program

According to the Finnish law on occupational health, the employer must negotiate with the occupational safety committee, or when there is none, the occupational safety representative, about the way in which occupational health services are arranged. Co-operation is required also when applying for reimbursement: the statement of an occupational safety committee or an occupational safety representative, must be included in the reimbursement application. The occupational health personnel can participate in the meetings of the occupational safety committee. The occupational health personnel, together with the occupational safety organization, arrange many activities. The maintenance of the employees' work ability is a central theme of co-operation (see chapter 5 Co-operation in occupational health services).

Since 1994, employers have been stipulated by law (based on EU Directive 89/391/ETY) to draw up an occupational safety action program. The aim of the program is to promote safety and health at work places. This goal is best met by improving the working conditions systematically. The central principle of the program is the systematic evaluation of factors affecting the working conditions, and the continuous follow-up of the working conditions. The program is preventive, rather than corrective, in nature.

A work place survey conducted by the occupational health personnel is a good starting point for planning the occupational safety program. The occupational health personnel's expertise is essential in the program. The action plan of the occupational health services can be a part of the occupational safety program. The employer's and the occupational safety organization's views on the important aspects of the occupational safety program can be taken into account also in the designing of the occupational health services' action plan.

Maintenance of work ability

The action plan contains the goals, principles and content of the activities for maintaining work ability. The activities that can be documented in the action plan depend on the size of the client enterprise and the continuity of the planned activity. For example, a system set up for the promotion of work ability, the prevention of substance abuse, referral to treatment, and other permanent arrangements, can be described in the medium-term time

plan (see Chapter 12 Maintenance of work ability). In the annual plan, the projects, procedures or programs directed at maintaining the work ability of different groups, are described in such detail that the realization of the activity can be evaluated in the follow-up.

Health examinations

The type and number of health examinations is based on earlier information on the working conditions and the employees. The type of examination (pre-employment health check-up, examination for health follow-up, examinations of persons in occupations with special risks, etc.) is briefly described in the action plan. Often the reasons for the special examinations and procedures are described in more detail in the appendix of the action plan (see Chapter 14 Health examinations).

Giving information and guidance

In a medium-term plan, the needs to disseminate of information are described in order of importance, and the informing is scheduled by topic and/or target groups over the coming years. The action plan lists the themes and the goals of informing, the target groups, and the manner and timing of the information (see Chapter 13 Information and guidance). Part of the informing can be continuous, such as the informing about pre-employment health examinations, other health examinations, and the guidance of new workers. The enterprise's future plans can create a need for new information, for example on new exposure. When down-sizing of the work-force is expected, *guidance and counseling can be given to those under the threat of lay-off or unemployment* (regulation of the Ministry of Social Affairs and Health). For this type of informing, the occupational health unit may have to make special preparations, offer training, and acquire outside advice and material. The action plan must make allowance for this.

Organization development

Organization development nowadays plays an important role in several enterprises, and work atmosphere problems are a common development target requiring co-operation between occupational health services and the work place. Development targets and possible planned examinations or other procedures are documented in the action plan. Sometimes it may be useful to document the general lines of development for a work unit, and to make a separate plan for an individual target. In this way it is possible to avoid stigmatizing one work unit as problematic. The occupational health personnel will then decide on how to proceed (see Chapter 16 Occupational health support for work communities).

First aid readiness

The planning and maintenance of first aid and emergency readiness is based on awareness of the hazards at the work place. The principles are briefly mentioned in the action plan, which describes the requirements of the activity in question (see Chapter 19 First aid readiness and operation in a catastrophe).

Economic considerations

The economic possibilities determine to a great extent the employer's commitment to the occupational health services' action plan. In addition to the costs of improving in the working conditions, the employer is interested in the potential positive economic outcome. It helps the employer's decision-making, if a rough cost estimate is included in the action plan. In calculating the overall costs of occupational health services, in pricing the services, and in the cost-benefit calculations for projects, computer programs, such as the Oxenburgh productivity model, can be used.

Follow-up, evaluation and development of activity

The follow-up of the effects, i.e. the results, of occupational health service activity is often complicated. Although it is often not possible to measure directly the final effect, such as improvement of the employees' health, some of the factors that represent it can be measured, however. The measuring will be successful, if already in the planning stage of the activity the assessment of the results is considered. The results of health guidance can be measured by the change in the number of employees wearing hearing protectors, the change in blood pressure between the health examinations (group averages, or the proportion of changed results), and the changes in weight, smoking habits, etc.

The results of the Work Ability Index, Occupational Stress Questionnaire, etc. may be used in the follow-up and evaluation. The results of a project to maintain work ability can be evaluated by comparing the result with the goals of the project. Also the number of suggestions for changes in working conditions and the number of realized changes are matters to be followed-up. How the employees experience the activity can be disclosed by an inquiry, or the extent of participation (i.e. the percentage of participants among those invited). The occupational health unit eventually decides which method of follow-up is used. Client inquiries are also a part of quality improvement.

‘A follow-up automate’ can be created by reserving a column in the activity plan form for marking the achieved goals (see model sheet 1 p.79). Additional activities are added to the empty space at the end of the form.

An occupational health unit plans its own activity

The planning of the activity in an occupational health unit is a part of the co-operation and management of a unit. The unit’s resources set limits to the extent of the health services. The available resources must be known before any commitments to work places are made. Clients must not be given promises that cannot be kept due to the lack of resources. Work places or authorities do not require the occupational health unit’s own action plan, but it is a good idea to make a written plan for controlling the unit’s activity. In this way the division of work is agreed on, and it is easier for e.g. a new employee to start working as a member of the team on the basis of the plan. Also the person who is responsible for the overall activity in a health unit can be marked in model sheet 2 p.83, which can be used in the planning of the occupational health personnel’s time usage. Model 2 exemplifies the process thinking described earlier.

Resources

The development of the occupational health personnel’s professional skills is essential for the unit’s ability to handle its tasks. Since every employee cannot improve his/her skills in all the areas that are needed in the fields of preventive and curative services, it would be feasible to chart the employees’ abilities, special skills and areas of interest. On the basis of the picture obtained, the training needs of each employee and the material purchases can be planned rationally. When considering the training needs, the services required by the enterprises are also an important guideline. Adequately trained personnel and an up-to-date reference library have a major impact on the quality of the activity.

The occupational health personnel are the first to confront the new challenges and problems that arise from work life. It is recommended to reserve time in the work schedule for getting acquainted with the new challenges and for holding innovation meetings to discuss new solutions and approaches.

Example 4

Client orientation in the preparation of an action plan

The occupational health unit of a large metal industry has decided to change over to the new occupational health practice after trying out the action plan as described in this model. The unit's physician says: "We have held one meeting for our client enterprises, where we told them we were taking up a new practice in our activity. We no longer give ready action plans for the occupational safety committees, but instead, we interview the enterprises and ask for their own ideas. We started with one of the group's factories, and circulated a computer disc containing the need inquiries (see examples in this chapter) and the model sheet for of the action plan between the contact person and the occupational health services. Both the occupational health services and the factories brushed up their improvements and put their ideas on the disc. The disc has been circulated only once, but the idea seems to work well. The text for the action plan has been prepared on the basis of the discussion."

At the work place, the following needs were put on the computer disc on the basis of the example questions on page 64:

How do the changes affect the personnel policy? Will there be an increase or down-sizing of the personnel? Is the need for training on the increase? etc.

New personnel are hired at a steady pace, and new employees are trained as the work requires.

What are the needs to improve the work environment?

THE FOUNDRY: Rearranging the entire production process, removal of dust from the roulette moulding, improving the ventilation in the mould core preparation (to remove isocyanates), the ventilation and working habits in the oven repair (to eliminate quartz dust), working habits in the finishing work (to decrease vibration, static work, noise, paced work).

THE PUMP FACTORY: The working habits and protective measures in painting work (epoxy paints), improving the biological state of the testing pools, developing the pools, increasing dust removal in grinding work (static work, paced work), increasing the removal of vapours in welding work, and the development of work methods (to eliminate static work, noise).

AFTER SALES: Increasing awareness of the occupational hazards in mounting work (through training), the need to develop painting work, awareness of the safety hazards of the chemicals used (through training).

How can the contents of work be improved?

More self-steering and versatile skills for the workers.

How can the work organization be improved?

See above.

What are the most urgent needs?

1) working conditions, 2) versatility, 3) self-steering.

What kind of time schedule, cost estimate and division of responsibilities can be agreed on by the enterprise and the occupational health services?

Theme year 97: Correct ways of lifting and of preventing eye injuries!

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Model sheet I

Model sheet of the OHS plan for an enterprise

dated on ___/___/___

Enterprice	Name
	Address
	Phone
	Fax (email)

Branch (number)
Accounting period

Contact person	Name
	Address
	Phone
	Fax (email)

Manager	Name
	Address
	Phone
	Fax (email)

Accident insurance company	Name
	Address
	Phone
	Fax (email)

Pensions insurance company	Name
	Address
	Phone
	Fax (email)

Occupational health service station

Name	Phone
Address	Fax (email)
Opening hours	

Occupational health personnel	Physician
	Nurse
	Physiotherapist
	Psychologist
	Receptionist

Patient representative	Name
	Address
	Phone
	Fax (email)

The coverage of OH services

- Preventive care Preventive care and maintenance of work capacity
- Curative care No (description/list of recommended suppliers of services)
- Yes includes the following examinations

Collaboration in work safety questions

- Safety committee Yes No
- Safety manager Yes No
- Workers' safety representative Yes No

Occupational health personnel participate in the meetings of the safety committee yes

Occupational health personnel contributes to the **occupational safety program** of the enterprise yes

- Follow-up **The implementation of the OHS plan is followed**
- ▶ together with the safety committee yes
 - ▶ yearly, in connection with making the plan for the next year yes
 - ▶ in connection with making the plan for the next year yes

- Changes to the plan
- ▶ yearly, during a 3–5 -year planning period yes
 - ▶ whenever new needs come up yes
 - ▶ at the beginning of each new planning period yes

Handling drug and alcohol abuse in the enterprise

- ▶ A policy exists No policy
- Contact persons

A description of the enterprise's OHS needs and of the personnel

(Informations 'in a nutshell')

Goals of OHS for the planning period

Target Goals

Detailed action plan	
For the next planning period ___ / ___ - ___ / ___	
Work-place surveys (walk-throughs)	
Target, purpose (time from the previous one)	Realization
Health examinations	
Purpose, contents, estimated number of persons to be examined, departments, etc.	Realization
Activities for the maintenance of work capacity	
Planned activities (target, goals, contents)	Realization
System for the follow-up of sick leaves (description)	
Information and guidance	
Topics of information, target groups, timing, etc.	Realization

Promotion of psychosocial well-being

Target work units, purpose, goal, methods

Realization

Accident prevention

Plans for preventing accidents at work
(and during commuting to/ from the work place)

Realization

Maintenance of first-aid readiness in emergency situations

Assessment of the level of first aid needed

Realization

First-aid training, preparedness for environmental catastrophes

Action plan

Discussed in the occupational safety committee

Date

Comments

Approval of the action plan

Signature of the manager of the enterprise

Date

Signature of the representative of the OHS

Model sheet 2

The result action plan of occupational health services – an example

Key result areas	Goals	Key procedures	Time schedule	Person in charge
Recognition and prevention of the health hazards of the work and the work environment	Continuous co-operation with the line organization, personnel administration, and the occupational safety organization	Work place surveys/ field work and consultation <ul style="list-style-type: none"> ▶ occupational safety committee meetings ▶ co-operation meetings when necessary ▶ co-operation with people in charge of planning, and participation in the planning of the work environment, work methods and work equipment 		
	Up-to-date work place surveys	Work place surveys at new and renovated work places, and checking old work place survey results <ul style="list-style-type: none"> ▶ ergonomic charting and description of work tasks on the basis of work place surveys 		
	Enough information on the effects of work and working conditions on health	Follow-up on sickness absences, and occupational accidents and diseases		
	Emergency readiness, 5 % of the personnel trained	<ul style="list-style-type: none"> ▶ general and specialized courses ▶ updating the computer files on persons trained in first aid readiness 		
		First aid equipment <ul style="list-style-type: none"> ▶ guidance for persons in charge of first aid cabinets and updating the name list ▶ keeping the first aid equipment up-to-date according to the recommendations, and the purchases the responsibility of the persons in charge of the cabinets 		
	Sufficient knowledge of occupational hygiene and ergonomics	<ul style="list-style-type: none"> ▶ continuous co-operation with all those participating in the planning of work and work methods ▶ training of e.g. those who train new workers 		
	Knowledge of human relations	Psycho-social strain, human relations <ul style="list-style-type: none"> ▶ co-operation with people in charge of training ▶ improvement of work ability and work climate, and inquiries to measure them 		

Goals	Key procedures	Time schedule	Person in charge
Support for people in situations of change	Individual and group discussions, training events, inquiries, etc.		
Evaluation of the employees' health resources	<p>Pre-employment health examinations</p> <p>Evaluation of work ability when necessary, after a long period of illness</p> <p>Follow-up of disability and participation in the transfer process</p>		
Information on the maintenance of good health for those going abroad on a work assignment	<p>A health examination (following special quality guidelines) for those going abroad on assignments and those returning</p> <p>Informing in connection with a health examination</p>		
Prevention of contagious diseases	Vaccinations, etc. (according to separate quality instructions) for those going abroad on work assignments		
Health promotion	Health examinations by departments and occupations		
Prevention of work-related diseases and early detection of symptoms	<p>Statutory health examinations</p> <ul style="list-style-type: none"> ▶ in noisy work hearing tests ▶ yearly examinations for those exposed to solvents ▶ examinations for shift workers 	every 3 years yearly	
Prevention of work disability	Early detection of disability, and plans for rehabilitation		
Promotion of physical fitness	<p>Fitness events and campaigns</p> <ul style="list-style-type: none"> ▶ walking tests, guidance in relaxation and break exercises ▶ guidance and follow-up of fitness activities 		
Sufficient curative services	<p>Occupational health nurse's reception hours</p> <p>Doctors' reception, by appointment</p> <p>Follow-up of the activity plan</p> <p>Economic impact of the OHS activity</p> <p>The quality system of occupational health services</p>		

Key result areas	Goals	Key procedures	Time schedule	Person in charge
	<p>Goals are attained</p> <p>Promotion of the occupational health personnel's professional skills</p> <p>Essential information to clients on occupational health services</p>	<p>Goal-oriented superior-employee discussions</p> <p>Further training in:</p> <ul style="list-style-type: none"> ▶ work atmosphere, human relations, coping with changes ▶ travel medicine/exotic diseases ▶ occupational hygiene ▶ ergonomics ▶ basic professional skills ▶ ADP training ▶ leadership training <p>Making occupational health services familiar to everyone</p> <ul style="list-style-type: none"> ▶ 'Open house' days 		

Work-place surveys

Riitta Riala

Introduction

A work-place survey brings to light information about a work place and the work environment, and its impact on the employees' health. A work-place survey serves as the basis for the activities of the occupational health unit. The survey reveals what the work and the work environment is like, and what is the equipment used by the occupational groups.

The basis for a work-place survey is the previous information about the enterprise's activity and a critical, yearly assessment of the surveys and their effects. The assessment shows whether the information is up-to-date and whether the survey practice needs to be changed. A new perspective is possible by changing the survey method or by combining information from different sources. A work-place survey must be sufficiently comprehensive, and the survey report comprehensible and easy to read. Work places and work methods are changing constantly; this requires rapid reactions, and the dissemination of information to occupational health units, as well as other personnel groups. The results are reported and suggestions made in co-operation with the work place. Work-place surveys and information on exposure can also be used in a wider context, for example, when looking at a particular branch of industry.

The persons responsible for designing the work place or the work methods should be encouraged to participate in work-place surveys, or at least to make use of the information presented in the survey reports. A work-place survey is a joint effort: the work unit, the work environment, the employees' work ability and their work tasks are assessed and observed as a co-operative project. Whether the reason for the survey is a suspected or known hazard or stress factor, or an individual employee's health problem, the occupational health personnel examine both the environment and the individual. Also in the planning of procedures, attention is focused both on working conditions and the employee (Table 2). The goal is always the maintenance of the employee's health, work ability and functional capacity. Co-operation networks and interaction skills help the occupational health personnel to reach the best possible result. The information gained from

Table 2.

The importance of a work-place survey as a part of occupational health services

Object	Observations	Measures
Work environment Work content Work unit	Hazards Strain Functioning	Work-place survey → Risks assessment → Repair and development activities
Individual/ employee	State of health Functional capacity	Health examination Assessment of work ability Treatment, rehabilitation
		→ Checking the importance of working conditions by a work-place survey (when needed)

work-place surveys can also be used in occupational safety programs and vice versa. A work-place survey is not an end in itself, it is a means to implement occupational health services in each enterprise so that their actual needs can be met.

Assessment of needs and requirements

Legislation

A work-place survey needs to be a recurrent activity which leads to recommendations to rectify observed defects and shortcomings, as well as to further surveys and procedures. It also involves a continuous follow-up of the suggested measures.

Work-place surveys are a mandatory part of occupational health services. The surveys focus on:

- ▶ health hazards and risks resulting from the work and working conditions and the psychosocial work environment
- ▶ the health effects of the hazards
- ▶ the working conditions in different branches of activity, the materials, substances and equipment used in the work, the work site, and working methods, and changes in these.

According to the Finnish law, a work-place survey includes, e.g. assessment of

- ▶ the overall occupational hygienic conditions of the work place
- ▶ the health hazards and risks inherent in the work, and the physical as well as psychosocial work environment
- ▶ the need for personal protective equipment
- ▶ the emergency/first-aid readiness
- ▶ the risk for an accident or a catastrophe.

The occupational safety program must be based on the information on recognized occupational hazards and their magnitude, as indicated in a work-place survey. Information from the work-place survey is also needed for assessing the chemical hazards, for planning noise control, and for assessing the risks caused by biological factors.

The goals of work-place surveys

The main goal of work-place surveys is to point out factors that either threaten or promote the employee's health and work ability. Other goals are:

- ▶ to find and define the key areas of activity in occupational health and safety
- ▶ to give information and suggestions for correcting defects discovered in the survey
- ▶ to offer support in the continuous improvement and planning of work places
- ▶ to function as a source of information on the maintenance of work ability
- ▶ to investigate the working conditions of professional groups whose work presents a threat to health and work ability.

A work-place survey helps the occupational health personnel to plan the OHS activities, define the goals of their work, and direct their services and follow up their activity. According to good occupational health practice, informing, guidance, health examinations, the promotion of work ability, ensuring first-aid readiness, etc. must be based on the work-place survey. It is also crucial to know about the working conditions of employees when assessing their work ability, their need for sick leave, or the relation between work and an illness. A thorough work-place survey including suggestions for improvement gives the enterprise a reliable picture of the expertise of the occupational health unit and its personnel.

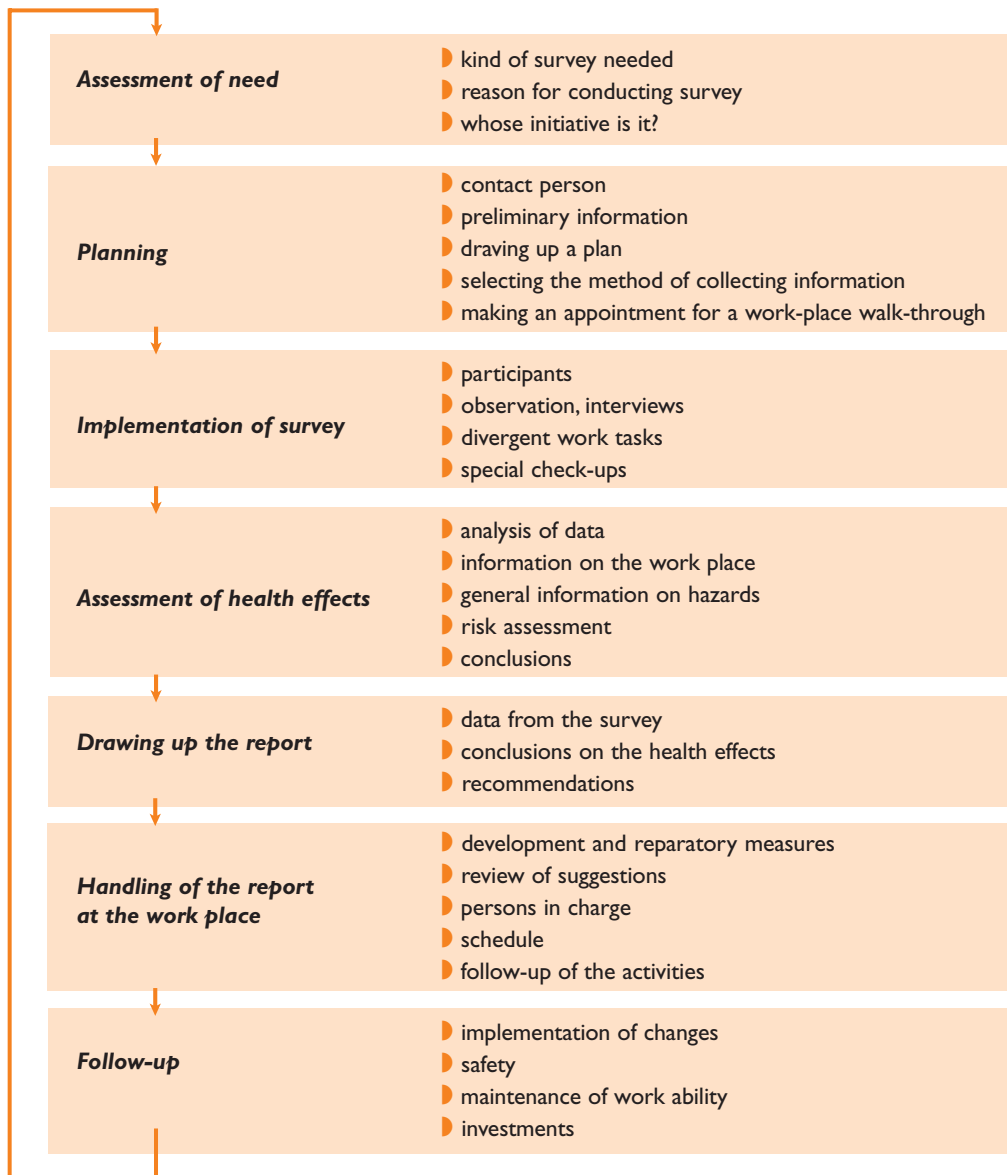
Carrying out a work-place survey

The stages of a work-place survey

The course of a work-place survey is shown in Figure 11.

Figure 11.

The phases of a work-place survey



Need assessment

Work-place surveys must be carried out recurrently, and they are especially important when working conditions change. The employer is stipulated by law to conduct work-place surveys, and the occupational health personnel carry out the surveys in accordance with the agreement made with the employer. Work-place surveys can also be conducted by the enterprise's representatives, the occupational health personnel providing their expertise. The management's commitment to the survey activity helps guarantee that the changes proposed in the survey will be implemented.

When an occupational health unit begins its operation in an enterprise, a basic survey, which is directed at all employee groups and all tasks, is conducted. Once the activity is established, focused work-place surveys can be conducted. The targets of these surveys are: changing working conditions, the employees' complaints, work units in which some employees have symptoms, or where an occupational disease is suspected, planned campaigns, and the planning of new procedures, working methods and work places. In a focused work-place survey it is possible to concentrate on ergonomic aspects, occupational hygiene, the use of protective equipment, accident risks, first aid/emergency readiness, etc. According to the needs that may arise at a work place, it is suggested to repeat a basic survey often enough, so that the data on the work environment is kept up to date.

Work-place surveys can be used as an information source when planning activities to maintain work ability. In a work-place survey, the occupational health unit gets information about the employees' opinions and symptoms. The occupational health personnel can also discuss casually the changes that an employee him/herself can set out to do, and, for instance, begin health counselling. Work-place surveys can also be used in the planning of rehabilitation for various professional groups, and in the trial work periods for employees with lowered work ability. The information on ergonomics and ideas for improvements that have accumulated in a work-place survey can be utilized in neck and back 'schools'. In the rehabilitation offered in a special rehabilitation center, the problems and hazards encountered in the work can be studied by watching a videotape of the work activity.

Planning

When a work-place survey is being planned, background information about the work place is gathered, or the validity of earlier information is checked from the enterprise's contact person. A good idea is to visit a new client, and then draw up an agreement on a work-place survey and other occupational health services. Practical arrangements are made with the contact person.

The background information includes, the following matters:

- ▶ the name of the enterprise, the branch of industry
- ▶ a description of the services
- ▶ occupational safety organization
- ▶ number of employees, their distribution by age, sex and profession
- ▶ lunching facilities
- ▶ working hour arrangements and system of payment
- ▶ prior surveys and measurements
- ▶ occupational safety inspection records
- ▶ statistics on occupational accidents, and diseases, and sickness absenteeism
- ▶ work processes and work procedures used
- ▶ employees with lowered work ability
- ▶ chemicals used, and safety data sheets
- ▶ action plan for occupational safety
- ▶ use of quality systems
- ▶ the maintenance and promotion of work ability
- ▶ first aid/emergency readiness.

Information on specific occupations and areas of economic activity is also available from national statistics, studies, professional literature and data-bases.

A plan or a check-list should be prepared for a work-place survey. It should include, at least, the goal of the survey, the targets and why they were chosen, and the methods and procedures used. Co-operation and exchanging information with other occupational health units is useful in developing the unit's own professional skills and in planning the work. Also the way of collecting the information is decided in the plan. Forms have been produced for different types of work places, e.g. construction sites, offices and farms (Table 3 p.94). Simple forms with open-ended questions are suitable for work-place surveys where different professional groups at the work-place evaluate the hazards of their work (model sheet, p.104).

Carrying out a work-place survey

The following people participate in a general survey visit: from the part of the enterprise, the employer and representatives of the employees, i.e. usually the occupational safety manager and the occupational safety representative, from the part of the occupational health services, the occupational health physician, the occupational health nurse, and when necessary, the occupational physiotherapist. In special surveys, the group is complemented by, for example, an industrial hygienist or psychologist. Appropriate protective clothing and other protective equipment is used on a work-place

walk-through. The walk-through is conducted in such a manner that no-one jeopardizes his/her own safety or that of others.

Partial surveys conducted during a work-place walk-through are check-ups on physical, chemical and biological hazard factors, on physical and psychological strain, and the charting of accident risks and of first-aid/emergency readiness. Depending on the situation, the measurements can be conducted with a noise meter, a thermometer, smoke tubes and indicator tubes. One of the best aids in ergonomic surveys or in planning is videotaping or taking photographs.

Only a part of the work situation is seen during a work-place walk-through. Information about the essential stages, equipment and hazard factors is gained by interviewing individual employees and employee groups. In certain types of work, such as maintenance and service work, the duties can vary a great deal. In such cases, a group interview is often the most effective way of getting an overall picture of the work and its hazards. In some professions, most of the working time can be, for example, control room work, but it can also include occasional repair and maintenance tasks and dangerous emergency tasks. Short phases that deviate from the routine may cause the most significant exposure. There may be considerable heat strain in maintenance and emergency work, it can be physically extremely strenuous, or demand good physical fitness because, for example, heavy protective equipment must be worn.

The occupational health personnel should also be aware of the hazards of exceptional work tasks, and they should try to conduct work-place surveys also in this kind of work. Often the tasks come unexpectedly, and it may be difficult also for the occupational health personnel to get information about them. If it is not possible to arrange a work-place survey for dangerous emergency work, it might be advisable to visit the work unit later, and interview the representatives of the work place about the course of the work, the possible exposure, and the possibility of conducting health examinations and biological monitoring.

Health-based risk assessment

Health-based risk assessment is an estimate of the effect of the factors observed during a work-place survey on the employees' health. Basic information, as well as the information gained from a work-place walk-through and special check-ups, and the occupational health personnel's own medical skills and knowledge are used in the assessment. The goal of the assessment is to reveal the significance of the health risks and hazards in the work, by occupation or task, and to prioritize the elimination of the risks

and hazards. In the assessment, information on the conditions of the work place is combined with the information on the health significance of the risks and hazards.

The information collected is analyzed after the work-place walk-through. The effects of the chemicals on health are checked in the material safety data sheets, and the work methods and the employees' working habits are assessed. Inconvenient repetitive work phases, exceptional, short work phases (e.g. repair and maintenance tasks), the duration of exposure, the adequacy of the protective equipment, and the structure of the personnel are also considered. The occupational physician, nurse and physiotherapist and, if necessary, other experts, participate in the risk assessment of the work.

At least the following aspects must be presented in the conclusions of the report:

- ▶ work causing an elevated risk of illness
- ▶ work, in which there is good reason to suspect health hazards
- ▶ tasks that impose special requirements on health
- ▶ work involving exceptional risk of accident
- ▶ hazards that can be eliminated through informing, guidance and health education
- ▶ prioritization of repair and improvement suggestions.

Based on the conclusions of the report, the occupational safety program of the work place and the action plan of the occupational health services are then specified and elaborated. For instance, attention is focused on health examinations, or on giving information and guidance on working habits and protective equipment, and on training. Risk assessment is nowadays the foundation of all occupational safety and health activity at work places. Work-place surveys are a part of the risk assessment, and the occupational health personnel participate in it as experts. The risks can be classified according to the gravity of the consequences and their prevalence (Table 3 p. 94). In addition to the prevalence and intensity of a risk, also the range of the risk phenomenon must be considered.

As the risk increases, measures must be taken to make sure that safety will not be jeopardized. Decreasing an insignificant risk does not improve the safety level significantly. But when the risk grows, the conditions that cause it must be scrutinized. When the risk is tolerable, risk reduction measures are taken, if their cost-benefit ratio is considered sufficient. The risk can also be so great that working cannot be started or continued until the risk has been lowered.

Table 3.

Model of risk classification

Ref.: BS 8800:1996. Guide to occupational health and safety management systems. BSI standards publication, British Standards Institution, London.

Occurrence	Consequences		
	Slightly hazardous	Hazardous	Very hazardous
Very unlikely	Insignificant risk	Tolerable risk	Moderate risk
Unlikely	Tolerable risk	Moderate risk	Significant risk
Probable	Moderate risk	Significant risk	Intolerable risk

Writing a report

A written report must always be made of a work-place survey. It must be comprehensible and easy to read also for the employees. The feedback that is given to the enterprise must be brief enough, because the enterprise is not interested in a description of its line of work. The occupational health unit can draw up a more specific memo for its own use. The report must not be simply a list of matters that need to be corrected. It is useful to let the work place know also what things are good. A figure attached to the report may be a good way of illustrating the most important matters.

The suggestions for improvements must be as clear and specific as possible. General statements, such as “the ventilation must be improved”, are not sufficient. It is good to include information in the report on who could carry out a closer investigation, e.g. an ergonomic assessment or hygienic measurements, or where further information can be obtained, how much a procedure costs, etc.

The report contains the following sections:

- ▶ the object of the survey, the conductors, and the date
- ▶ the goal and purpose of the survey
- ▶ the methods used in the survey
- ▶ positive aspects and solutions that work well
- ▶ central results in order of importance
- ▶ conclusions on the health effects of the working conditions
- ▶ practical suggestions for procedures (according to the occupational health personnel’s own expertise) in order of importance.

The report is forwarded, when necessary, for instance in summary form, to various co-operation partners:

- ▶ to the management of the unit, the supervisor, and personnel administration
- ▶ to persons in charge of planning processes and work sites, and of building and repair operations
- ▶ to persons in charge of making purchases.

Review of the Report

In order for the work-place survey to be useful to the work place, the report should be gone through together by everyone at the work place or, for example, in an occupational safety committee meeting. This will ensure that the report corresponds to the actual situation at the work place, and that matters are understood correctly by both sides. Also the various options regarding the technical solutions and their health effects can be discussed together. A schedule for the implementation of the changes is set in the meeting, and it is also decided who takes care of the changes and how they are followed up. After a set period of time, the results can be checked to see what has been accomplished, or why some recommendations have not been carried out. Plans for the future can also be made. Feedback events on surveys making use of the videotaping of work have often been successful, and led to improvements, such as the purchasing work equipment, better housekeeping practices, and changes in working methods.

Methods of conducting a work-place survey

General methods

Interview

An interview can be conducted either separately, or at the same time as the observation and the videotaping of the work. The interview is used to elaborate and specify the preliminary information and to obtain additional information about the work process, target of work, work tasks, working methods and the end product. Additionally, the strain experienced by an employee can be examined. In order to obtain comprehensive basic information, representatives of the line management, superiors, the occupational safety manager and the occupational safety representative, and especially the employees must be interviewed.

The interview can be either free in form or structured, in which case the goal is the interaction between the employer, the employee and the interviewer. The main purpose is to bring out the health risks, loading factors and the possibilities to make improvements. It is difficult for the person

conducting the work-place survey to discover these things by him/herself during a short walk-through. Before the interview, the interviewer should be familiar with the working conditions in order to be able to ask essential questions. It is necessary to acquaint oneself with the occupational safety problems of the specific field and to have comprehensive basic information.

At the beginning of the interview, the purpose and methods of the work-place survey must be explained to the employee in order to gain his/her trust. The interview should be conducted in a quiet, peaceful setting. Only after this interview, can the discussion and observation be continued at the work site, because the atmosphere of trust created during the interview affects both the interviewer and the interviewed. The direction of the conversation depends on the interviewer's questions and comments, and it should be remembered that suggestive questions often lead to biased answers and incorrect information.

Observation

The most common survey method is a combination of an interview and observation. An occupational health professional observes the employee's work at his/her work site and observes how the employee works. The employee reports matters which he/she considers important and demonstrates the work phases that he/she regards as the most strenuous. Also matters which the employee perceives as difficult, problematic or bad for health, are discussed.

The most common way of pin-pointing health hazards at work is visual observation of the work and the work environment, and assessing the working conditions, equipment and work space. In a well-conducted observation, the findings are recorded meticulously. During the observation, the working conditions and the working should be as normal as possible. Before the observation, it is important to interview the employee about the background information and the production process in order to reveal the major loading factors.

Usually, an assessment based on observation and interview, including a discussion of improvement needs, is a sufficient basis for corrective measures. If some aspect of the work turns out to be difficult to assess, or requires more detailed investigation, the occupational health services can use one of the systematic observation methods of work.

Videotapes and photographs

A camera is easy to use in a work-place survey. Photographs show clearly, for example, poor working arrangements, lack of order at the work place, and ergonomically poor work sites, and in the report, photographs illustrate the situation well. Videotaping has proven to be a useful tool for occupational health services. It has been used for guidance, training, assessing physical loading factors of work, as well as for projects to promote work ability, and in rehabilitation.

A video tape of an employee's or a team's work activity gives a good picture of the work environment and the individual differences in working habits. The employees themselves can see the problems in their work that need correcting, and they will become motivated to improve their working habits. The videotape can be viewed at different speeds for both analysis and teaching purposes. In this way work situations that change rapidly can be examined carefully. Information on the work place can be easily recorded on videotape.

Video-assessment of the loading of the work is not, however, substitute for the observation of work conducted at the work place. Obtaining an overall view of the work requires the observer to spend time and move around in the work space. A video-recording is often only a narrow sample of the work tasks. In addition, it is difficult to see the work equipment or machines on a TV screen or to observe accurately, for example, lifting tasks. The success of the changes made at work places and their health effects can be followed in practice by videotaping.

Systematic methods of work-place surveys

Different check-lists, forms or methods can be used in a work-place walk-through. Examples of such methods are: 'The analysis of strain and hazards, "KUVA"', or the systematic work-place survey, meant for construction work (Example 1 p. 98). 'The analysis of loading and hazards' is a simple, comprehensive and flexible method that is used in recognizing and assessing the loading and hazards of work. The variables are chemical, physical, biological and accident hazards, and physical and emotional strain. Their occurrence is assessed on a scale. The information is collected from the employees, the supervisors, and experts, and the results are discussed together in a group.

Example 1

Summary of a work-place survey on strain and hazard analysis, "KUVA", (scale 0–2: 0 = no exposure, 1 = some exposure, 2 = much exposure)

Object: a construction company

Date: 23.4.1996, carpenters, interior work

	Assessment by the employees		Assessment by the occupational health personnel	
	Assessment		Assessment	
1. Chemical hazards	1.5	xxxxxxxxxx	1.0	xxxxxx
2. Physical hazards	1.5	xxxxxxxxxx	1.5	xxxxxxxxxx
3. Physical strain	2.0	xxxxxxxxxxxxxx	2.0	xxxxxxxxxxxxxx
4. Emotional strain	0.5	xxx	1.0	xxx
5. Risks of accident	0.5	xxx	1.0	xxxxxx

Comments by the employees: plates delivered to the wrong place. Haste and work pressure because of the move. More vacuums needed at the work site. According to the assessment of the occupational health personnel, the haste at work creates emotional strain. Only little exposure to chemicals, i.e. the dust from the plaster plates.

Special surveys

Assessment of the physical strain of work

The occupational health personnel usually assess the physical loading and strain due to work by observing the work process and interviewing the employee. There are actually very few methods that can be applied to working conditions and that are reliable and easy to use. As the accuracy and reliability of the methods increase, they become more complicated and can be applied to a narrow area only. For example, the strain on the respiratory, circulatory and locomotor systems has to be assessed separately for each. In order to obtain an accurate individual result, also the characteristics of the employee should be considered. This requires measurements of functional capacity which can be reliably conducted only in a laboratory. In the assessment of the physical loading of work, the general information obtained from the work-place surveys is usually sufficient. Thus, the survey methods should include separate items which measure the physical strain of work. Table 4 p. 104 gives a list of the most common assessment methods of physical strain.

The targets of an ergonomic survey are the organizing of work and working methods, machines, installations and work equipment, work spaces and work stations, work operations and breaks.

The features of work and loading factors are studied by observing the work informally, by interviewing the employees, or conducting measurements. Comparison of the results to the recommendations gives a picture of the level of the ergonomics at the work place. The goal of the survey determines whether self-evaluation is enough, or whether special procedures are to be used in the collection of information.

Survey of mental stress

If a work-place survey reveals psychological or mental stress connected with some tasks or in some occupational groups, a follow-up survey can be recommended. Stress is generated by a work environment or work tasks that are in conflict with a person's natural way of functioning. The reason for the stress may have been created already in the planning of the work site or the work contents, or it may have built up gradually along with changes at the work place.

With the help of the Occupational Stress Questionnaire (see Table 4 p. 104), a reliable picture of the stress caused by the work is obtained, if a person who is experienced in using the Questionnaire, assesses the working conditions. 12 stress factors have been defined in the Questionnaire, and they deal with qualitative and quantitative overloading and underloading of work. The Questionnaire is based on methods of work description and on studies of work-related stress. Based on these, a description is given of work situations that are a likely source of stress to anyone in the situation in question. The instructions to the Questionnaire highlight, e.g., the responsibility of the work, human relations factors, the amount of work, handling of information, and autonomy of the work. The method is easy to use, and is especially suited for industrial work. The Questionnaire can also be used for those doing the same type of work as a basis for discussion in the assessment of stress.

The Occupational Stress Questionnaire is useful when an employee's level of stress is investigated in relation to the stress factors of his/her work. Stress is often the result of a conflict between an employee's abilities and the demands of the environment. A questionnaire is also the most economical option when several work tasks and occupational groups are studied. In order to make sure that a questionnaire or an observation method is successful, it is of crucial importance to ensure that the management is committed to the survey and to the needs for the corrective measures that

have come up in the survey. The active input of the occupational health services is needed in the evaluation of the significance of the results and in the planning of procedures, to promote work ability or the planning of work. The same methods can be applied to develop a work unit or group. The stress arising from social relationships and the management of stress are discussed in Chapter 16 Occupational health support for work communities.

Occupational hygienic surveys

Work-place surveys, in which information on the work place is combined with the expertise of the occupational health services, are helpful when the employer assesses the employees' exposure to chemical, physical and biological factors. The employer must be aware of the occupational hygienic hazards, the number of exposed employees, and the level of exposure. The occupational health personnel can conduct the occupational hygienic surveys, or, instead, an industrial hygienist can conduct the survey or the measurements.

Basic information on the chemicals used at the work place are needed for a hygienic survey, namely, on the amounts and processes used, on their harmful reaction products, on work methods, on machines and equipment, on occupational safety inspections, on biological exposure measurements and occupational diseases. Information on the chemicals is found in the material safety data sheets. In addition, the occupational health unit must have an updated alphabetical list of the safety data sheets prepared by the employer.

By interviewing the employees and by observing the work, it is possible to collect up-to-date information on the following matters at the work place:

- ▶ the use of chemicals and the emission of impurities into the air
- ▶ machines and equipment which are the source of noise, radiation and vibration
- ▶ exposure to biological agents
- ▶ employees who are exposed and the routes of exposure (skin, respiratory tract)
- ▶ carcinogenic substances and special groups of employees (pregnant women, etc.)
- ▶ working habits and the personal hygiene of the employees
- ▶ the intensity and duration of exposure, and its temporal variation of exposure
- ▶ lighting conditions
- ▶ ventilation and other forms of technical prevention
- ▶ the availability, use and condition of personal protective equipment
- ▶ the current production situation and the effect of changes in production on exposure
- ▶ maintenance, repair and malfunctions of the production process.

The person conducting the work-place survey assesses the risk of hazard to the employee by taking into account the properties of the chemicals, the work process, working methods, technical solutions and protective equipment. The assessment of exposure can be based on, for instance, the results of earlier measurements at the work place, or on surveys done in the same field (literature, information services). In connection with the work-place surveys, the occupational health personnel can also give guidance on how to use the safety data sheets.

In the survey, attention must be paid not only to the quality of the air, but also to exposure through the skin. In addition to the most common hazardous exposure, i.e. solvents, dusts and metals, attention should be focused especially on substances that affect reproductive health, and to sensitizing and carcinogenic substances. Work places that use carcinogenic substances must keep a record of employees who are exposed, and of the substances and the amounts used. According to the directions on the special maternity leave, pregnant women must be transferred to work not involving exposure, if, for instance, the exposure to organic solvents exceeds 1/10 of the occupational exposure limit value. The factors that entitle an employee to the special maternity leave are mostly chemicals (e.g. solvents, lead and carbon monoxide). The factors also include biological agents and ionizing radiation.

If an employee's exposure to noise exceeds 85 dB (or impulse noise 140 dB), the employer must undertake a noise prevention program, grounded on technical solutions and work arrangements. Guidance on noise, its hazards and how to prevent them, and on hearing protectors and their use must be given to those who work in a noisy environment.

If the assessment of the hazards is otherwise difficult, hygienic measurements should be conducted and biological samples taken. It depends on the resources of the occupational health services, to what extent the occupational health personnel conduct the measurements themselves, and when additional experts are needed. Many occupational health units are able to measure the noise levels, the worker's noise exposure, the temperature, the lighting, and some of the impurities in the air. All those who carry out measurements must know how to use the measuring equipment correctly, and know their applicability and possible sources of error. A report must be written of the measurement, together with an evaluation of the results. When necessary, the occupational health personnel recommend more extensive measurements performed by an expert, in order to find out the extent of the hazard.

When the exposure is significant, the employer must plan and implement measures to decrease the exposure. The exposure can be decreased, e.g., by substituting the chemicals with safer ones, or by altering the work methods used, by encapsulating sources of emission, by local exhausts, by partitioning walls, by general ventilation, by break room arrangements, or by personal protective equipment. The occupational health personnel participate in the planning of these protective measures. The assessment of the industrial hygienic hazards and the solutions to them are team work, where, in addition to the representatives of the employer, the occupational safety and occupational health services, also the co-operation of other experts is needed, in order to get the best possible technical solutions to the problems.

Follow-up, assessment and development of action

Typical features of a good work-place survey are:

- ▶ well defined goals
- ▶ sufficient coverage, so that the survey meets to the goals set for it; physical as well as mental strain are taken into account
- ▶ setting of goals, conducting work-place surveys and planning further measures together with the representatives of the enterprise
- ▶ commitment of the enterprise management to the activities of the occupational health service unit and to the work-place surveys
- ▶ the use of systematic survey methods and data processing methods
- ▶ assessment of the impact of working conditions on health, and the prioritization of problems
- ▶ a comprehensible and easy-to-read final report
- ▶ unambiguous, practical suggestions for improvements
- ▶ follow-up of the level of implemented recommendation procedures
- ▶ documentation of implemented changes
- ▶ revision of the occupational health service action plan on the basis of the survey.

The following points should also be emphasized in a work-place survey:

- ▶ systematic use of the surveys to improve the health and safety of the employees, and the work environment
- ▶ focusing the surveys on factors that affect work ability
- ▶ special surveys of different risk factors and the assessment of their health effects
- ▶ co-operation in risk control between various interest groups at the work place.

Example 2

Factors that are followed-up	
Factor	Methods of follow-up
The number of work-place survey reports	<ul style="list-style-type: none"> ▶ Statistics
The quality of work-place survey reports	<ul style="list-style-type: none"> ▶ Self-evaluations or peer evaluations ▶ Customer inquiries
Suggested improvements	<ul style="list-style-type: none"> ▶ Conclusions
Applying the information to develop occupational health services	<ul style="list-style-type: none"> ▶ Concentrated collection of information, mastery of information ▶ Conclusions ▶ Changes in the OHS action plan
Changes at the work place	<p>Follow-up visits, inquiries</p> <ul style="list-style-type: none"> ▶ The extent to which the recommendations are carried out ▶ Changes in the employees' health (sickness absences, work-related illnesses, occupational diseases, accidents) ▶ Investments (changes in work spaces, ventilation, machinery and processes) ▶ Changes in work and work arrangements (personal protectors, the safe use of chemicals) ▶ Changes in attitude toward occupational health and safety, and OHS ▶ More information on health, safety, etc.
Customer satisfaction	<ul style="list-style-type: none"> ▶ Customer inquiries

Model sheet

Assessment of working conditions				
Object of work / job title		Work place		Date ___/___
Description of work ▶ work tasks	Risks, hazards and positive features of the work	Health impact, effects of hazards ▶ description ▶ probability/prevalence	Need for change ▶ target of change ▶ how to change it	The person in charge of the implementation/follow-up

Table 4.

Work-place survey methods based on observation, interviews and self-evaluation

Method	Purpose	Advantages	Disadvantages	Additional information
General				
A check-list of preliminary information from each work place	A general picture of the enterprise, personnel and production	Practical basic information		
KUVA	A general picture of the work, an assessment of the current situation of the work, the management, employee and occupational safety	Easy to learn	A rough method	Mattila M: The work-place survey method (In Finnish). Tampere Technical University, Faculty of Safety Technology, Tampere 1995.
AET	A general picture of the work, includes 216 characteristics of work from different fields	Extensive, systematic, a comparison data base exists	Long training for users, laborious	Rohmert W, Landau K: AET – the method of description for a work profile (in Finnish). Finnish Institute of Occupational Health, Helsinki 1981.
ELMERI	Observation of the operation safety and safety of the work environment in industry	Easy and quick to use, reliable, gives an index number describing the level of safety		Laitinen H, Rasa P-L, Räsänen T, Lankinen T (ed.): ELMERI A Workplace Safety and Health Observation Method. FIOH. Helsinki 2000. 16 p. http://www.occuphealth.fi/e/dept/t/wp2000/Elmeri-method.pdf

Method	Purpose	Advantages	Disadvantages	Additional information
Örebro questionnaire	Charting of indoor air factors, the work environment, symptoms, work-related stress	Easy to use, gives a good picture of the situation	A small sample is unreliable, the current situation affects the results	Regional Institutes of Occupational Health
Psycho-social factors				
Occupational Stress Questionnaire	Assessment of the stress of an individual or a work unit, using a questionnaire (concise or extensive)	Easy to use, participation also motivates people to carry out changes	The current situation affects the result	Elo A-L et al.: Occupational Stress Questionnaire: user's instructions. Finnish Institute of Occupational Health, Helsinki 1993.
Working positions				
PEO	Qualitative and quantitative assessment of working positions	Includes also handling of loads, can be adapted to different occupations	Observation continuous, requires constant attention, laborious, long training, the results are difficult to interpret	Fransson-Hall C et al.: A portable ergonomic observation method (PEO) for computerized online recording postures and manual handling. <i>Appl Ergon</i> 26 (1995) 93–100.
RULA	Loading of the musculoskeletal system	Includes also the assessment of muscle use and power		McAtamney L, Corlett E N: RULA: a survey for the investigation of work-related upper limb disorders. <i>Appl Ergon</i> 24 (1993) 91–99.
Self-evaluation				
ROUND-ROBIN	Collecting the good features and development targets of work and work stations	Inexpensive and practical to use, arouses ideas and discussion	Requires a distributor of forms and a gatherer of information	Wilson J: Design decision groups – A participative process for developing workplaces. In: <i>Participatory Ergonomics</i> . Ed. by K Noro, A Imada. Taylor & Fancis, London 1991.
TR-safety observation method on building construction	Assesment of safety at a construction site	Easy and quick to use, reliable, gives an index number describing the level of safety		Laitinen H, Marjamäki M, Päivärinta K: The validity of the TR safety observation method on building construction. <i>Accident Analysis and Prevention</i> 31 (1999) 463-472.

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12

Maintenance of work ability

Esko Matikainen

Introduction

The concept of the maintenance of work ability became generally known in 1990 in a recommendation from the labor market organizations. The Ministry of Social Affairs and Health defines the maintenance of work ability as all activities by which the employer, the employees and the co-operative organizations at the work place try to promote every worker's functional capacity and work ability throughout his/her work career.

According to several studies, the number of people contracting the most common diseases has decreased in recent times. In contrast, the number of people who are retiring prematurely has increased, and this raises the economic burden due to the costs of the pensions. Special attention should therefore be paid to activities that improve the employees' well-being and encourage them to remain longer in work life.

The activities that maintain and promote work ability are so varied, that a single, unambiguous definition cannot be given. The maintenance of a person's work ability is a part of his/her general life-style. Work ability is a quality that is manifested as good health, functional capacity, professional skills, and the desire to work. That is why overall work ability can even be said to be partly inherited, but mostly it is an acquired and maintained quality. Everybody is therefore responsible for building up and maintaining their own ability to work.

The society and enterprises also have their responsibility areas in the maintenance of the work ability of people. It is the responsibility of the society to provide the general conditions and possibilities for acquiring and maintaining work ability. All such actions and legislation that promote general health, learning, and working skills, and that encourage people to work, are essential in helping people to enter work life and to remain in it.

Enterprises are legally obligated to ensure a safe, hygienic and healthy work environment. However, the activity to maintain work ability has in many enterprises been understood and implemented more comprehensively.

Optimally, the maintenance of work ability is a continuous activity targeted at the entire personnel, the work and the work environment, including the work community of the enterprise. Thus, it is not merely a part of the safety and production policy of the enterprise, but is also inherent in the personnel policy. It is not possible to implement exactly the same kinds of promotion activities in every enterprise. Each enterprise carries out such programs that are suitable and effective for the enterprise in question.

The promotion and maintenance of work ability is not a new concept in occupational health services. Reimbursement for the costs of preventive activity arranged by the occupational health services was started already at the end of the 1960s. However, the 1990s have brought a new perspective and shift in emphasis to the dialogue on the maintenance of work ability. Maintaining the work ability of people is one of the principle tasks of occupational health services, and it must be the goal of all the occupational health service activities.

An advisory committee of the Ministry of Social Affairs and Health has recommended that the activities to maintain work ability should be implemented by the occupational health services on three levels (Table 5 p. 109). The activity at Level 1 is preventive, and supports the individual, and develops the work or the work place. It arises from the needs of the work place, and it should be mainly implemented as the work place's own activity. The activity at Level 2 can be directed at the individual, the work community, or both. The activity at Level 3 is mainly the traditional services of the occupational health service. Co-operation between the occupational health service personnel and the enterprise representatives is necessary at all levels of activity. The Level 3 activity also requires co-operation with the rehabilitation and pension systems. On all levels, the activity must be prioritized according to the needs of the work place. It is usually most effective to involve the work community in the planning of the activity.

The role of occupational health services in the maintenance of work ability

The activity maintaining work ability is consistent, systematic and goal-oriented. It is carried out at the work place, but the occupational health service personnel play an important part. The occupational health services have a statutory role in the promotion of work ability at the work place, providing expert advice. The activity includes the prevention of illnesses (work-related and other) and health promotion by advising the employees, and paying attention to the physical work environment and the psychosocial aspects of the work community.

Table 5.

The 3 activity levels in the maintenance of work ability

	Level 1	Level 2	Level 3
Target group	all employees and work places	<ul style="list-style-type: none"> ▶ employees at risk of lowered work ability ▶ work places/work communities with problems in functioning 	<ul style="list-style-type: none"> ▶ employees with lowered work ability ▶ work communities in crisis
Goal	<ul style="list-style-type: none"> ▶ predicting factors that cover work ability ▶ promoting work ability and functional capacity and the individual 	<ul style="list-style-type: none"> ▶ predicting, and supporting work ability with measures directed at the environment 	<ul style="list-style-type: none"> ▶ restoring work ability ▶ crisis management
Identification	<ul style="list-style-type: none"> ▶ needs of the enterprise and its work communities 	<ul style="list-style-type: none"> ▶ persons with symptoms and illnesses and addiction problems ▶ initiated by employee or employer ▶ evaluation by occupational health services 	<ul style="list-style-type: none"> ▶ persons with illnesses ▶ lowered work performance ▶ follow-up by occupational health services ▶ enterprise diagnosis
Measures	<ul style="list-style-type: none"> ▶ management ▶ professional skills ▶ possibility to influence one's own work ▶ preventive action ▶ promotion of a healthy life-style ▶ development of work and the work environment ▶ training in occupational safety ▶ work guidance and counselling ▶ organization development 	<p>in addition to the measures at Level 1:</p> <ul style="list-style-type: none"> ▶ follow-up on work ability and functional capacity ▶ adjustment of the work ▶ transfer to a new task ▶ informing and guidance ▶ personal health promotion ▶ rehabilitation ▶ development of work environment ▶ development of work community 	<p>in addition to the measures at Level 1:</p> <ul style="list-style-type: none"> ▶ adjustment of the work to suit an individual's work capacity ▶ medical and occupational rehabilitation ▶ job re-placement ▶ development of work environment ▶ development of work community

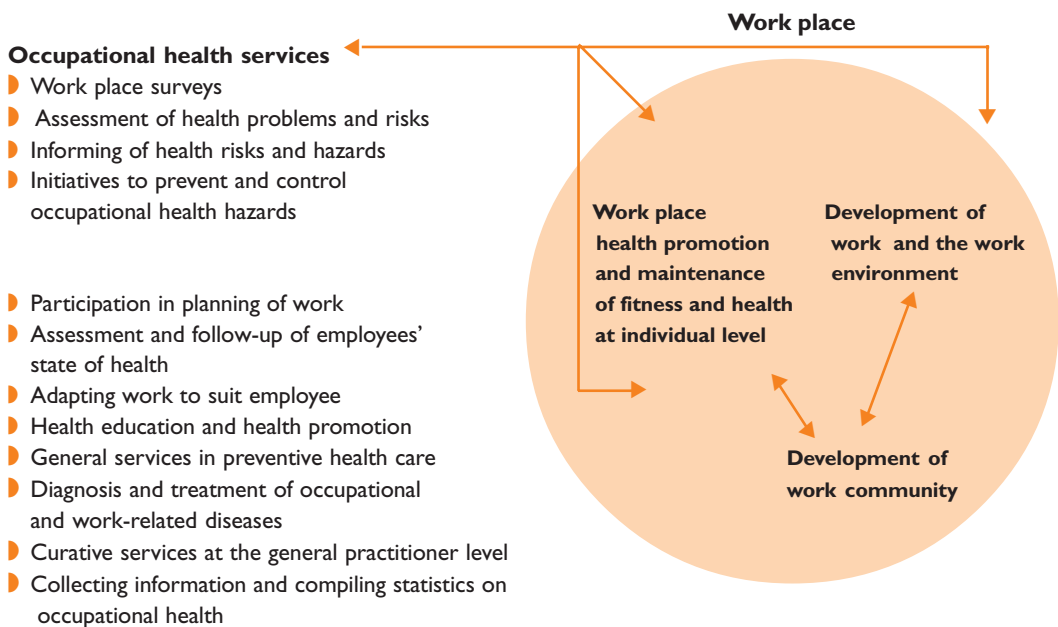
prioritization according to needs of work place

The relationship between the occupational health services and the work place, as regards the maintenance of work ability is shown in Figure 12. The contacts between the enterprise and the occupational health service staff depend on how the health services have been arranged. It is easy for the enterprise's own occupational health unit to work closely with the enterprise management and representatives of the personnel administration and production. If the occupational health services are arranged in some other way, the routines for the communication and contacts should be agreed on carefully.

Work ability maintaining activity makes up the essential content of the strategy of occupational health services (see, e.g. Chapters 10 Action plan, 11 Work place surveys, 13 Information and guidance, 14 Health examinations, 17 Participative planning of work places, 15 Assessment of work ability and 16 Occupational health support for work communities). The occupational health personnel have a great deal of information about work, about the employees, and the maintenance of work ability. The information is used in charting the need and the targets of activity, and in planning the

Figure 12.

The relationship between the occupational health services and the work place in the maintenance of work ability



contents of the activity. Knowledge of the working conditions based on the surveys of the occupational health services is important in the assessment of the employees' work ability and their need for rehabilitation. The occupational health personnel also have methods for measuring and following work ability on individual and group levels. The assessment and development of the atmosphere at work requires, co-operation between the occupational health service people and other parties in the enterprise. Health education aimed at improving the general health of working-aged people, is one of the basic tasks of the occupational health service. When planning their activity, the occupational health service personnel should keep in mind their dual role at the work place, i.e. the promotion of health and the prevention of illness. The occupational health personnel use their knowledge and skills to promote and maintain the employees' work ability in the client enterprise, focusing on the individual, the work environment and the work community.

Assessment of needs and prerequisites

Regulations

According to the regulations, the maintenance of work ability is a part of all the occupational health service activities directed at the work environment and work communities. It is directed at all employees during their entire working career. The goals, principles and contents of the activities for maintaining work ability maintaining are presented in the action plan of the occupational health services.

The following activities of the occupational health services include the maintenance of work ability:

- ▶ Work place surveys
- ▶ Follow-up and assessment of the employees' state of health and their ability to work
- ▶ The development of work, working conditions and the work community to support the employees' coping at work
- ▶ Giving advice and guidance to the employees and the work community about the maintenance of work ability maintaining activity
- ▶ Transferring an employee to a new job if he/she cannot cope with the present work
- ▶ Participation in the prevention of special problems at work, such as substance (alcohol/drug) abuse, and in the early recognition, treatment and referral to treatment of substance abusers.

The goals of activities to maintaining work ability

The following general goals can be set for activities to maintain the work ability:

- ▶ Work communities are able to manage and develop their work, their members' work ability and health, and to give social support, i.e. the work community supports the coping of individuals (see Chapter 16 Occupational health support for work communities)
- ▶ The functional capacity of individuals and work communities improves
- ▶ The functioning and productivity of the enterprise improves.

At each work place, prioritized goals are agreed on. The goals set for the maintenance of the workers' individual work ability must be so specified that their progress can be followed-up. In the developing of the work community, attention should be paid to management attitudes and practices that support work ability and motivation, possibilities for life-long learning, up-dating of professional skills, and the right to a healthy and safe work environment.

Both the employer and the employees must be committed to develop the work ability and well-being of the personnel. The successful maintenance of work ability pays off in the long run as a decrease in sickness absences as well as in pension costs.

Implementation of activities to maintain work ability

The maintenance of the employees' work ability is a continuous activity. However, it can be started in the form of a project and it can include projects. Participative activity in the maintenance of work ability starts from the presumption that everyone accepts responsibility for the improvement of his/her own health, functional capacity and work community. A natural work community (work unit) is the most suitable forum for this activity. Work communities can thus develop their work, their work environment, and themselves, with the help of the employer's authorization and support. This support also includes consultative help from the occupational health services.

By following the key points in the maintenance of work ability (see below) the effectiveness of the activity can be ensured. The key points are based on experience of practical application and on research. The key points are critical stages in the implementation and they should be considered at every work place. The measures required at these critical stages, and the order in which they are implemented, always depend on the available resources, and they cannot be the same at every work place.

Key points in the maintenance of work ability

The key points in the maintenance of work ability are:

- ▶ Commitment of the management to participate in the maintenance activity and to agree on the general goals
- ▶ Organizing the implementation project
- ▶ Defining responsibilities
- ▶ Specifying the goals of the activity
- ▶ Informing the personnel
- ▶ Motivating the personnel
- ▶ Implementation of individual projects to maintain work ability
- ▶ Evaluation of the results.

Motivating the enterprise management

It is the duty of occupational health service personnel to inform the enterprise management, the personnel administration, and the employees about the possibilities and benefits of maintaining work ability. The commitment of the management is a precondition for the successful promotion of work ability activities at the work place. This means that the management approves of the activity and the principles regarding, for example, co-operation. The exemplary role of the management also motivates the employees. Experience has shown that systematic maintenance of work ability soon brings back the money invested in it through lower indirect labor costs and an increase in productivity (see Chapter 9 Marketing and motivating).

Organizing activities and defining responsibilities

The maintenance of work ability is built on co-operation at the work place. Experience has shown that the activity is most successful when a 'work ability team' is in charge of co-ordinating the activity. A new work group does not have to be set up for this purpose, as an already existing co-operation work group can take on its duties too. However, it is essential that co-ordination of the activity and defining of the responsibilities have been agreed on. The 'work ability team' should preferably include representatives from all the central interest parties at the work place.

The composition of the work ability team depends on the size of the enterprise, its field of activity, the way in which the occupational health services are arranged, and on the personnel. In large enterprises the team can be fairly big, and it can include representatives of the management, the personnel administration, the occupational safety organization, the occupational health services, the line management and the personnel. In a small work place, the team may consist of only 1-2 persons, and the role of the

owner or manager is important. A representative of the occupational health services should be a member of a work ability team whenever possible. Employers are obligated to resort to occupational health service professionals for organizing health services at the work place. Co-operation in accordance to good occupational health practice is an essential part of the activity for maintaining work ability.

Having a ‘work ability team’ in an enterprise does not mean that the maintenance of the employees’ work ability rests entirely on the team. The team is responsible for the arrangements, continuity and organization of the activity. The main responsibility for the actual activity, from planning to implementation, lies with the entire work community of the enterprise. Eventually, the maintenance activity should be integrated into the normal work process of the work place.

Defining goals

To ensure effectiveness, it is necessary that the goals of the activity to maintain work ability are set before starting the activity. When the management is committed to the activity, it is recommended to include the forms and goals of the activity in the personnel strategy. Specific goals can be set when the development needs are known.

Informing

The promotion of work ability is based mostly on the active participation of the personnel and on their desire to develop their own health and work ability, their work environment and work community. The level of participation can be raised by actively informing the entire personnel of the work ability projects as early as possible. Such projects also have an impact on productivity, and therefore the information about them should reach the entire organization.

Occupational health service personnel have a great deal of information on matters related to the maintenance of work ability. So they should be asked to help with the informing whenever necessary. For example, information can be distributed in connection with health examinations.

It is also important to inform about the project as it proceeds. Feed-back from inquiries and interviews increases the employees’ motivation to improve their own health and work ability. As the project draws to an end, reporting and feed-back must be taken care of. This is easy, if specified goals have been set and the follow-up of the activity has been planned and implemented well.

The stages in the maintenance of work ability

Activities in the maintenance of work ability need to be continuous. Separate projects can be included in the continuous activity.

The stages in the maintenance of work ability are:

- ▶ collecting information
- ▶ prioritizing and choosing targets
- ▶ setting goals
- ▶ planning activities
- ▶ carrying out activities.

Collecting information

When a project to maintain work ability is being planned, the current situation of the personnel and the working conditions must be known. Information can be collected in various ways (Table 6). Occupational health services which include also curative treatment, can offer the client enterprise a great deal of information. This information is useful in the planning and implementing of work ability promotion. The state of the entire personnel can be studied with suitable methods, such as a personnel report, or balanced score card. In this way, it is possible to make comparisons with the previous situation of the personnel, and possibly also with other work places.

Table 6.

Examples of ways to collect information

Work community	Employee environment	Work and work environment
▶ surveys of work atmosphere	▶ health examinations	▶ physical strain of work
▶ occupational stress questionnaire	▶ assessment of work ability	▶ psychological strain of work
▶ work place walk-throughs	▶ medical record	▶ ergonomic check-up
▶ information collected at other events	▶ follow-up on absences	▶ occupational hygienic survey

and interviews can be utilized to discuss together ideas for the development targets. The targets can be prioritized by combining the knowledge on the needs and appropriate methods. The ‘work ability team’ is in charge of co-ordinating the suggestions and defining the lines of action. Participation in the planning of the activity strengthens their commitment and willingness to participate in the activity also in the future.

In order to carry out activity to maintain work ability, resources are needed. The occupational health service personnel must have the readiness to evaluate, together with the representatives of the work place, which of the current activities can be changed, in order to have enough resources for the maintenance of work ability.

Goals must be set for the activity. Already in the planning stage of the activity, the follow-up methods for evaluating the impact should be defined. It is cost-effective to use such methods that the occupational health personnel use routinely.

Implementation of activities

The activity to maintain work ability can be directed at an individual, a work community, the work, or the work environment. In the case of an individual, the activity can be promotion of physical or psychological well-being, assuming a healthier life-style, or rehabilitative measures. Work can be developed by improving working methods, planning, professional skills, or interaction. The work environment can be improved by concrete changes, such as various ergonomic and safety actions. Developing work communities is a comprehensive task which is linked also to the areas already mentioned. Table 7 lists some commonly used methods.

Table 7.

Examples of methods used in the maintenance of work ability

Work community	Employee	Work and work environment
<ul style="list-style-type: none"> ▶ organization development ▶ training - leadership skills ▶ crisis management readiness ▶ a learning organization 	<ul style="list-style-type: none"> ▶ healthy life-style ▶ fitness exercises ▶ ergonomic guidance ▶ work counselling ▶ training - professional skills ▶ individual therapy 	<ul style="list-style-type: none"> ▶ ergonomic planning of work site ▶ improved working methods ▶ better tools and equipment ▶ improved safety measures

Recently, the role of professional skills has been recognized as an important part of the maintenance of work ability. The development of professional skills is of crucial importance in combatting the effects of ageing and the risk of marginalization from work, and in ensuring a high level of productivity. The occupational health service personnel must be aware of the training needed of the employees and of the realistic possibilities for implementing the training. They must, when necessary, take efforts ensure that the required actions can be carried through at the work place.

Ethical questions

In order for the promotion of work ability to be successful, the procedures must be ethical respecting human dignity. There must be an atmosphere of openness, and trust in the activity. When the activities and action strategies are being planned, the parties concerned should clarify mutual goals and principles (see Chapters 7 Ethics in occupational health care and 8 Data protection). In this way, interruptions in the activity can be avoided, and solutions to even difficult situations can be found together.

Asking the following questions may prove useful:

- ▶ The principle of co-operation
 - What are the benefits of co-operation to all the parties concerned?
 - What are the responsibilities and rights of all the parties in the co-operation, especially as regards data protection?
 - Are we aware of each other's professional values?
- ▶ The principle of impact achievement
 - Have we gone over the goals of each other's activity?
 - What are the advantages and disadvantages of the activity over a longer time span, and also from a wider people-oriented perspective?
- ▶ The principle of personal integrity
 - Have we made sure that participation is voluntary?
 - Have we ensured the data protection of confidential information?
- ▶ The principle of equality
 - Have we made sure that our system does not, in any way, discriminate against anybody?

Special features of work ability promotion at small work places

The principles of work ability activities described in this chapter apply to work places of all sizes. Of course the implementation is easiest at large work places that have abundant resources. Small work places have less resources, for instance, there is no occupational safety representative. How-

ever, it is possible to carry out activities to maintain work ability systematically and effectively also at small work places.

The role of occupational health services as the initiator of promotive activity is central at small work places. However, motivating the management is especially important. In the motivation, a common 'language' is important, because the parties must understand each other (i.e. clarity of concepts, terms, values, etc.). An atmosphere of confidentiality and trust enhances understanding. Good results obtained from activities maintaining work ability make the motivation much easier. The occupational health service personnel must demonstrate the benefits gained from the activity, not only to the management, but also to the employees.

The maintenance of work ability can be started in the form of a project. For instance, short information bulletins can be issued at work places. Their themes can deal with healthy eating habits, management of stress, ergonomics, moderate alcohol consumption, etc. Fitness tests and other time-consuming promotion measures often need to be done outside working hours, and thus, their benefits must be justified to the employees. Personal health promotion and self-care can be planned during health examinations.

In the planning of a work ability maintenance project, the nature of the work, the workers' level of knowledge about health issues, and the psychosocial situation of the work community should be considered. They can be investigated by questionnaires and interviews. The forms used should be approved by both the employer and the employees.

The project should be planned in detail, for example as a 1-3 - year overall plan, but it must be carried out in small steps, depending on the available resources. Often it is difficult for small work places to commit to long-term plans.

Follow-up, assessment and development of activity

The implementation of activities to maintain work ability must be followed up and assessed regularly. The 'work ability team' can help in the follow-up, which can be divided into:

- follow-up of the benefits and the overall impact of the activity
- evaluating and improving of the quality of the services.

The purpose of the follow-up of the activity is to clarify whether the interventions have been useful in relation to the resources used. The assessment

can be done by repeated measurements (questionnaires, check-ups, indexes) and by continuously following indicators that describe the employees' work ability and functional capacity. Based on the results, the work ability team guides and develops the activity.

The services provided to the client must be continuously analyzed and improved. Are they of high quality? Are the methods and equipment used suitable; do they produce correct information; can the costs be lowered and the quality improved, etc. Based on these evaluations, suitable improvement measures are selected and undertaken.

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13

Information and guidance

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Harri Vertio*

Introduction

The task of occupational health services' to inform the employees, the managements of enterprises, supervisors, and the occupational safety representatives of the work-related hazards and how to avoid them (giving information and guidance based on the Act on Occupational Health Services). It is at least equally important to influence individual employees' behaviour, as it is to influence the management, supervisors, and persons in charge of planning, in order to create a safety-promoting atmosphere and to promote a safe work environment and safe working habits (see chapter 17 Participative planning of work places and 18 Accident prevention).

In Finland, also the overall promotion of the health of workers is seen as the duty of occupational health services. Health promotion is partly the improvement of people's opportunities for actively taking care of their own health, and partly the improvement of their opportunities to stay healthy. Work life is one area of health promotion that is reflected in the relationships between an individual, his/her work and health. In work life, the maintenance and improvement of health is seen as one entity, and the prevention of illnesses and reducing risk factors as another. Health education is *one* of the tools of the occupational health services for promoting health.

Evaluation of needs and requirements

Laws and regulations

The giving information and guidance given in accordance to the Act on Occupational Health Services must contain

- a sufficient amount of information on health risks and hazards, advice on how to prevent them and, if necessary, on how to protect oneself from them, and guidance on correct work methods and working habits before starting to work and, if necessary, during the work
- information on occupational and work-related diseases and occupational accidents

- ▶ health education and guidance for the promotion of health and the maintenance of the ability to work
- ▶ information and guidance on health promoting factors connected with work, the work environment, and life-style
- ▶ counselling and guidance for an employee facing the threat of unemployment.

Counselling and guidance should also be part of the initiation and training in the work tasks.

Evaluation of need and defining goals

In connection with a work place survey or other activity, the occupational health personnel evaluate which factors in the work or the working conditions may cause such a risk or hazard that could be prevented by informing, guidance or health education (see chapter 11 Work place surveys).

The need for individual health education arises mostly during health examinations or the treatment of illness. Good occupational health care combines the needs and possibilities of a work community and individuals in health promotion. When promoting health and healthy living habits, cooperation with outside experts or organizations is often fruitful, for example in the prevention and treatment of drug and alcohol abuse.

In addition to work place surveys, on the work atmosphere, health goals, the resources invested in health, and the expectations regarding health, in order to be able to chart the health status of employees, information is needed. Methods have been developed to diagnose work communities; usually both objective parameters and subjective methods of gathering information are used. Such methods can be used in, for instance, in comparing different work sites or work units, but they also give significant information on perceived health and its dimensions.

The social dimensions of health often stay in the shadow of safety and the search for risk factors. In the methods of work community diagnostics, special attention must be paid to human relationships (see chapter 16 Occupational health support for work communities). A work community diagnosis is more than an analysis of the working conditions. It also brings up suggestions about procedures which could promote the work community's health in each work place.

Implementation

Occupational health services function in line with the occupational safety organization as regards the division of work and co-operation in the ways of informing and guidance in order, to avoid overlapping activity. The supervisors must also be familiar with the prevention of health hazards.

Information is needed on

- work processes
- anticipated hazards and risks
- how risks can be anticipated
- how to avoid hazards and risks, for example guidance in the use of personal protective equipment
- individual health restrictions
- behaviour that increases the risk of hazards.

The chosen strategies vary depending on the situation. Technical solutions that eliminate the possibility of human error are the surest way to prevent hazardous situations. Ergonomic solutions can make safe working methods easier. Instead of rewards and punishment, employees should be motivated to act safely, for instance, by informing, training and increasing their participation in the planning of their own work. The employees' own analyses of their working habits and a search for safer alternatives are good methods, if the management is genuinely interested in the promotion of safety.

A prerequisite for safe working is that the organization allows, supports and demands it. Behaviour can be channelled either in a safe or a risk-taking direction, through guidance in work methods, the attitudes of supervisors, and basis for payment.

Increased participation and multidisciplinarity are effective strategies of health promotion in occupational health services. There are many ways of encouraging participation, for example, arranging work-place exercises or work-place lunches.

The possibilities people have for promoting their health are diverse, depending on their life situation, education, attitude toward health risks, or their experiences on health and sickness. These possibilities can be improved through information. Health education has mostly been the dissemination of correct information to people. Information plays an important role also in the health education of occupational health services, but it must be proportioned to the everyday work life. It is often difficult to balance

out fragmented pieces of health information. People must be offered tools, which can help them to put matters in their right perspective. A very low risk level has already been achieved for many individual risk factors in work life, compared to the risks that people face outside work life. The standard may be different in work life than in private life and the occupational health personnel should take this into account when giving advice. People tend to tolerate greater risks in their private life than at work.

The possibilities of people to influence their own work are an important part of their possibilities to promote their health. The occupational health services must also take into account the individual ability of people to cope with problems, also those related to health. Many health habits are a means of coping, and the circumstances affect how these habits are formed. Examples of these habits are, for instance, smoking, excessive use of alcohol, and eating habits.

From the point of view of the occupational health personnel, pre-employment health check-ups, instruction on work tasks, safety instructions, work place surveys, and individual guidance to work groups and employees are important in promoting the employees' health. The quantity and quality of these activities are crucial factors in successful health promotion, as is the trust built between the health personnel and the employees.

Follow-up, evaluation and development of activity

It is often difficult to measure the effectiveness of the information given, and thus it is difficult to measure efficacy. The impact of information can be, for example, changes in working methods and protection, changes in the work environment, safety policy, health behaviour, state of health, subjective well-being or the ability to work. A variety of methods should be used in the evaluation of health-promoting activities. It is often necessary to concentrate on the intervention process itself, in other words, to analyze how easy it has been to implement a certain activity, and what has happened in the process. At least in the case of long-term employment, it is possible to help an employee feel that he is in charge of his own life. This happens best through feedback on the work, self-esteem, and the possibility to participate in the planning of one's own work.

Along with the tendency of employment to change from permanent to short-term contracts, new health promotion tasks are surfacing. The way people commit to work and the work environment may in future be very different from what it is now. The foundations of work-related health requirements

will change. In good occupational health practice, the problems caused, for instance, by competition and the ageing of workers, are noted, and solutions for them are sought. The solutions take into account the health promotion of both the work community and the individual, as well as the enterprise management, supervisors, and the people in charge of designing for creating a health-promoting and safe work environment and of ensuring the prerequisites for health.

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14

Health examinations

Mari Antti-Poika

Introduction

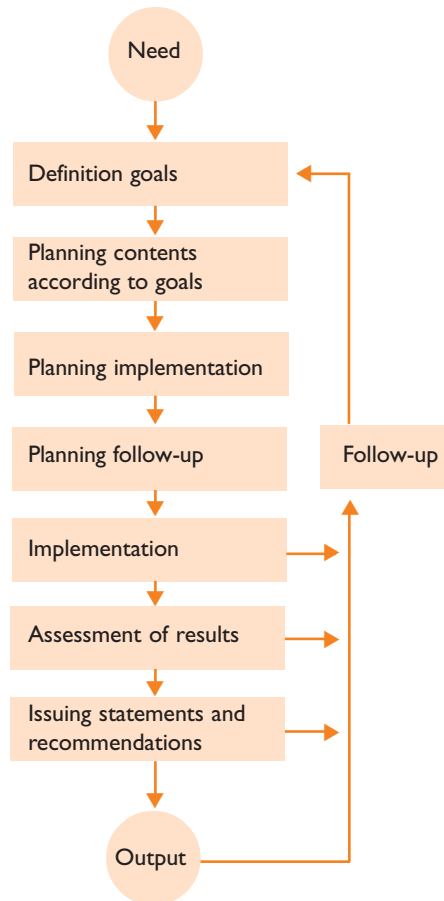
The employees' health is followed mainly by health examinations. In occupational health services, a health examination means a planned meeting between an employee and an occupational health professional, and the purpose of the meeting is the assessment, and follow-up of the health and functional capacity of the individual. Examinations targeted at work groups or units are discussed in Chapter 16 Occupational health support for work communities, and health counselling in association with health examinations is discussed in Chapter 13 Information and guidance. Health examinations provide information also for the planning of activities to promote work ability (see Chapters 12 Maintenance of work ability and 15 Assessment of work ability). Figure 13 p.126 illustrates the health examination process.

The target groups and the content of health examinations are planned in accordance to the objectives of the work place. The final objectives may be connected with promoting the employee's work capacity, preventing work-related diseases and symptoms, or promoting a well-functioning work community and a healthy and safe work environment. Health examinations can also support the prevention and handling of addiction problems, their early recognition and referral to treatment. A health examination is not a separate procedure, it is part of the comprehensive occupational health services, and helps in the recognition of the need for corrective measures and in the follow-up of their effects.

In order to follow up the workers' health, a health plan may be drawn up during the health examination. The employee makes the health plan for him/herself together with an occupational health professional. A written summary of the examination can function as the health plan, if it includes the plan, intended actions and the follow-up of the implementation of the plan.

Figure 13.

Flow-chart of a health examination



Group examinations can be used in solving special problems. For example, in examinations carried out after water damage has occurred, in the case of a ‘sick building’, or when assessing the consequences of gas leaks, etc., it is usually feasible to examine employee groups. In these instances, the health examinations complement work place surveys. The methods are chosen carefully according to each case. Often, reference groups are also needed. Examinations of this kind can be done either once, or more than once to follow up the effects of interventions. Group examinations (for instance, connected with a questionnaire on work-related stress) can also help to enhance discussion at a work place (see Chapter 16 Occupational health support for work communities).

Assessment of needs and prerequisites

Based on the regulation of the Ministry of Social Affairs and Health (1348/94), health examinations are carried out to employees starting out on a new job, if the work entails health hazards, or if it involves special health requirements. These examinations are carried out, with the exceptions listed in the regulation, 1) when an employee starts in such work, or when occupational health services are implemented at a work place, 2) when the work tasks change essentially, 3) after periods of illness affecting the employee's work ability and 4) when placing an employee with deficient work capacity in such work.

Separate regulations and guidelines exist in Finland on the statutory health examination of workers exposed to hazardous substances or physical agents, or work otherwise involving special risk (Decision of the Council of State 1672/1992 and Health examination guidelines 1994). Health examinations should also be carried out if there are special reasons to suspect that the work involves a health hazard. When considering the need for such follow-up examinations, attention is focused on the following points: 1) the need to determine the possible health effects of new substances or methods, 2) the influence of the employee's age, sex and physiological state on possible health risks, 3) non-typical working hours, 4) exposure to factors other than those arising directly from the work or the work environment and 5) the need to follow the employee's state of health after the exposure has ended.

Based on the amendment to the Act on Occupational Health Services (259/90), the occupational health personnel are obligated to participate in the maintenance and promotion of the employees' work ability. Health examinations may be used to support these activities (see Chapters 12 Maintenance of work ability and 15 Assessment of work ability).

Goals of health examinations

Definition of Goals

The goals of the examinations are agreed upon together with the management and the personnel of the enterprise. In defining the goals, the legislation, the viewpoints of the employer and the employees, as well as the age and gender structure, and the morbidity of the employees are considered. The goals must be realistic and appropriate, and they must be reassessed when the working conditions change. The goals are defined clearly in such

a way that reaching them can be followed and documented in the occupational health service action plan.

Goals of pre-placement examinations

The goal of the examinations can vary depending on whether the examination is carried out with view to possible employment, or with view to supporting an employee's work ability, on working conditions or on the expected length of employment.

The goals can be:

- ▶ prevention of work-related diseases and symptoms
 - excluding especially susceptible employees from work that is hazardous to health
 - disseminating information to employees on the hazards of the work and on means to prevent them
- ▶ promotion of the employee's health and work ability
 - assessment of the employee's health at the start of employment as the basis for follow-up
 - recognition of diseases affecting work ability, when the work imposes special requirements on health
- ▶ promotion of a well-functioning work community and a healthy and safe work environment
 - when necessary, adjusting the work environment according to the special requirements of the employee, as far as possible.

During the health examination, it is also possible to familiarize the employee with the occupational health unit.

Goals of periodical medical examinations

The final goal of the periodical examinations is promotion of the employees' health and work ability.

The intermediate goals of the examinations are:

- ▶ Prevention of work-related diseases and their symptoms
 - to prevent the employee from falling ill because of the exposure at work
- ▶ Promotion of the employee's health and work ability
 - to follow the employee's work ability, to chart the employee's life-style choices and to encourage him/her to choose health-promoting habits, and to survey the employee's health resources. The health plan of the employee, drawn up together with the occupational health personnel, may also be used

- to detect, as early as possible, potential changes in health, onset of diseases and indication of problems in coping and the threat of lowered work ability
- to assess work ability or its restrictions, when necessary
- to follow up the work capacity of employees with chronic illnesses
 - to determine the need for treatment, to refer an employee for treatment or rehabilitation, and to support the employee's ability to cope despite possible diseases
- ▶ Promotion of a well functioning work community and a healthy and safe work environment
 - to investigate an employee's attitude toward safe working habits and protective measures
- ▶ Collecting and conveying statistics on the employees' state of health and information about possible problems at work to the employer, discussing them with the employer and the employees in order to plan and carry out health-promoting measures and to create a health-promoting attitude.

Implementation of health examinations

Content of health examinations

The contents of the examinations are planned together by the various professional groups in occupational health services, in collaboration with the employees and the employer. In the planning of the contents, all information available on the working conditions, the health requirements inherent in the work, the age and gender structure of the employees, the sickness profile, the results of earlier examinations, and the cost-benefit ratio, are considered. Also the frequency of the health examinations is agreed upon.

The contents should be sufficiently comprehensive, but not too extensive, considering the goal. Only such information is collected during the examination that is necessary for achieving the goal of the examination.

The health examination can be a thorough investigation of the employees' work ability. The emphasis may be on different aspects (physical health, physical capacity, or mental and social coping resources). In work that involves a special health risk, the examination may be limited, for instance, to a hearing test or to biological monitoring.

The methods used should be scientifically validated, correctly used, and their results must be correctly interpreted. Since very few methods have

been scientifically evaluated, one must also use methods based only on common practical experience. In such cases, the selection criteria include, e.g.:

- ▶ the need to measure something, for which there is no validated method
- ▶ the method is suitable for the goal that has been set
- ▶ the method has been used widely for a long time (not merely in individual cases)
- ▶ the user knows how to interpret the results
- ▶ the method can be used to encourage discussion and to help in problem solving
- ▶ the risks and disadvantages of the method
- ▶ acceptability for the clients
- ▶ special demands on premises and equipment
- ▶ special skills needed for using the method
- ▶ the time needed
- ▶ other expenses.

Interpretation of the results

When drawing conclusions from the health examination results, sufficient expertise must be used from both the the occupational health unit, and, when needed, outside. All evaluations must be justified and documented.

The results of the employee groups are evaluated in co-operation with the employer and the employees, and the possible actions to be taken are discussed at the work places. Positive features of the work community which support the work ability of the employees must also be considered.

Pre-employment assessments

The occupational health service personnel consider the risks of the work, the requirements it sets, and the previous jobs of the examinee, how he/she has managed in them, possible previous problems, previous occupational diseases, or exposure during leisure time. The decisions concerning the person's suitability for the work must be consistent and well justified.

Selection based on health may come into question regarding work that entails a special risk of illness, or work that places special requirements on health. There must be clear, scientifically approved criteria for the selection, and the assessment must be based on scientific data and sufficiently many-sided expertise. When assessing the suitability for work, the level of exposure, the possibilities for protection, the employee's training, motiva-

tion and individual potential of following the instructions on protection must also be considered. In unclear cases, a trial period is recommended, if possible. It must also be remembered that the scientific foundation of a rejection based on medical or psychological reasons is weak, and that the person's pre-employment illnesses are a poor indicator of later illness or of early retirement.

Periodical health examinations

The client's possible need for rehabilitation, treatment, counseling or other support is assessed. In examinations carried out because of a special risk of illness, the potential health hazards due to the work are assessed.

Statements and recommendations

Statement to the examinee

The person examined is given the information on the examination results, an assessment of the situation, and instructions on how to actively improve his/her coping at work without risks to health. When informing and giving guidance, one has to put the matters in their right perspective, depending on which matters are most important. The client's overall life situation must also be considered. The information is given in comprehensible form, and the results of the examination and the significance of the test results are discussed. Essential information is also recommended to be given in written form. Possible further action is agreed on with the client.

A health plan, which takes into account the client's coping resources, is made together with the client. For this purpose, the client is given sufficient information on how to affect his/her own health, and where to get more information. Referrals to further examinations, treatment or rehabilitation are made after discussing them with the client.

An applicant who has not been employed due to an illness may find suitable work if directed, for instance, to the Employment Agency's special consultation, to rehabilitation offered by the Social Insurance Institution, or by giving him/her advice on work placement questions.

Statement to the employer

The employer is given a résumé of the results of the examinations and, if necessary, recommendations for work place improvements or further examinations. The résumés are given in an easy to understand form, and they

are delivered, as agreed, to the person who has the best possibilities to initiate possible improvements. The employer can be given national or regional reference information, if it is available.

If the examinee is found to have working restrictions due to his health, they must be clearly defined in the statement. The statement must also mention of the necessity of a new examination at the end of the trial period, or when the work tasks change. The manner of informing about the working restrictions is agreed on with the person examined.

The employer is informed of the employee's suitability or unsuitability for work, and of his/her working restrictions in a clear form. When necessary, the placement to work is discussed, with the consent of the examinee, together with the representative of the employer. Confidentiality is guaranteed in all communications. Especially in the discussions with the employer, one must be careful not to reveal confidential matters. It must always be agreed on beforehand with the examinee, what information can be given to the employer. The occupational health services are nevertheless obligated to give certain information (see Chapter 8 Data protection).

Planning of follow-up

The results of the health examinations are expressed, as far as possible, so as to allow, e.g., calculations or graphic summaries to be made of them. The results of the examinations are followed up on both individual and group levels. A plan is made on, how to utilize the follow-up information. The possibility of utilizing group-level information depends on, for instance, the computer resources available. It needs to be planned how, and how often, the realization of the planned measures is followed up. It is also agreed on, who is in charge of which further action, eg. the examinee, the employer or the occupational safety organization of the enterprise.

Ethical considerations

Ethical considerations are discussed in Chapter 7 Ethics in occupational health care and the handling of confidential information in Chapter 8 Data protection. Many problems related to ethics and privacy protection are connected with health examinations.

Ethical problems may arise from pre-employment examinations when, e.g. recruiting employees. It is the duty of the occupational health personnel to discuss ethical problems connected with the examinations together with the representative of the employer, and to also point out the limited possi-

bilities of medicine in the selection of employees. It is a good idea to agree together with the employer and the employees on common 'rules' and to write them down. In problematic cases, the possibility for an outside evaluation (a so-called second opinion) should be provided for the examinee.

The content of the health examinations must be accepted by all parties when it is not stipulated by law, or based on other regulations. This applies especially to examinations which are not clearly connected to the person's suitability for work or to his/her work ability (e.g. HIV tests).

The participation of employees in the health examinations must be voluntary. It is therefore necessary that the employees have enough knowledge of the consequences that the examinations may have (informed consent). However, according to the Act on Occupational Health Services, an employee cannot, without a justified reason, refuse to participate in health examinations that are carried out because the work entails a special risk of illness which has legal significance regarding the employer's responsibility.

The occupational health personnel must, for their part, try to guarantee that participating in periodical check-ups on the employee's coping at work, or in other examinations that chart the need for rehabilitation, does not lead to the stigmatization or discrimination of the examined person at the work place.

If an employee refuses to take part in an examination, his/her conviction must be respected. Also, the employee's set of values must be respected, even though health values may well not be as important for him/her as the occupational health personnel might wish. The employee makes his/her choices. It is the task of the occupational health services to simply give information and, if the employee wishes, to support him/her to attain a healthier life-style (see Chapter 13 Information and guidance).

Co-operation in health examinations

Tasks of the occupational health unit

The occupational health personnel must be able to use the chosen methods correctly, and always in the same way. The health examinations are carried out in a way that has been agreed on. However, the examination is an interactive situation, and its content can be adapted, if necessary, to the needs of the examinee and the situation (see Chapter 13 Information and guidance). All the occupational health professionals, and others whose expertise is needed, participate in the implementation of the examination.

The scheduling of the examinations is flexible, and the appointment times are reliable, in order to minimize the loss of working time for those examined. The schedule is fitted together with other possible tests. However, the number of matters to be dealt with during one appointment should not be so great that it hinders the discussion of important matters in sufficient detail.

The occupational health unit plans how the feedback is to be given, and how further medical examinations and other additional measures will be implemented.

Co-operation between enterprises and occupational health services

Pre-employment assessments

The examinations must reach all those concerned. This means that the target groups have been defined and agreed on, and the communication between the occupational health service personnel, the occupational safety organization, and the employer works well. The forms of co-operation on the pre-employment pre-placement issues, e.g. where the statements are sent and recorded, are agreed on with the employer.

The way in which the examinations are scheduled, where they are carried out, and who is in charge of the referrals, is agreed on with the enterprise. The schedule depends on the goal set for the examination, or the examination can be, for instance, a statutory one.

Periodical health examinations

The implementation of the examination is agreed on with the employer and the representative of the employees. The entire enterprise must be committed to the examinations, their goals, the methods used, and the measures they cause.

The target groups of the examinations are decided upon. It may be more useful as regards the improvement of the work environment and the work communities to select the members of a certain department or a work community to be examined, rather than, for instance, persons of a certain age in the entire organization. On the other hand, if the goal is to collect extensive information on the whole organization, age-group examinations are justified. Examinations by age groups or, for instance, according to the length of employment may be useful from the viewpoint of reducing an individual's risks.

Participation in the examinations must be voluntary, except in the case of statutory examinations. It must be ensured that the examined persons know why the examinations are carried out and what their consequences may be.

It is necessary to agree with the employer and the employees, to whom the feedback is given, in what form and in what way, and how should the possible further corrective measures be implemented at the work place.

Follow-up, evaluation and continuous improvement

Outcomes of health examinations

Pre-employment examinations

The final outcome of a pre-employment examination is the placement of the employee into a job that justifiably suits his health. In such work, the employee will maintain his health and functional capacity as long as possible.

Intermediate results leading to this outcome are:

- ▶ factors recognized that increase the risk of falling ill, or diseases or disabilities that decrease work ability
- ▶ other diseases diagnosed to be considered in the health plan
- ▶ the examinee is aware of the connections between work and health, knows the correct working habits and knows how to protect himself from hazards at work
- ▶ the examinee has accepted the statement regarding his/her suitability or unsuitability to work
- ▶ the examinee has received the necessary information and support regarding the working conditions and his/her functional capacity, and enough information on the available occupational health services
- ▶ the occupational health service personnel have understood the health values, attitudes and goals of the examinee, and a good co-operative relationship has been established with the examinee. Accordingly, the employee has, together with the occupational health personnel, made a health plan which he/she is willing to follow
- ▶ the occupational health personnel are aware of the employee's state of health.

Example 1 on page 137 shows the factors to be followed.

Periodical health examinations

The final outcome of a periodical examination is, despite possible diseases or insufficiency, a satisfied employee who is able to work, and whose work requirements are in accordance with his capacities.

The intermediate outcomes leading to this are:

- ▶ the enterprise and the occupational health personnel are aware of the employees' state of health, work ability, the state of the work organization, and possible problems arising from e.g. ergonomics, management or leadership

- ▶ the enterprise undertakes all the necessary changes to the working conditions, maintains healthy working conditions, and strengthens a health-promoting organization culture
- ▶ a possible work-related illness or excessive exposure has been detected in an employee, whose work entails a special risk of illness
- ▶ the examinee is aware of the influence of the work on his/her health and knows safe working habits and means of protection
- ▶ the examinee is aware of the connections between life-style and health, is motivated to take care of him/herself and follows the health plan he/she has made for himself together with the occupational health personnel
- ▶ the examinee has had an opportunity to discuss his/her problems and has received enough information on possible questions.

Examples 2-3 of factors to be followed are given on pages 138 and 139.

Example 1

Factors to be followed up	
Pre-employment examinations	
Factor to be followed up	Means of follow-up
Number of examinations	Statistics
All those who should be examined are examined	Personnel records
The examinations are completed	Copies of filed statements
The statement has been sent to the correct place	Questionnaires to clients
The contents of the statement	Audits
<ul style="list-style-type: none"> ▶ legally tenable ▶ justified recommendations ▶ easy to understand 	
A health plan	Patient records
Detected factors that increase risk	Résumés of examinations
Restrictions based on health (rejections or partial restrictions)	Résumés of examinations
Diagnosed diseases or disabilities	Résumés of examinations
Good co-operation	<ul style="list-style-type: none"> ▶ questionnaires to clients ▶ feedback from clients ▶ use of occupational health services
Safe working habits and protective measures	<ul style="list-style-type: none"> ▶ work place walk-throughs ▶ work place inquiries
Correct job placement	<ul style="list-style-type: none"> ▶ periodical health examinations ▶ statistics on illnesses
Health plan	<ul style="list-style-type: none"> ▶ audits ▶ inquiries ▶ follow-up of implementation
<ul style="list-style-type: none"> ▶ contents ▶ acceptability 	

Example 2

Factors to be followed up	
Periodical health examinations	
Factor to be followed up	Means of follow-up
Number of examinations	Statistics
Active participation in the examinations	Statistics
Recommendations <ul style="list-style-type: none"> ▶ for the examinee ▶ for the work place 	Résumés of examinations
Referrals <ul style="list-style-type: none"> ▶ to treatment ▶ to rehabilitation 	Résumés of examinations
Recommendations <ul style="list-style-type: none"> ▶ informative ▶ appropriate ▶ comprehensible ▶ sent to the correct place 	<ul style="list-style-type: none"> ▶ audits ▶ questionnaires to clients
Health plan	Patient records
Health plan <ul style="list-style-type: none"> ▶ contents ▶ acceptability ▶ following the plan 	<ul style="list-style-type: none"> ▶ audits ▶ questionnaires to clients ▶ information on periodical examinations
Agreement on further procedures and responsibilities	A note in the patient records
Diagnosed diseases and disabilities	Résumés of the examinations
Fulfilled recommendations <ul style="list-style-type: none"> ▶ personal 	<ul style="list-style-type: none"> ▶ information on periodical examinations ▶ questionnaires to clients
<ul style="list-style-type: none"> ▶ directed at the work environment 	<ul style="list-style-type: none"> ▶ questionnaires to clients ▶ work place walk-throughs
The examinee has received the information and support he needed	Questionnaires to clients

Example 3

<p>Factors to be followed up</p> <p>Check-ups in jobs that entail special risk of illness</p> <p>Factor to be followed up</p>	<p>Means of follow-up</p>
<p>All those who should be examined are examined</p>	<p>Personal files and patient records</p>
<p>Assessment of the need for examination is based on the correct exposure information</p>	<ul style="list-style-type: none"> ▶ dates of the work-place surveys ▶ the date of the last change in the content of the survey
<p>The content of the examination is appropriate</p>	<ul style="list-style-type: none"> ▶ the date of the last change in the content of the examination ▶ audits
<p>All abnormal findings are checked</p>	<ul style="list-style-type: none"> ▶ résumés of examinations and follow-up information ▶ audits
<p>A résumé is made of the health examination and appropriate recommendations are given</p>	<p>A résumé of the examination</p>
<p>Improvements or repair plans have been made at the work place</p>	<ul style="list-style-type: none"> ▶ reports and plans ▶ discussions in the occupational safety organization
<p>Changes in the results of, e.g., biological exposure measurements</p>	<p>Follow-up examinations</p>
<p>Safe working habits and protective action</p>	<ul style="list-style-type: none"> ▶ work-place surveys ▶ questionnaires ▶ occupational diseases ▶ occupational accidents

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15

Assessment of work ability

Timo Aro

Introduction

Assessment of the work ability of the employees is an essential part of occupational health services and of the maintenance of work ability. The assessment of an individual's ability to work begins at the pre-placement health examination and continues throughout his/her working career in connection with different occupational health services. When the occupational health personnel assess an employee's ability to work, they should pay attention to the work tasks and working conditions and try to ensure that the employee can cope with them. The assessment of work ability also includes evaluation of an individual's work ability and functional capacity so that the individual's health resources are developed, taking into consideration the requirements of the work and the individual development needs of the person during his/her working career.

The ability to work is based on health, functional capacity, professional skills and, for instance, the desire to work. Practically everyone, except those with serious diseases or disabilities, is, generally speaking, able to work. However, in work life, the question is more or less of occupational work ability, which consists of two main factors: the work task and its specific requirements, and an individual's ability and qualifications to handle the work. Thus, work ability is affected by changes in both the functional capacity of people and in the work. It is also necessary for individuals to adjust to their work group. They should also have the desire and possibilities to maintain and promote their work ability at different stages of their working careers and in different work environments.

One of the basic tasks of the occupational health service is to issue statements on the work ability of individuals. Usually, a person's ability to work is determined during a health examination in which the person's fitness for work and the possible need for preventive measures and the promotion of ability to work are assessed. The work ability of a sick person has tradi-

tionally been assessed in terms of the person's incapacity for work, although it would be essential to assess work ability also in terms of the remaining work ability and to suggest the necessary measures to support it. The certificates and statements issued by the occupational health service personnel must always be based solely on medical expertise and through knowledge of the contents of occupational health services.

When an employee presents a certificate or a statement given by a health care professional on the need for a sick leave or a disability pension, the decision on the pay during illness, the daily allowances or pensions is made based on the concept of incapacity for work. The incapacity for work, or inability to work, which entitles to benefits, is a legal term which is always connected to a medical assessment. An employee is entitled to his/her salary/pay during illness when an he/she cannot perform his/her work tasks due to the illness. Employees who cannot perform their own work or similar work, are entitled to the daily allowance paid by health insurance. However, the legislation presents several definitions of long-term incapacity for work. When deciding on a person's right to disability pension, his/her possibilities for gaining a reasonable income with his/her remaining work ability, are always thoroughly investigated.

It is not a statutory duty of the occupational health personnel to decide, for example, on an employee's pay during illness, on the daily allowances paid by insurance systems, or on disability pensions. Occupational health professionals are better acquainted with the requirements of work compared to other health care personnel. That is why good occupational health practice necessitates mastery of the definitions and contents of work ability as well as inability to work. Nevertheless, the occupational health personnel are not required to master the entire legislation on social security, because the legal executive power and the interpretation of laws are the responsibility of other institutions.

Evaluation of needs and requirements

According to the regulation of the Ministry of Social Affairs and Health (1348/94) based on the Occupational Health Service Act, the maintenance of work ability includes, for instance, follow-up and assessment of the employees' health, work ability and functional capacity. The maintenance of work ability also includes development of work, of working conditions, and organizational development. An employee must be given a different task if he/she cannot cope with the present task. Also, the employer must try to prevent special problems, such as substance abuse, and be active in the remittance to treatment.

The evaluation of work ability may be a systematic part of the programs that promote work ability, or the need for the evaluation may come up in the health examinations and sick calls. The follow-up of absenteeism or a supervisor's suspicion of lowered work ability (e.g. poor work performance, a change in behavior, neglecting work tasks, or negative feedback from clients) may also be the starting point for an evaluating work ability.

Assessment of the ability to work

Assessment of work ability in regard to maintenance activities

When one looks at the maintenance of work ability, the goals of the assessment of work ability are early detection of the risk of incapacity for work, and recognition of possible risk factors in an employee's work, work community or work environment. The assessment of work ability is part of the evaluation of the need for health-promoting and maintenance activities, and it yields information for the planning of such activities (see Chapter 12 Maintenance of work ability).

Easy-to-use, reliable methods are available for evaluating work ability or the need for maintenance activities. The results obtained with the evaluation methods must be compared to the actual reference values. The selected methods must be such that they measure risk factors which are known to predict poor health or loss of work ability, and which can be controlled by activities that maintain work ability.

The follow-up of work ability and the assessment impact of the implemented measures is continuous and systematic, and requires regularly conducted check-ups of the workers' functional capacity and work ability. Repeated measurements demonstrating improvements in health and functional capacity motivate the employees to continue developing and improving their functional capacity. These follow-up check-ups also help those who plan the activities for work place health promotion to follow their own line of action. They may also help to look for potential new activities for the maintenance and promotion of the employees' work ability.

Assessment of work ability in regard to illness

The assessment of work ability should be based on the idea of the employee's remaining work ability, except when a sick leave is required for treating an illness. An illness can result in either permanent or temporary incapacity for work. Even a serious illness does not necessarily lead to perma-

ment incapacity for work, if the other conditions for promoting and supporting work ability are in order. An employee can keep up his/her work ability also with the help of supportive working arrangements and, when necessary, through retraining to new tasks that are more suitable for the person's health.

If the person's state of health is not so critical that it automatically leads to permanent incapacity for work, the basis for the assessment of work ability should always be a successful return to work and restored work ability. The measures needed for this must be assessed. It is important that the employee has faith in the restoration of his/her work ability.

It is important from the viewpoint of maintaining work ability that the rehabilitation is started as soon as possible. The possibilities of the occupational health services are unique in this regard. When the first symptoms of lowered coping at work appear, special arrangements at the work place are usually sufficient. These may be, e.g. changes in work processes, working conditions or work tasks. Also additional training, special equipment, or a transfer to entirely new tasks may be necessary. When making agreements on such changes at the work place, the occupational health service personnel can, if necessary, make a decision on, for example, a trial period in more suitable work. Based on the decision, the employee, also when returning from a long sick leave, can apply for a rehabilitation grant for the duration of the trial work period from the Social Insurance Institution or the Employees' Pensions Institute.

Occupational health services have a major role in the planning of occupational rehabilitation. Also in cases when the physician's statement in the rehabilitation grant application is written in a hospital, the occupational health service personnel often help to chart the employee's possibilities of continuing in his/her current job. The rehabilitation works best if the employee can continue working for the same employer. If this is not possible, retraining for a new job may be necessary. Funding for occupational rehabilitation can be received from the Social Insurance Institution, the Employees' Pensions Institute, or employment authorities.

When an employee falls ill, the attending doctor, often the occupational health physician, plays an important part in influencing how the employee feels about returning to work after the sick leave. The doctor must encourage the patient to return to work, even though the patient him/herself might not see his/her chances as very good in the most difficult stages of the illness. On the other hand, it is part of a doctor's professional expertise to see realistically a patient's possibilities for rehabilitation, and to support him/her also in the case when a disability pension is applied for.

Writing a reliable medical report is part of a doctor's professional know-how. An occupational health physician must collect enough information on the health requirements of the working conditions, is able to relate the medical findings to them, charts the rehabilitation possibilities sufficiently, and draws the right conclusions based on the observed facts. The quality of the report may be decisive as regards the employee's possibilities to get the social benefits that he is legally entitled to.

Use of information on work ability in the maintenance of work ability

The collecting of information on an employee's work ability should be a continuous routine activity of the occupational health service personnel. The occupational health service is the main collector and co-ordinator of this information, which is useful for the personnel administration and the persons who plan the promotion of work ability. The requirements of data protection must always be remembered, however (see Chapter 8 Data protection).

The occupational health service personnel have knowledge about the working conditions based on work place surveys. They also have access to reliable information on the work ability of employees from several sources, both at individual and group level.

Regular health examinations allow the follow-up of the an employees' health, functional capacity and ability to work (see Chapter 14 Health examinations). In the health examinations, it is possible to use, at regular intervals, such assessment methods of work ability which have been chosen based on the needs of the enterprise. These methods are, e.g. the Work Ability Index, tests of functional capacity, muscular fitness tests, the Occupational Stress Questionnaire, as well as clinical physiological and laboratory tests. In connection with the health examinations, it is useful to inquire the employee's own prognosis of his/her work ability and opinion of his/her professional skills.

At the doctor's appointment, it is always possible to update the information on the employee's work ability. At the end of the appointment, the work ability and rehabilitation need of a chronically ill employee can be assessed, e.g. on a scale of 1-3 (1 = work ability good, no need for treatment/rehabilitation, 2 = work ability mediocre, threat of incapacity for work if no curative/rehabilitative measures, 3 = work ability poor, treatment and rehabilitation to be started immediately). In this way, the work ability of a chronically ill employee can be updated at each appointment. Computer reports at regular intervals guide the occupational health personnel to target appro-

appropriate measures in order of urgency at the chronically ill persons who have been identified at the appointments. Sudden and brief illnesses do not require updating of the level of work ability.

A follow-up of the reasons for visiting the occupational health station and of the sickness absences also gives an indication of the employees' work ability. Frequent visits to the occupational health station and periods of absence with indefinite causes may be signs of illness or of excessive strain on an employee, and they can predict a worsening of the ability to work. When such signs are observed in the follow-up, an employee's work ability should be assessed more closely.

Follow-up, assessment and development of activity

The methods for following up the development of the work ability of individuals and the improvements in the work environment are described in Chapters 12 Maintenance of work ability and 14 Health examinations. The quality and reliability of the assessment of work ability is ensured by the correct timing and appropriateness of the assessment. Quality can be estimated, for example, by following these rehabilitation measures which maintain or restore the employee's work ability despite his/her illness.

A good work ability assessment also includes a detailed medical report of all the matters that affect work ability. The facts presented in the report must be in line with the conclusions. The quality of the reports is illustrated, for instance, by the extent to which the recommendations in the reports are carried out. One must nevertheless be cautious in drawing conclusions, since the final outcome is affected also by other matters, in addition to the report, e.g. the final decision of the Social Insurance Institution, based on the legislation.

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16

Occupational health support for work communities

Anna-Liisa Elo

Introduction

Work communities (work units) need support to improve their interaction and to learn to prevent stress and improve the ability to work. The goal of the occupational health (OH) support is to improve the ability of workers to solve together the problems arising in the work community, and to improve their functioning as a group. Activities to maintain work ability focus on influencing the psychological and social prerequisites of work ability. This is preventive occupational health care. By supporting work communities (work units), an interaction is created with them, which is the basis for the work of occupational health services. Other preventive activities can be built on this co-operation. The early support of workers with problems and the improvement of their work environment go hand in hand to support work communities. Employees' commitment and participation in planning are central elements in accomplishing improvements at work (see Chapters 12 Maintenance of Work Ability and 17 Participative planning of work places).

Changes in work life require a strongly goal-oriented approach from the occupational health personnel in their co-operation with work communities. Identifying both resources and weaknesses of a work community is an important starting point in the struggle against work stress and in the improvement of work ability. The support given to co-workers and the superior can also be helpful when a person is subjected to pressure in his or her personal life. Psychological and consultative skills complement the occupational health personnel's good knowledge of work life and increases their possibilities to help work organizations cope with continuous changes. Occupational health services are a resource for the work community; they can support work communities to continuously improve their activity in such a way that the employees' work ability and well-being are enhanced.

Concepts

Work community means here a functional group with common goals, and whose members are, at least to some extent, dependent on each other in

reaching these goals. The roles of the members are also different as regards reaching the goals. A work community can be an administrative, formal unit in an organization, but it can also be a more flexible group of people working together permanently., i.e. a natural work unit. Work organization is used in this chapter to mean a wider work place entity which often includes several work communities or units.

OH support for work communities covers comprehensively the activity of the occupational health personnel. It can be implemented as occupational health service projects or as the participation of the occupational health personnel in the development project of a work community or entire work organization. Understanding group processes and basic knowledge of work psychology is needed in this work, although only a few OH services have psychologists as team members.

Other supportive activities benefiting work communities are organization development, human resource development, safety work, and improvement of the working conditions. Collaboration is needed. Management and leadership are central in implementing the plans that supportive co-operation brings up. The techniques of project work, team work, and quality management can be similar to the methods used in OH support for work communities. The participation and co-operation of the employees is often essential in all these activities.

The starting points and goals of OH support activities

Supporting work communities means helping them and emphasizing the importance of the workers' participation in the development of their work. The target of the supportive activities may be:

- ▶ improving interaction in the group
- ▶ supporting the work ability of an individual by increasing social support from the work mates
- ▶ helping an individual to function as an equal member of his/her work group
- ▶ solving conflicts
- ▶ supporting the superior as the leader of his or her group or in development activities

The initiative for supporting a work community may arise from an acute crisis or a defined need for development:

- ▶ a crisis or exhaustion of the whole work unit requires an analysis of the situation and support for the work unit's own resources and choices
- ▶ managing change requires knowledge of how people behave in a situation of change, as well as increased mutual understanding within the work group, and support for overcoming the most difficult stage

- ▶ supporting a work unit's functioning requires charting of strengths and weaknesses, and motivating the work unit to make plans and to carry them out.

Assessment of needs and resources for support

An understanding of the work contents of employees and work processes is the basis when one considers OH support for work communities. The hazards and risks of the work must be assessed (see Chapter 11 Work-place surveys). Based on the assessment, it is essential, to encourage the members of work units to become active and participative in order to improve their working conditions.

Psychosocial factors in the promotion of the employees' health have long been emphasized in international recommendations, but the psychosocial significance of the work community or unit has not been emphasized separately. Increasing the employees' possibilities to participate in health-related matters and the improvement of their working conditions have been key points in the recommendations and instructions of the International Labour Organization (ILO), the World Health Organization (WHO) and the European Union (EU).

Clients' needs and expectations

Opinions on the possibilities of supporting work communities vary. Attending to the expectations of a work group, unit, or a whole organization helps in determining the needs. The actual needs may also be in conflict with the verbally expressed wishes. The needs and expectations of a work unit can be clarified by discussing them with the members of the unit.

Signals of the work unit's need for support may come through different channels. Very often an employee talks about the problems in his or her work unit during a health examination (see Chapter 14 Health examinations). The occupational health personnel also observe the functioning of the work units when they engage in work-place monitoring and preventive occupational safety inspections. If questionnaires are used, they shed light on problem areas and work units needing special support.

When the yearly action plan for occupational health services is being prepared, the need for support to work communities can be charted and discussed with the management or the superiors. These discussions should also cover the possibilities of the occupational health services in support-

ing the work units. The discussions can be guided by e.g. a brochure describing the available services and options. These discussions serve as a basis for negotiating an offer/tender with the superior. It is important for the occupational health personnel to be familiar with other development projects going on in the organization, so that they can be fitted together in the best possible way.

Both the communication with the work unit, and the negotiating process, must evoke trust in those concerned. The target and content of the support, and not the person providing the support, should be emphasized, because this kind of service may be unfamiliar to the client. It is important to point out the ethical considerations and actions, as well as quality aspects of the services, because often the client is not competent to assess these. When a project is launched in a work community, it must be agreed right from the start who is the client and who represents the client.

Understanding an organization's culture is an important prerequisite for successful co-operation. Recognizing the values of the organization helps one to set realistic goals and to choose the best way to proceed. Culture in this context means such habits, skills, attitudes, equipment and techniques that the work unit has adopted and which are typical to it. Culture reflects the way in which reality is interpreted. Thus, culture creates a frame of reference for behavior. Phenomena that are esteemed and idealized in a particular culture influence the choices people make, and guide their creativity and personal growth toward these ideals. In a situation of change, an organization's culture comes out more strongly than at other times. For example, when organization mergers occur, it is necessary to solve problems arising from clashes between different sets of values and different lines of action in the merging organizations. Work communities also create their own culture, and this may differ from the culture of the organization.

Not everyone in an organization wants changes, even if they are intended to promote health. The occupational health personnel may find themselves in conflict with the culture of the organization, if they do not strive to understand the organization's mode of action. The occupational health personnel have a great deal of knowledge about the culture of the organization, as it accumulates during appointments with clients and while participating in different projects. When assessing this knowledge, however, one must be critical, because usually more negative than positive experiences are reported at the appointments. It is important to recognize those features of the organization culture which weaken or strengthen the employees' functioning and ability to work.

Implementation

Planning

The planning of OH support for work communities is based on the clients' needs and motivation. It is useful to discuss the role of the occupational health services with clients in order to avoid unrealistic expectations. It is also good to agree exactly who is the client in a project or consultation, and to whom the project will be reported. The role of the client should also be discussed; it is important to clarify the type of activity to which the client is willing to commit him/herself, and the client's role and responsibilities. If the occupational health personnel are not able to help the client, they should suggest where else the client could ask for help.

The occupational health personnel's own skills and knowledge, and their understanding of the methods to support a work community influence their possibilities to promote the work ability and well-being of their clients. The resources of both the client and the occupational health personnel set practical limits for action. That is why the goals must be set individually for each work community, and be defined together with the client. At the same time, the manner of co-operation and the distribution of tasks and responsibilities is planned. Making an agreement and defining the task clearly is important in supporting a work community, because the process of supportive consultation may evoke new needs and tasks, which cannot be handled by the occupational health personnel. It is important to define and to agree on what the particular project or consultation includes, what it does not include, and how possible changes in the action plan are settled. It is also important to plan beforehand the follow-up and continuous evaluation of the actions.

The role of occupational health services in a project

The management and personnel bear the main responsibility for developing the organization. The task of the occupational health personnel is to support the co-operation and interaction, and not act merely as a consultant to the management, or a counsellor to the workers. Providing psychological support to a work community is different from the traditional role of occupational health personnel. However, they must still maintain their independence and impartiality to be able to carry out also the basic task of looking after the employees' health. It is thus important to define one's own limits in supporting work communities. In extensive projects, it is important to understand the relationship between activities of the occupational health services and the organization development and leadership activities.

The occupational health personnel have given colorful descriptions of their role in supporting work communities:

- “ a prodder”, a motivator at a time when a work community is still hesitant to take action, which it has perhaps already recognized as important
- “extra hope”, when faith in the future and in the possibilities to cope with problems is faltering
- “a window washer”, helps in clearing views and visions, when all roads seem blocked
- “a signaller”, who warns, “if you continue this way, then ...”, who informs about earlier experiences of similar situations.

Competence of occupational health personnel to support work communities

A wide range of skills is needed in the support to work communities. Occupational health personnel can help all members of a work community to participate equally, they can encourage individuals and the group to listen to everyone’s opinion when searching for a solution to a problem. The occupational health personnel can develop their skills continuously, even if they have experience in supportive work. They should also repeatedly assess their own skills and need for improvement. It is important for the occupational health personnel to get work counselling from time to time, either in a group or individually, especially when the supportive activity is new (see Chapter 6 Multidisciplinary in occupational health services).

The support given to work communities is based on a consultative approach. Training in psychotherapy may also prove useful in this kind of work. However, the meaning of consultation, work counselling and therapy should not become blurred in practice. In consultation, the expertise is used in analyzing the client’s problem and in outlining various solutions. In work counselling, the problems are looked at personally, with emotion, trying to increase openness and awareness of oneself and one’s own work.

The consultative approach of the occupational health personnel is based on a reflective approach on listening and understanding. This kind of approach can influence the client’s way of acting also outside the consultation project. At its best, it increases interaction in leadership and in the social relations of the work community. The occupational health personnel can, by their own actions, serve as ‘a communication model’ to the work unit. The members of the work unit may gradually improve their listening and communication skills when deciding on important issues. Thus, management of group processes and communication in groups is the most central tool in supporting work communities.

Selecting methods

In diagnosing the situation in the work community, available survey methods can be used. Questionnaires are the most common methods for this purpose.

The situation can be monitored by

- ▶ individual interviews
- ▶ questionnaires
- ▶ group discussions or interviews
- ▶ interactive methods, e.g. sociometric exercises, sociodrama.

Each method has its own requirements. Questionnaires and interviews are familiar to everyone, but interpreting the results and drawing conclusions may be difficult. User-friendly computer programs for statistical analysis facilitate the use of questionnaires. Practice is needed in giving feedback of the results to the work unit and in making a plan based on the feedback. In a feedback session, the discussion of the participants should be guided in such a way that they themselves interpret the results and plan improvements in a cooperative way. It is usually helpful if an external consultant, e.g. occupational health professional, participates in this discussion. There are many ways of structuring the discussions in a feedback session, and problem-solving techniques may also be helpful.

Interactive methods, such as sociometric exercises or group-work techniques, are also useful in diagnosing the situation. In addition, they help the participants to become aware of the different viewpoints behind the problems. The methods should be chosen according to the situation and the consultant's own expertise. Different approaches are possible. When adopting a new method, the OH service personnel might first try it on themselves, and then on the target group. This is a good way of training oneself.

Implementation of support for work communities

At its best, supporting work communities is based on long-term interaction with them. New projects can be started with the same communities, and the occupational health personnel are in contact with them about various matters. The course of action taken is determined by the problem in question and the resources available. The supportive work is process-like (Fig. 14 p. 154), but its duration can vary from an extensive development project to a single discussion arranged because of an acute problem or crisis.

One objective of supporting work communities is to create an atmosphere of trust and security. It is crucial to encourage discussion of issues connected with a crisis or problems at work, and to create an open atmosphere

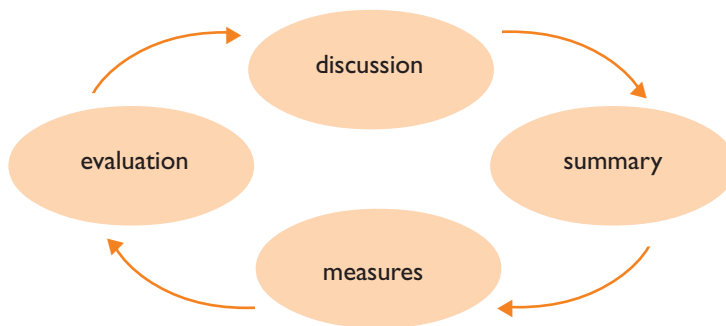
which allows free discussion. The work community should also be encouraged to hold regular meetings, preferably at stated intervals. The work community itself is responsible for the development of its own activity and for solving its problems, but it needs a “prodder, a window washer, an interpreter of connections”.

Support to work communities can be given on the basis of a number of theoretical frames of reference. Theories help to analyze an actual situation in which emotions guide the behavior of people, for instance during a crisis or a change. The consultant’s own training, interests, and the nature of the problem help in the choice of a suitable theory or model.

Stress theory examines situations from the viewpoint of an individual’s psychological balance and the factors that threaten it. In a stress situation, an individual’s resources and expectations, on the one hand, and the requirements and possibilities of the situation, on the other hand, are in conflict. The individual’s own resources, as well as social support and possibilities to control one’s situation are central in coping with stress. The work community may either hinder or support its member’s coping resources.

Figure 14.

A simplified model of work community work



According to the role theory, an individual’s behavior in a group is determined by roles. It is important to analyze the roles of the work unit’s members, and the roles of each member in different situations, in order to make the members conscious of these roles. After this, the roles can be developed.

According to the system theory, a work community is an open system that interacts with its environment. The community learns by examining its own reactions. The principles of cognitive therapy also apply to the support of work communities. A short-therapy or solution-oriented approach aims at a quick definition of the client's problem, at setting a goal, assessing the input needed, and at testing and evaluating the result.

Support in situations of change

Problems related to changes in the organization are easier to solve when the change is in the interest of the work unit, like in a development project, and the work unit is committed to carrying out the change. In a forced situation, e.g. in connection with downsizing, support has to be asked from several instances, in order to minimize the employees' risk of falling ill, even committing suicide. Occupational health services may have to focus on those who leave the organization, those who change jobs, superiors, and also on the remaining employees.

The goal of training for change is to support the employees and superiors who are under pressure due to the changes. Discussions can help people to plan their lives and to maintain their work ability and well-being despite negative changes. Joint discussions should be arranged together with other supportive projects planned for example by the personnel administration and occupational safety personnel. Additionally, the occupational health personnel can offer individual crisis counseling at an appointment.

Supporting internal functioning in a group

The problems related to the work community's internal functioning can result from conflicts between some employees. There may be cliques and competing groups inside a work community. Preferably more than one external consultant is needed for a crisis situation, especially if the crisis concerns a large number of people. During the process, the way of co-operating and the social relationships are examined by different methods. Problems are pointed out, but also the strengths in the co-operation are brought up. Little by little, the work community gets new hope, improves its self-esteem and learns to solve its problems.

The occurrence of mental violence or bullying at a work place must be strongly intervened with when all the members of the work unit are present. Here too, the occupational health personnel can participate as the initiator and provider of models. If the victim of bullying comes to an appointment, the superior can be contacted, with his or her permission. The victim needs individual support. The phenomenon must be addressed directly at the work-

place meetings, for example by describing the experiences of the victims of bullying in general, and by adopting a decisively disapproving attitude toward bullying.

Crisis interventions

A crisis intervention usually consists of 3-5 meetings, in the beginning held probably more frequently, and toward the end less frequently. Face-to-face discussions with each employee can be included, because a crisis often reminds people of other issues that are good to bring up. In addition, the follow-up can be arranged, for instance, so that the work unit itself takes care of it after trying out the procedures agreed on during the project. It may also be useful if the OH consultant calls the superior after a few months.

The crisis intervention can proceed as follows:

- ▶ a joint discussion for all those involved in the crisis
- ▶ face-to-face discussions with each person
- ▶ a summary of actions that could be taken in the work unit
- ▶ 1-2 additional meetings, if needed
- ▶ evaluation

Psychological debriefing

Psychological debriefing may be needed, if the employees have experienced violence or the threat of violence at work. Also accidents or fatalities can shock the work community. After such situations, many people experience sleeping difficulties, a fear of being alone, and feelings of helplessness or unreality. Common questions asked by many are: Why? Why just us? Did we do everything we could? Could we have prevented what happened by acting in some other way?

After a traumatizing situation, it is good to meet the people who were there and who know what happened. Going over the events with others helps to give a better picture of what happened. We know from experience that serious stress reactions can be prevented or alleviated in this way. The session should be arranged within 1-3 days of the incident. Even one debriefing session is better than nothing. Psychological debriefing is also needed after catastrophes. A plan for the support of the personnel should be made for such cases (see Chapter 19 First aid readiness and operation in a catastrophe).

Participating in an organization development project

Supporting a work unit can proceed as a development project. An extensive project usually requires co-operation among different interest groups and

their representatives, and the occupational health personnel participate in it within the framework of their own role. Occupational health personnel can initiate projects, because they often have a good view of the development needs of work communities. The OH personnel must plan beforehand, where and how the development needs observed by them are best brought up.

A development project may proceed as follows:

- ▶ analyzing the problem and making an agreement
- ▶ diagnosis of the current situation
- ▶ assessment of the prerequisites for improvement
- ▶ setting the development goals and planning the implementation
 - prioritizing development targets
 - choosing methods
 - drawing up a schedule
 - agreeing on the people in charge of the various stages
 - agreeing on the methods and dates of the follow-up
- ▶ implementing the development project and tackling the obstacles
- ▶ evaluation.

Analysis of the work unit's problems and development of the work community actually begin at the same time, because the posing of critical questions guides the participants in interpreting of the reasons behind the problems.

Ethical considerations

As all occupational health service activities, also the support given to work communities is built on high-quality ethical practice (see Chapter 7 Ethics in occupational health care). The occupational health professionals must maintain their independence and impartiality even in conflicting situations. Sometimes it may be difficult to support the same people as individuals and as members of a work community at the same time. It can be difficult to make a distinction between the problems of the individual and the problems of the work community. From the viewpoint of individual data protection, it is important to keep the information gained at an appointment separate from the information gained in discussions with the work community, although both would provide important information on the problems. Also the individual client must be convinced of this procedure.

Work community support is based on confidentiality. The information gained on the work community is used only for developing the community. Mentioning the work community by name in some other context must be agreed on beforehand. When giving feedback to the members of the community based on questionnaires or interviews, one must make sure that individuals

cannot be identified. This is especially important in small work groups, where the members know each other well. That is why criticizing the superior as a person in a feedback session is questionable from the viewpoint of confidentiality. These principles must be agreed on with the management and employees beforehand.

It is natural that when working with groups, as with individuals, dependence and feelings of anger may be provoked between the client and the helper, particularly when difficult and distressing issues are discussed. Too much dependence prevents the work community from learning. At some stage of a development project, it is usual for negative feelings to emerge toward the consultant/helper, and there may be a threat of discontinuing the project. Overcoming these difficulties requires experience, because, the client has the right to discontinue the project, if the cause for discontinuing is well grounded. Sometimes, the work community looks forward to entertaining activity and may be disappointed and frustrated when difficult problems come up.

Follow-up, evaluation and development of supportive activities

Follow-up on the effects and results of the support for a work community helps both the work community and the occupational health personnel to develop. The follow-up should not be merely an evaluation done at the end of a project; it should always include continuous evaluation. In addition, the times for the follow-up should be decided beforehand. The goals of a long project may have to be specified or even changed during the project. The follow-up should be continued also after the project, because after the initial enthusiasm has worn out, the work community may return to its old course of action. The follow-up can be useful for the work community, even if it is only a phone call every now and then. Also follow-up carried out by the work community itself can be planned together in advance.

Questionnaires on work stress and on the work climate are used in starting development projects, and they are very suitable for this purpose. It is feasible to use again the same assessment method and to compare the results with earlier ones. The reliability of the questionnaires applicable to practical work poses a problem, however. A questionnaire must be sufficiently extensive to ensure good measurement quality. On the other hand, it should not be too extensive, in order to allow flexible use. No compromises on the reliability of measurement can be made in measuring a change, however. If a measurement indicates improvement or weakening of the situation, and

the result is used as a basis for decision-making, the measurement must be valid and reliable. In a practical development project, one should use such questionnaire and interview methods that help to clarify people's opinions about the nature of the change, e.g.: "Was the change to the better or worse?".

Common discussions in which the project is evaluated together are a good traditional way of gaining an overall view of the advantages and disadvantages of the support project. The discussion should be planned in advance so that all the important aspects of the project are brought up, even those which perhaps were not anticipated in the initial goals. Questions on the work community support should be included in the client inquiries of the occupational health services, because the clients' experiences describe particularly the success of this activity.

Employees, the line management, the top management, safety personnel, personnel administration, and health and labour authorities emphasize somewhat different issues in assessing the necessity and benefits of supporting work communities. The primary evaluation criterion for occupational health services is the work ability and well-being of individuals, but improvement of the prerequisites for them requires co-operation with the above-mentioned parties.

The evaluation should focus primarily on matters that have been defined as targets of a supportive project. It is possible to evaluate improvements in a work community's functioning, decreased bullying, and decreased post-crisis trauma. A good workplace climate is an important resource for effective working. Goal clarity, role equality, openness and ability to bring up problems, support and trust, co-operation and tackling conflicts, clear-cut procedures, appropriate leadership, regular evaluation of own activity, possibilities for individual development, and positive interaction are indicators of a good social climate and a well functioning work community. When evaluation is included in the support of work communities, the continuous development of this activity is ensured.

This chapter is based on intensive group work by OH physicians, nurses and psychologists Anna-Liisa Elo, Merja Honkalinna, Risto Rinta-Mänty, Heikki Saarnio, Helena Sivanne and Kati Uksila.

17

Participative planning of work places

Tuulikki Luopajarvi

Introduction

Providing healthy, safe working conditions and work is the best way of maintaining and promoting the health and work ability of the employees. Occupational health personnel are the experts in the enterprise on human health and on the interaction between a person and work. In addition to professional know-how, occupational health personnel possess a great deal of information on work places, work methods and employees. Utilizing all this knowledge in the planning and designing of the work environment and work methods enables the continuous improvement of working conditions.

Health information is used in the evaluation and rectification of work sites (see chapter 11 Work-place surveys). However, as time goes by, it is not enough to point out errors and problems; the quality of the occupational health services and the meaning of the work must be scrutinized. Changing existing premises is expensive and difficult, and it may not be technically possible to repair the premises.

If the occupational health personnel want to develop their know-how, promote the health of workers, and utilize their knowledge and skills efficiently, it is necessary to integrate the occupational health services to the other activities of the enterprise. In this way, the enterprises will benefit more from their input to occupational health services than they do now. Collaboration with the occupational health personnel in the designing of work methods and work environments ensures that ergonomic and health aspects will be considered. This is most important when basic decisions concerning plans for functions, building and purchases are made, as these decisions determine the basic layout of working conditions and the well-being of workers for a long time.

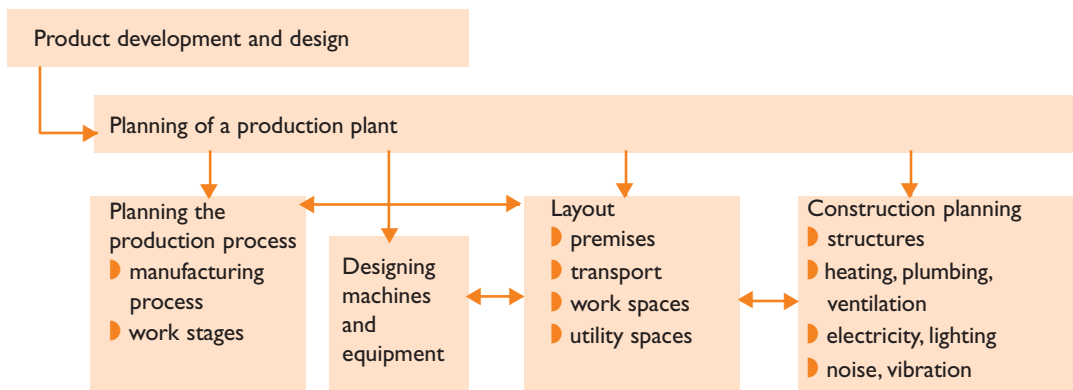
Areas of planning

Both long-term and short-term (yearly) planning is carried out in enterprises. In the long-term plans, the action policy and the goals are defined, the modes of action are chosen, and the necessary premises and various resources are analyzed. In the yearly planning, the earlier plans are checked, concrete goals and tasks are set for the coming year, and the division of labour and resources needed for implementing the goals and tasks are assessed.

The planning (figure 15) begins with product development and product design, when the product or service is developed. Creating a new product or a service may require the planning of an entire production plant or the designing of a small service unit. The planning of production engineering often means the planning of the manufacturing process of a product or of the way in which a service is produced. It covers the planning and designing of production and work processes, work methods, layout and equipment. Layout design is carried out on many levels, on the level of the entire building, its parts and work sites, in order to find out the need for space in the construction plans. The location of rooms and equipment and the space needed for the services is determined in the plan. The planning of work methods concentrates on the work tasks of individual employees and on the designing of work sites. Construction planning includes, in addition to architectural planning, calculation of the strength of the constructions, designing heating and ventilation systems, plumbing, electricity, data communications, lighting and interior decoration.

Figure 15.

Stages and proceeding of production planning



The different stages of planning often overlap and influence each other in such a way that the border between different stages is often unclear.

The planning can be divided according to the method of working as follows:

- ▶ *expert planning*, which is co-operation between the professionals of planning
- ▶ *participatory planning*, in which all or most of the future users of the premises are directly involved
- ▶ *representative planning*, in which a few of the future users of the premises or their representatives, such as the occupational safety delegate or an elected trustee, participate
- ▶ *co-operating planning*, in which, in addition to the future users of the premises or their representatives, experts in different fields, such as occupational health and safety personnel, participate.

Assessment of needs and requirements

Legislation and official instructions

In Finland, the Occupational Health Service Act states that in the planning of work methods, equipment and premises, and in starting new functions, medical knowledge and experience of the presence of health risks and health hazards must be considered.

The Occupational Safety Act stipulates that occupational safety aspects and the prevention of physical and psychological over or underloading are to be considered when planning a building project. Ergonomic solutions, which promote health at work, must be utilized as much as possible. The designer and the decision-maker are responsible for the final outcome, which fulfills the occupational safety requirements. It is also in the designer's interest to co-operate with the future users and to hear experts of different fields, in order to ensure a good result in the easiest and best way.

A prerequisite for co-operation is that the management of the enterprise, the planners and the occupational health services accept co-operation as a way of action. The occupational health personnel must actively inform the designers, supervisors and support groups of the activities promoting health and preventing illness so that this knowledge can be shared with other professional groups (see chapter 5 Co-operation in Occupational Health Services).

Another prerequisite for co-operation is that the data available to the occupational health services on the working conditions, the working methods, the equipment and substances used, as well as the employees' health status and functional capacity are up-to-date. Based on the existing data, one should be able to draw conclusions on the connections between work, health and functional ability in order to define the health and safety level and the safety goals of future work spaces and the criteria for good work and a good work place.

People with different training and work backgrounds culture must have a chance to learn and practise co-operation. The work of other occupational groups must be known sufficiently so that people are able to discuss matters and to ask for help and give help when needed. In addition to the internal, reciprocal training in the company, for instance courses on ergonomics are useful in creating a common language and broadening understanding (see chapter 6 Multidisciplinarity in Occupational Health Services).

Goals of planning co-operation

The goal of co-operation in planning is to ensure, already during the planning and construction phases, such work and working conditions which are safe and healthy, and which support the skills and development needs of the employees.

The goal of a healthy and pleasant work environment is not in conflict with the production goals. In good working conditions, the work proceeds well, the risk of diseases and accidents decreases and, consequently, the productivity of the work improves.

The management of the enterprise and the employees should recognize the benefits of the co-operation between the designers and the occupational health personnel and accept co-operation as a mode of action. If the occupational health personnel have thus far concentrated mainly on pointing out deficiencies and the need for repairs, co-operation means a change in the working habits and culture as concerns the enterprise's planning activity and the occupational health services.

Invisible effects of the work environment

Often, the psychological effects of the work environment are limited to the significance of colours and state of mind to feeling of general well-being. Structural factors, e.g. the physical environment, also influence the functioning of a work group, the well-being of the employees and the work arrangements and co-operation. The work environment determines, for its

part, a person's actions and human relations. The physical environment can enhance or hinder the development of social relations at work and the relations between people. The significance of the work environment to a person's general well-being is great, because most people spend a quarter of the time they are awake in their work environment. A constructed environment also reflects the values, culture and the view of humanity that are conveyed to us as perceptions and meanings.

The physical environment can be examined from the point of view of both the organization's basic task and various groups, such as the employees and the clients. The starting point is to examine whether a certain space or building supports the goals set for work, and whether it reflects the basic purpose of the organization. The symbolic qualities of an individual work site often reflect an individual's status in the organization.

The significance of the physical environment is of current interest, because many work tasks change continually. Their goals and contents are redefined and re-emphasized. There is reason to ask what the work places of the future will be like, and in what kind of an environment will the work be carried out. Buildings and spaces should also be understood as instruments of achieving the goals of the activity, not merely as the outer shells of the activity. For example, people cannot be forced to co-operate, but physical and functional conditions can be created to facilitate co-operation. Awareness of the significance of the environment helps us to use and plan environments that serve our purposes. In the planning of a work environment, the effect of the spaces on the psychological characteristics of people should also be considered.

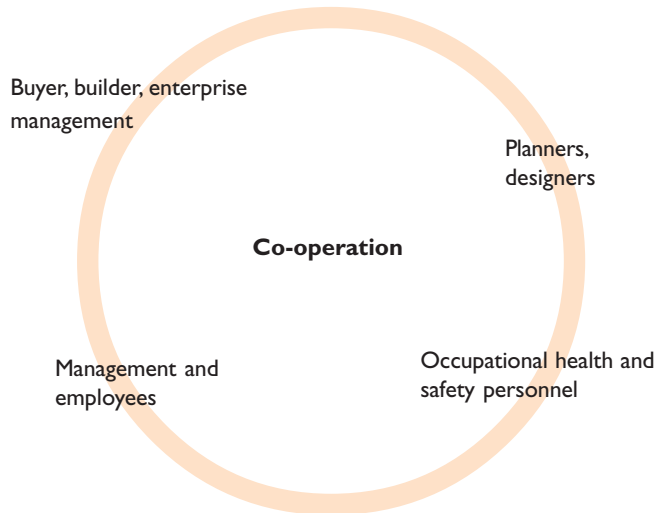
Collaboration in planning

Many professional groups, which vary during the different stages of the planning process, and in the different projects, collaborate in the planning (Figure 16 p. 165).

In the action plan and in the initial stages of planning building projects, the client is usually the management of the enterprise or the builder; they may want information on the health, work and functional capacity and possible special needs of the personnel. As the project proceeds, various planning professionals join in. The occupational health personnel can give them basic standards and information related to the employees' health, strain and activities, and feedback on, for instance, the success of earlier plans. The future users of the premises are an important collaboration partner.

Figure 16.

Planning is a collaborative project



The occupational health personnel can support their participation in the project by training and offering information. The users are in a key position, when choices regarding work situations and job satisfaction are made. The occupational safety representatives usually have a great deal of information and experience regarding the work and the work environment, and they are also natural collaborators also with the occupational health personnel.

It is beneficial for the occupational health personnel to understand sufficiently the planning practice of the enterprise and the work of designers to be able to interact with them. On the other hand, the enterprise management, the designers and the users of the premises expect the occupational health personnel to take initiatives and have the readiness to take on challenges.

Starting collaboration

When regular communication between the enterprise management and the occupational health services is started, the management receives up-to-date information on the development of the employees' health and functional capacity and of the health status and effects of the working conditions. At the same time, the occupational health services are told about the enterprise's future projects and they can study them in the yearly action plan. They can reserve time and other resources for possible planning collaboration, and can chart the existing information and decide what other information may be needed.

Common procedures and tasks of the different parties involved in the co-operation should be agreed upon beforehand. If the enterprise has written co-operation guidelines for construction projects, also the general principles of how the occupational health personnel participate and their tasks should be outlined in them. The principles of co-operation can also be recorded in the occupational safety action program, or the co-operation can be managed by an ergonomics group, if there is one. Co-operation initiatives may come from the management, product development team, the developers of production technology, designers of work methods and work stations, employees and occupational health personnel.

Good communication and co-operation within the occupational health team form the basis of sensible division of work also in planning. In this way, the best expertise can be guaranteed in every project and everyone's skills can be utilized.

Co-operation in practice

The forms and content of co-operation vary in different planning projects. When co-operation is concerned one must consider the nature of the project, the target of planning, the future activity of the employees on the premises and the data that the occupational health services can provide, as well as the available time and other resources. An occupational health professional can be a member of the planning group during the entire planning and building process, he/she can function as an adviser to the designers and/or as a facilitator in the participatory designing, or he/she can merely give feedback and comments on the plans made.

The issues discussed in the co-operation may be related to techniques, quality, difficult work postures or questions related to vision. The problems are solved together with the designers of methods, automation, and measuring devices, the management, the product development people and the employees.

The occupational health personnel can make comments about the employees' activities and health matters, inform about hazardous strain factors, carry out special examinations, such as eye sight tests, and inform about lighting and viewing in the written working instructions. The work stations can be designed and adjusted to support the work methods and also the locomotor system. Sometimes also product development is required.

Example 1

Planning of a new production plant and production

Borealis Polymers Ltd develops and manufactures plastics and petrochemicals, in their production plant at Kilpilahti, Porvoo. The enterprise was started in 1993, and it employs over 100 people and functions in close co-operation with the production plants of Neste Ltd. Borealis Polymers Ltd buys occupational health services from the occupational health care station of Neste Ltd.

In November 1991, Neste Ltd made the decision to build a new polyethylene plastic plant, the Europlant 2. The occupational health personnel got information in the initial stages of the project through the enterprise's own information service and by interviewing the project people. The occupational health personnel contacted the project leader, and inquired of the possibility to participate in the project. In spring 1992, a joint meeting was held with the project people. The occupational health personnel expressed their interest and readiness to participate in the planning, especially as regards the choice of chemicals to be used, the assessment of their possible health effects, the methods of handling the chemicals, and the use of protective equipment, the measurement of noise and assessment of ergonomic conditions in the process area, etc.

A safety group was set up to support the planning. It included, in addition to the representative of the planners, the representatives of the line organization, the occupational safety organization and the occupational health services of the future plant. In the meetings, for instance walking and working in the process area, as well as the chemical, physical and mechanical risks were discussed. Placing of the equipment and ensuring safe working conditions were discussed from the viewpoint of maintenance. Information overload, the social environment, the ergonomic work environment, and working methods were assessed from the viewpoint of psychological and physical strain. The precautions for hazardous situations were assessed separately. The group also conducted a study visit to learn about computer-aided-design (CAD). The occupational health physician prepared instructions on coping with accidents or sudden attacks of illness for the construction site manual. The occupational health physician and nurse visited similar plastic plants in Sweden and Belgium that had already been functioning for some time.

For financial reasons, the building of the plastic plant was interrupted for over a year. In the final stages of the building, the safety group no longer met, but their work was continued. The plastic plant started to operate in autumn 1995.

Experiences. In the safety group, the occupational health personnel received already in advance a sufficient amount of information on the conditions of the plastic plant, and they had a possibility to influence them. Working in the group was relatively easy, because the majority of the group members were novices in planning work. Basic knowledge on occupational health services is usually enough to enable participation in the planning. Considering the time spent, participation in the planning proved useful. However, individual ergonomic deficiencies have been already detected after the plastic plant began to operate. The deficiencies will be recorded in the future work place surveys.

Example 2

Participative planning of a telephone exchange

In a changing project of the use of the premises, a new room for the telephone exchange renovated from a room used earlier for technical central equipment. The department head and all 13 female employees were willing to take part in this development project, participatory design was chosen as the working method. The enterprise's occupational physiotherapist acted as a facilitator in the project, and the occupational physician gave expert help when needed. The facilitator guided, helped and assisted the users in the designing tasks.

The stages of participatory design were:

- ▶ *a start-off meeting*, in which the principles and course of action of the participatory planning and the future renovation project were clarified
- ▶ *individual task*, in which each employee drew her own work station, and described the work place and the work environment to the designers
- ▶ *round robin inquiry*, in which the employees' opinions on the positive aspects of the work and the work place and on the points needing improvement were collected in writing to obtain criteria for a well functioning telephone exchange
- ▶ *study visits*, made to three rather new telephone exchanges in order to get ideas
- ▶ *feedback discussion*, in which experiences were summarized and the quality criteria of the new work space as regards the operators' work and well-being were agreed upon
- ▶ *building of a model work place*. The criteria were specified and modified with the help of the model work place.
- ▶ *meeting for setting the standards*, in which the operators expressed their needs and wishes to the designer
- ▶ *follow-up of planning and renovation*. An interior designer discussed the suggestions with the operators and the facilitator. During the building phase, the interior designer, the operators and the occupational health personnel participated in the construction meetings and followed the achievement of the goals.

The new room for the telephone exchange was taken into use in December 1993. The work place functioned well and the room was pleasant; the telephone operators were pleased with the final result. The interaction of the work group, as well as the work climate improved during the planning. The well-being of the employees improved also as measured by absenteeism figures. In 1993, the operators were absent 30 times, totalling 132 work days. In 1994, there were only 8 absences, amounting to 34 work days. In the other units of the department, the absenteeism situation remained unchanged.

The telephone operators, the management and the designers were satisfied with the course of action. The occupational physiotherapist and physician found participatory design an efficient way of giving the employees information on health, safety and ergonomics. However, the facilitator must know whom to contact when deciding on the meeting place, the time schedule, whom to invite, the topics discussed in the meetings, the supplementary material to be handed out, and suitable persons to introduce the topics. The facilitator must also be able to create an open and unconstrained atmosphere. It is important that the management and designers commit themselves to the promises made and to the proposals of the employees.

The occupational health personnel taking part in the participatory design should be the experts on the enterprise's health situation and on human behaviour, they should give ergonomics and health information to the employees, guide and assist in the development work, take care of practical arrangements and make summaries of the information obtained and the experiences gained.

Tasks of the occupational health personnel at different stages of planning

Planning usually proceeds according to a certain scheme. In practice, participation, for example, in the planning of a new plant includes, not only the planning of the premises, but also participating in the planning of work methods (figure 17 p. 170). The tasks of the occupational health personnel vary in different projects and at different stages of the planning process (table 8 p. 170).

Figure 17.

The stages of planning a production plant

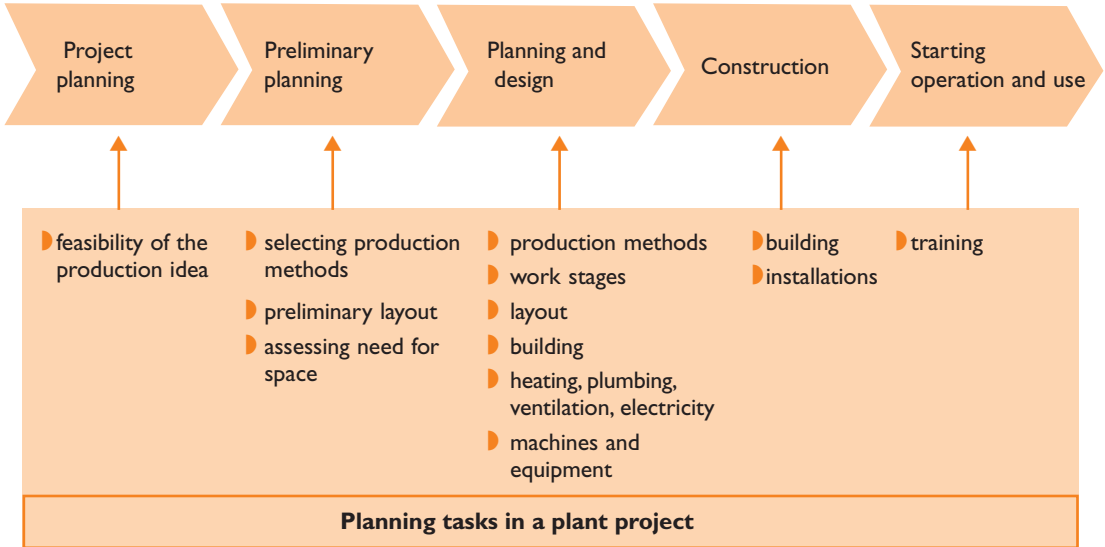


Table 8.

The course of actions of occupational health personnel at different stages of planning

Planning stage	Contents	Course of action
Charting needs	Assessing future activity and the quantity and quality of the spaces/buildings needed for the activity	Provides information to decision-makers on the improvement needs of the working conditions and on the development of the work ability and well-being of the personnel
Preliminary planning	Charting the possible activity and space alternatives, their suitability and cost benefits; making usage and room space plans	Participates as an expert in setting the health and safety standards and goals for new working spaces. E.g., the requirements for inside air, the materials and final products are clarified in the planning of a new production process or a plant; exposure to hazardous processes is assessed and target levels of exposure, which are e.g. 1/2, 1/4 or 1/10 of the occupational hygienic limit value, are set. Target levels for e.g. noise and vibration are set for machine and equipment installers

Planning stage	Contents	Course of action
Planning the production process, buildings and interior design	Detailed plans and diagrams are made of the production and the work spaces, e.g. drafts, work drawings, and drawings of electricity, heating and ventilation systems and interior design, which often are done at the same time	Gives advice on ventilation, local exhaust systems and lighting solutions; information on ergonomics and the latest research results supporting health and safety goals. Encourages employees, 'the future users', to participate in the planning
Construction	Implementation of the plans: there may be changes in the plans during construction	Follows up the realization of the health and safety goals and investigates the effects of possible changes
Machine, equipment and furniture purchases, installations and interior design	Carrying out the installation and interior design plans, making purchases	Gives information to those in charge of installations, interior design and purchases; participates in setting target levels of exposure for the installers and in arranging needed test runs and other trials
Starting operation	Finalizing the working methods, layouts and interior design so that normal production and activity can begin	Ensures that the safe adjustment and operation of machines, equipment and furniture is taught. Follows the test runs: makes sure that the noise and chemical emissions are below the target level
Follow-up	Evaluation of the functioning and the health effects of the premises and processes during the first year of operation	Follows the health and safety of the working conditions during the first year of operation, follows up the employees' health and gives feedback on good and bad solutions to the decision-makers, planners and builders. Plans and assists in the evaluation and measurement of occupational hygienic exposure

Follow-up, evaluation and development of activities

At the end of each participative planning project, the success of the co-operation, the resources used, the information needed for it, and its economic impact must be evaluated in order to find development needs.

In the follow-up, the functioning, healthiness and safety of the working conditions are evaluated and feedback is given also to the planners on both successful and inadequate solutions.

During the first year of operation, comprehensive work place surveys are carried out and the health and well-being of the employees are followed closely. In this way, the occupational health personnel can evaluate their own working methods, the information they have given, and the realization of their goals.

In the evaluation of the results of the planning, the following points may be considered:

- ▶ the promotion of the employees' health and work ability
- ▶ the nature of the production or the activity, and the quality of the constructed premises regarding the flow of work
- ▶ the lowered need for repairs and changes
- ▶ economic impact and benefit of the activity.

Quantitative measures of co-operation can be:

- ▶ number of co-operation projects
- ▶ amount and quality of information given
- ▶ measurements carried out
- ▶ recommendations and suggestions made
- ▶ given feedback and statements.

Good working conditions are important both from the economic and human perspective. Participative planning of work places gives the occupational health personnel a possibility for even more comprehensive and long-term projects than earlier.

18

Accident prevention

Mari Antti-Poika, Heikki Laitinen

Introduction

The goal of accident prevention is to prevent accidents, for instance, by promoting technical safety, safe working habits, and a safety culture. Close co-operation between safety, delegates, the line organization, and occupational health services, is necessary for reaching this goal (see Chapter 5 Co-operation in Occupational Health Services). The distribution of tasks and responsibilities is agreed upon jointly. Occupational safety should be a permanent part of the enterprise's regular activity. It is feasible to concentrate such activities to the occupational health services in which their expertise can best be exploited. It is also the duty of the occupational health services to take care of first aid. Their first aid readiness must be such that they can efficiently treat and rehabilitate persons injured in an accident, in order to prevent the injuries from worsening (see chapter 19 First aid readiness and operation in a catastrophe).

An accident is a sudden, external and involuntary event, which causes a physical injury. In the accident insurance law, occupational accidents are defined as accidents occurring at work or in circumstances connected with work. An injury which has been caused in a relatively short time (24 h at the most), and which is not compensated as an occupational disease, can be compensated as an occupational accident.

From the point of view of occupational safety, it is important to also recognize non-injuring incidents, as these can be used in the planning of accident prevention. Such incidents are, for instance, near-accidents, in which an injury is avoided only through chance.

Assessment of need and requirements

The need and extent of accident prevention depend on the sphere of activity of the enterprise. Assessing accident risks is a part of a work place survey (see chapters 11 Work Place Surveys and 13 Information and guidance). When gathering the basic information, accident statistics and

the results of occupational safety inspections should be examined. Based on these, the accident risks, the necessary first aid readiness, and the possible need for more detailed surveys are assessed (see Chapter 19 First aid readiness and operation in a catastrophe).

Implementation of actions

Prevention

Tasks of the enterprise and occupational safety

An occupational safety action plan must be drawn up for each work place. Safety activity plays an important role in industry and in other branches of activity, where there is a significant risk of accidents. Regarding accident prevention, the action plan should consist of

- ways of following up occupational safety
- methods by which technical safety and safe working habits are maintained.

The follow-up methods of occupational safety include, for instance, safety surveys of the work environment. Some of the equipment must be checked daily before use, and some equipment need regular check-ups at stated intervals. Construction sites carry out a mandatory inspection round weekly. In other branches too, the general safety of the work environment should be inspected yearly, for instance. A number of check-lists and observation methods are available for the different branches. The observation results obtained by using for instance the TR method® (a method of safety inspections at construction sites) correlate well with the occurrence of accidents. A corresponding method, ELMERI®, has been developed for use in industry. In special cases, safety analyses based on the work and the equipment are conducted. In addition to observations, the safety culture of a work place can be charted by questionnaires.

In the TR method®, the safety of the work environment and of the work is observed so as to get a sufficiently reliable picture of the current level of safety at the construction site. The observer walks around the construction site and marks down the items of observations. The aim is to have at least one hundred separate items. The items to be observed are grouped into six entries on the measurement form: 1) working, 2) scaffolding and ladders, 3) machinery and equipment, 4) protection against falling, 5) electricity and lighting and 6) order and waste disposal. The observations are marked as ‘correct/incorrect’: the target is marked as right if it reaches the level of

safety standards, otherwise it is marked as wrong. The safety level of the construction site is a percentage calculated from the number of correct observations.

In the ELMERI® method, the observations are carried out concentrating on one work site at a time. The following items are observed: 1) risk taking and use of protective equipment, 2) order and tidiness, 3) machine safety, 4) industrial hygiene, 5) ergonomics, 6) walkways and 7) first aid and fire safety. All observations are made following the ‘correct/incorrect’ principle. When there are enough observations, an index describing the safety level of the work environment can be calculated from the results. The index can range from 0–100 %.

Occupational safety can also be followed up from accident statistics. If numerous accidents have occurred, a computer should be used for compiling the statistics. For example, by using the TATU software®s (a safety information system for enterprises developed by the Finnish Institute of Occupational Health), it is possible to notify insurance companies about accidents, and to make analyses pin-pointing special risks and possible corrective measures.

Proper repair and servicing of machinery, equipment and buildings is important in the maintenance of technical safety. Old worn-out machines are often dangerous to use, and thus they must be repaired quickly. Preventive maintenance aims at preventing hazardous and costly break-downs.

Safe working habits include, for instance:

- ▶ using appropriate personal protective equipment and guards on machines
- ▶ stopping the machine during cleaning and maintenance
- ▶ following instructions on safe working
- ▶ taking care of the safety of personal protectors
- ▶ promoting order and tidiness at the work place.

New workers must be instructed in safe working habits already in the training phase. It is possible to improve working habits and safety culture, but special actions are needed. Development projects arising from the employees’ own participation, objective assessment of working habits, and continual positive feedback, are an effective way. For example, good results in both the industry and the service sector, and in the weekly TR evaluations® at construction sites, have been achieved with the TUTTAVA method® (a housekeeping program developed by the Finnish Institute of Occupational Health).

Tasks of occupational health services

Occupational health services offer their expertise and function in close cooperation with the occupational safety organization and the line organization. When necessary, occupational health services can make initiatives to implement development programs.

Occupational health services can resort to the following means for preventing accidents:

- ▶ participation in the preparation of the occupational safety program
- ▶ participation in the meetings of the occupational safety committee
- ▶ promoting safety aspects based on discussions in the enterprise
- ▶ participation in the planning of safe working methods
- ▶ participation in the planning of working instructions to new workers so that this instruction will also include the teaching of healthy and safe working methods
- ▶ preparing brief and comprehensible safety instructions to be used either as a support in the instruction of new workers, or posted publicly
- ▶ individual guidance at the work site (e.g., instructions on correct work positions and movements)
- ▶ participation in the planning of first aid training, including instructions on accident prevention, bearing in mind the requirements of the work place
- ▶ teaching workers to carry out first aid activities independently.

The TR and ELMERI methods that chart occupational safety are quick and easy to use also by the occupational health personnel. Occupational health personnel can also make inquiries concerning the safety culture or detailed report of the reasons for accidents.

A special problem in the health care services arises from needle prick accidents which may involve risk of contamination via blood. The Ministry of Social Affairs and Health has issued instructions on the prevention of health care personnel's needle prick incidents and of the potential risk of infection.

Treatment and rehabilitation

The most common accidents treated in occupational health services are sprains and strains of the back or limbs, and wounds. One of the goals of the treatment is to ameliorate pain. When an employee returns to work after an accident, the occupational health personnel follow how he/she copes at work. If necessary, the health personnel make initiatives on improving the working conditions, or if this is not possible, on the person's rehabilitation.

Visits to the health station, because of accidents or musculoskeletal strain injuries, should always lead to the assessment of the working conditions. A model of action, by which the flow of information and, when necessary, the joint discussions of the occupational health and safety are conducted, should be agreed upon in advance for these situations.

In the treatment of acute low back pain, caused by straining the back, bed rest should be avoided, and daily activities should be continued within the limits set by the pain. However, excessive stress on the back should be avoided, as it prolongs the illness. The return to work should be encouraged, and the working conditions alleviated temporarily, as far as possible. The Ministry of Social Affairs and Health has given instructions on the post-treatment of needle prick accidents in the health care sector.

Statements and compiling statistics

A physician's statement is sent to the insurance company on all accidents that have resulted in an injury. The classification of strain injuries and acute pains of the musculoskeletal system as accidents or diseases is often flexible. This is why no precise instructions can be given on when a medical statement on an accident or an occupational disease, or a notice of a work-related disease should be made to the occupational safety authorities. The decision depends on, for instance, the severity of the injury and the circumstances leading to it. Regardless of the statements made, the occupational health personnel should, even in less serious cases estimate whether the incident warrants looking at the working conditions from the viewpoint of accident prevention.

The accident statistics of a work place are used both in accident follow-up and in the assessment of the need for preventive actions. The expertise of the occupational health personnel is important in compiling and interpreting the data. There is variability in compiling statistics on strain injuries and acute pains of the musculoskeletal system. Some of these strain injuries and painful states are classified as accidents, some as occupational diseases, and some as ordinary diseases. When planning preventive measures, it is beneficial to study the accident and sickness statistics together, considering also the less serious cases of strain and pain as diseases.

Occupational health personnel must have clear instructions on compiling accident statistics. Only compensated accidents should be classified as accidents (see also section Economic Considerations in this chapter). Other disorders classified as work-related should be collected in a separate set of statistics for preventive purposes.

Ethical considerations

Protecting the health of employees is the primary goal of occupational health and safety endeavours, and occupational safety and health services must promote the creation of a positive safety culture in the enterprise. Negative attitudes are often blamed for the shortcomings in occupational safety. But attitudes can often be changed to be more positive toward occupational safety by changing the working methods, so that safe working habits are easier to follow. A good safety culture also implies that it is natural to follow safe working habits even when the safety measures make the work more difficult or slower (see chapter 13 Information and guidance).

Economic considerations

Accident prevention requires economic input, but it also brings considerable savings. The clarification and follow-up of the unwanted consequences of a bad work environment help in focussing the resources as efficiently as possible. The costs incurred by accidents include, for instance, the value of the work of the injured person and of others; hospital, medical, travel and rehabilitation costs; damages to property; interruptions and losses in production, and administrative costs arising from the aftermath of the accidents.

In more and more fields of activity, accident frequency is used in quality systems as one indicator of quality; it is thus of great significance to competition in international trade. This increases the economic benefits of accident prevention, but it also demands great accuracy in the compiling of accident statistics.

Follow-up

Sufficiently detailed company accident statistics (by diagnosis, type of accident, etc., compiled, e.g. by the departments) can be helpful in follow-up. In this way it is possible to collect long-term information, which is especially reliable if the work place is large, and the working conditions have remained unchanged, or if the changes are not rapid. Accident ratio (accidents per one thousand people) and accident frequency (accidents per one million work hours) are indicators of occupational safety used in the compiling of national accident statistics.

Accident ratio and accident frequency do not consider the seriousness of the accidents. This can be followed up from the absences due to accidents. Even when the rate of absenteeism (number of absence days due to accidents per one thousand people) and frequency of absenteeism (number of

absence days per one million work hours) are used, the ranking of permanent injuries and deaths remains a problem. In risk studies, this has often been solved by calculating the average number of work days lost as a result of a work-related fatality, as the difference between the age of death and the average age of retirement. On average, 6 500–7 000 work days are lost due to work-related fatalities.

At small work places, the accidents that have occurred during a year can be easily summed up. The recording of an accident depends on several incidental matters. That is why at small work places (and also at the departments of large work places), the annual variation in the number of accidents usually displays statistical random variation, typically reflecting a statistical phenomenon, i.e. a tendency toward average, so that if in one year the number of accidents is greater than usual, the next year it is probably smaller, and vice versa. Thus, the change in accident figures may not give a reliable picture of the changes in the actual safety situation.

Using standard observation methods, like the TR-method® and the ELMERI-method®, the level and improvement of occupational safety can be measured quickly and sufficiently reliably.

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19

First aid readiness and operation in a catastrophe

Mari Antti-Poika

Introduction

Emergency readiness at a work place means that there are, depending on the circumstances, enough people with first aid skills, up-to-date first aid equipment, and instructions on how to act in case of an accident. First aid training aims to promote first aid skills and to prevent accidents through attitude training. The goal of first aid is to prevent the injuries from becoming worse and to prevent new injuries.

In a catastrophe, the number of injured persons and the seriousness of the injuries set exceptional requirements for the first aid, the transportation of victims, and the hospitals. The goal of catastrophe readiness is to ensure an efficient and co-operative organization between different units in case of a catastrophe. When an accident occurs, the aim is to minimize damages; the goal of occupational health personnel is to minimize especially injuries to people.

First aid and catastrophe readiness is a part of an enterprise's safety plan. A catastrophe in an enterprise often affects also the environment and the people living nearby. That is why safety plans require co-operation with the local health care centres and hospitals, the civil defence forces, and the environmental authorities (see Chapter 20 Environmental protection).

The occupational health services participate in the maintenance of catastrophe readiness, which includes, e.g.:

- ▶ planning of medical activity in co-operation with health care centres, ambulance services, and the hospitals
- ▶ evaluating the need for resources
- ▶ planning and implementation of training
- ▶ planning of catastrophe drills.

Assessment of needs and prerequisites

Employers are obligated to ensure sufficient first aid readiness in accordance to the conditions of the work place. At work places entailing a risk of catastrophe, the employer must establish the necessary procedures to identify the risks, to prevent accidents, and to limit their consequences, using the expertise of the occupational health services.

The risk of accidents and of a catastrophe, and the need for first aid readiness are assessed in a work-place survey, and recommendations are given on first aid readiness. In addition to assessing the need for first aid skills and first aid equipment, the special requirements of the work place must be considered in the planning of first aid readiness. Appropriate first aid readiness is planned in co-operation with work safety representatives and, when needed, with the civil defence forces and the rescue organization. The number of people with first aid training and the amount of first aid equipment depends on the magnitude of the risk. Also the distance of the work place from the actual health services has an effect on the kind of first aid readiness that the work place must have.

Implementation of first aid and catastrophe readiness

Planning

The occupational health service action plan includes a description of how first aid readiness is maintained and a list of the responsibilities. It is a good idea to nominate someone in each department or work unit to be in charge of the first aid equipment.

It is the task of the occupational health service personnel to undertake the first aid training, in co-operation with the entire enterprise. A register is kept of those with first aid training, and includes, for instance, the following information:

- ▶ the proportion of the personnel with first aid training, by work units and work shifts
- ▶ name lists
- ▶ types of courses taken
- ▶ years in which courses were taken.

An enterprise which has a risk of a catastrophe, prepares a safety plan which includes at least the following information:

- ▶ legislation and other regulations
- ▶ organization in a catastrophe situation

- ▶ forms of co-operation and contact information
- ▶ assessment of risks, e.g. the amount, location and properties of dangerous chemicals, and special requirements in their handling
- ▶ assessment of the risks in the neighbouring areas, e.g., the properties of the chemicals in nearby plants
- ▶ a system of alarming and informing
- ▶ fire-fighting and rescue equipment and fire-fighting and rescue personnel
- ▶ plan for returning to normal activity
- ▶ training and drills
- ▶ test runs of equipment and systems
- ▶ detailed instructions for the most probable accident situations
- ▶ up-dating the plans
- ▶ plan for information activities.

The health service personnel prepare a medical readiness plan for a catastrophe. The plan is a part of the overall safety plan, and includes, for instance:

- ▶ rescue actions (planned together with the employer)
 - emergency exits and their use
 - description of rescue actions
- ▶ first aid readiness
 - operating principles
 - alarm systems
 - list of people with first aid training
 - possible first aid teams
 - list of the enterprise's first aid equipment and a map showing their location
- ▶ transportation of injured persons
- ▶ normalizing the post-accident situation
 - information activities and, when needed, debriefing.

In addition, the occupational health service personnel must have more detailed instructions for their own activity, such as

- ▶ emergency telephone numbers and alarm systems
- ▶ other important telephone numbers
- ▶ a communications plan
- ▶ transportation of injured persons, e.g. access to ambulance service
- ▶ the arrangements of the occupational health station in case of a catastrophe
- ▶ equipment of the occupational health station and the medical stand-by team
- ▶ maps of the premises
- ▶ collecting areas for injured persons
- ▶ instructions on first aid and treatment
- ▶ instructions on special first aid and treatment in the case of chemicals
- ▶ debriefing after a catastrophe.

Special first aid and treatment instructions need to be drawn up for accidents caused by chemicals. These instructions can be made in collabora-

tion with the health care centers and hospitals of the region, or by the occupational health station personnel, who will forward them to the health care centers and hospitals. It is also wise to clear up in advance the mode of cooperation for the medical activity, e.g. leadership and division of responsibilities in a catastrophe.

At the OH station, it is a good idea to name the occupational physician to be in charge of the catastrophe readiness, and to select a substitute for him. However, the activity in a catastrophe must not depend on one person only - everyone must be capable of acting correctly.

Implementation

The occupational health service personnel can arrange first aid courses, if the occupational health nurse has the qualifications of a first aid teacher. In the training, first aid is presented especially from the point of view of the work place.

Especially at work places with a risk of a catastrophe, first aid readiness can be accentuated by establishing first aid teams formed of people with first aid training. The teams have access to the necessary first aid equipment, and they keep up their skills by regular training in first aid readiness requiring several helpers. Catastrophe readiness is maintained at the enterprise by repeated drills, which are planned, realized, and assessed in cooperation with the occupational health services.

Debriefing can be organized, not only after a catastrophe, but also after such near-accidents and other events that cause great emotional strain (see Chapter 16 Occupational health support for work communities). The employees are told about the possibility for a debriefing session, and arrangements are made with the employer. Debriefing should take place within three days of the event in, for example, guided group meetings, where everyone has the opportunity to talk about his/her experiences and feelings, and go over the accident. The debriefing is carried out either by occupational health personnel who have special training for it, by a separate crisis group within the enterprise, or by outside experts. The debriefing of the medical personnel who took part in the rescue operation must be arranged with an outside expert. When needed, individual post-trauma treatment can be arranged for persons with more serious psychological reactions.

Ethical considerations

Human life and health always come first in rescue operations. This must be emphasized also in all instructions and training. Ethical choices must be made when deciding on the urgency of treating of the injured. A generally

accepted goal of first aid in catastrophes is to save as many lives as possible with the resources available. An urgency classification, or triage, for the treatment of injuries can be drawn up for catastrophes to help in decision-making.

Economic considerations

The maintenance of first aid readiness and provision for a catastrophe entail costs for the employer. However, human lives can be saved with correct procedures. Injuries can be alleviated and prevented from becoming chronic. Sick leaves are shorter and fewer people go on disability pension or retire prematurely.

Follow-up, evaluation and development of activity

After a catastrophe, the authorities require a report of the course of events, also of the medical actions. The reports are used in the evaluation and development of first aid activity. Also the assessments made during the drills are helpful in the development of first aid activity. It is good to use also outsiders as observers to give feedback on the drills. Special attention should be paid to the co-operation and communication between different rescue organizations.

Table 9.

Examples of the assessment of first-aid readiness

Target factor	Follow-up methods
The proportion employees trained in first aid compared to the target level	A record of employees with first-aid training
First-aid equipment compared to the target level	<ul style="list-style-type: none"> • work place survey • other investigations
Correct action in immediate first aid	First-aid drills and simulations
Carrying out drills	Follow-up of actual drill according to a detailed plan

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Environmental protection

Riitta Riala

Introduction

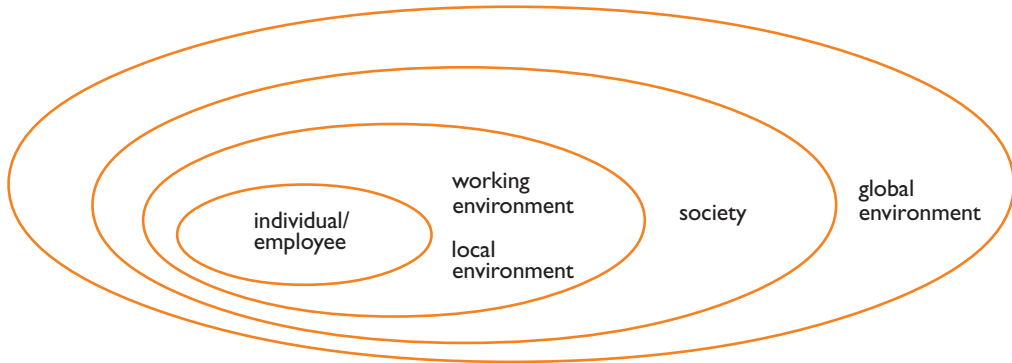
According to the international ethical instructions for occupational health services of the International Commission on Occupational Health (ICOH), occupational health services must take initiatives and participate in the assessment and prevention of environmental hazards arising from the activities of enterprises, and to inform about them. The ‘Health for all by the year 2000’ strategy states: “There are many problems that require changes connected with environmental protection as well as with occupational health services and occupational safety. Examples of these are the many deficiencies in working conditions, the scarcity of co-operation in environmental protection and occupational safety and the emissions of traffic that threaten the quality of air”.

Environmental protection is a wide entity, ranging from the protection of natural resources to community planning. Occupational health services and environmental protection have many points in common. The expertise area of occupational health services concentrates on the assessment of the risks, effects and hazards that exposure poses on health and the environment. Occupational health services can help in the assessment of the environmental risks of enterprises, and they can also participate in the handling of matters related to environmental health care.

Occupational health services must support enterprises in the enforcement of legislation and also in environmental protection (Figure 18 p. 186). Environmental protection requires openness and co-operation. Regional features, the structure of the production, and the role of the occupational health services as the health expert of the enterprises, influence the possibility of the health services to take care of environmental matters. Large industrial enterprises often have their own environment organization, and they need the expertise of the occupational health services mostly for the assessment of health effects. In medium-sized and small enterprises, the occupational health services may be in a key position to give guidance in environmental matters and their development, and in finding interest groups.

Figure 18.

Occupational health services' environment of action in environmental protection



Assessment of needs and requirements

The legislation on environmental protection has evolved during the recent years. Voluntary environmental protection in enterprises has also increased significantly. For instance, consumers who want to know more and more about the environmental effects of the products they use have influenced the decisions made in enterprises. Many enterprises have their own environmental program and an environmental management system, mandatory often, especially in international trade.

An enterprise must be aware of how its activity affects the surroundings and the residents. When assessing the effects, the quality and quantity of the chemicals used, the conditions of use, the emissions to the atmosphere, soil, waterways and sewage, the amount and nature of waste, and the noise emission must be considered. The good management of environmental issues is systematic, and can be measured.

When environmental issues are concerned, high-quality occupational health services requires not only basic professional skills, but also the recognition of important environmental factors. Occupational health personnel need training, or time off for independent studies, in order to acquire more information on, at least, chemical safety, environmental effects, radiation control, environmental noise and biological factors.

The needs and expectations of clients

Occupational health personnel must disseminate information workers about the health effects of chemicals and other factors that may load the environ-

ment, and about hazard prevention. The occupational health personnel must also be able to assess how the chemicals that get into the environment affect human beings at different levels of exposure. The people living in the affected area are interested in the environmental effects of the chemicals, their persistence, their possible spreading and accumulation in the soil/water/air and the hazards they may cause to human beings or to nature. The most important co-operating partners of occupational health services are the safety delegates of the enterprise, environmental organizations, and the entire personnel. Other partners may be the authorities, the neighbours, experts in research institutes, and the media.

The co-operation of different interest groups is necessary in environmental protection. A joint meeting for interest groups is useful when planning, for instance, new construction or production projects. In addition to the enterprise management and the representatives of the safety personnel, also other stakeholders and interest groups should attend the meeting. These may include representatives of the occupational health services, the occupational safety district, the environmental authority, the rescue authority, and the neighbours, and if feasible, the representative of the safety authority, or in a construction project, the representative of the construction authority (see Chapter 17 Participative planning of work places).

In environmental protection, the long-term effects of chemicals and other factors loading the environment are often pointed out. The threat of environmental hazards may also have a psychological impact. People tend to get used to a hazard, if it is distant and its actual outcome is unlikely. Ever-present non-frightening threats are, for example, nearby factories and the transportation of dangerous substances. A sudden new threat increases fear, because there is little time for protecting oneself. Sufficient, appropriate information about the risk factors and protective measures may alleviate fear.

Implementation of environmental protection

Planning and defining goals

The occupational health personnel need information on the substances and processes used in the enterprise to be able to assess how they influence health, genotype, the foetus or fertility, or the environment at different stages. Safety data sheets are the first and foremost source of information in the assessment of chemical hazards.

An enterprise's environmental protection activity always starts from the assessment of the environmental effects. In the assessment of the effects, it is important to determine as realistically as possible, the production stages that load the environment. The entire life span of a product or a service is taken into account. The environmentally critical stages, which the enterprise can control, such as the purchasing and storage of raw materials, and the production, use and disposal of the product, are pin-pointed in the life-span analysis. The expertise of the occupational health services is utilized, especially in the assessment of the environmental effects of the final products when in use.

The detailed environmental protection goals of an enterprise must be concrete, connected with the activity, and realistic. The goals are set in cooperation with the personnel. At the same time, training can be given, and the enterprise's activity and environmental impact can be discussed. After defining the goals, an implementation plan is drawn up, e.g., yearly i.e. documenting the ways of action. It is important to inform the personnel as well as the other interest groups of the goals achieved.

Environmental policy

In its environmental policy, an enterprise presents the ways in which the continuous environmental improvement is being implemented and the set goals achieved. Specific development goals and the quantities of e.g., hydrocarbon emissions, and the quantity and nature of the wastes, must be documented in the environmental policy. The documenting shows the progress made in improving the environment, and the personnel get feedback on their activity. Establishing an environmental policy for a large enterprise usually requires the co-operation of many experts. A small enterprise's environmental policy can be simple and concentrate only on cutting down the immediate emissions and wastes, and on introducing less harmful raw materials.

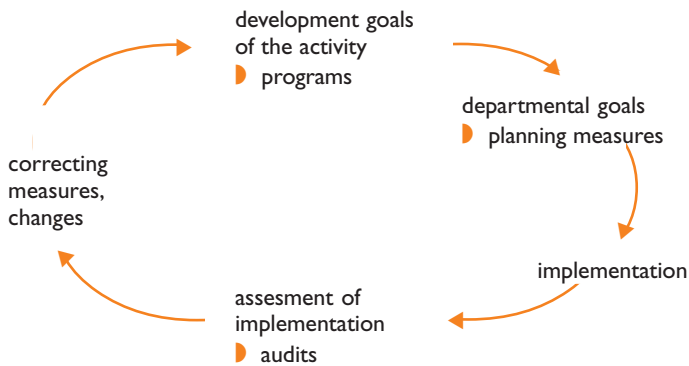
Environmental management systems

An environmental management system is a documented, systematic course of action, by which the environmental policy is implemented. The responsibilities of the personnel must be determined, and written instructions drawn up. In the voluntary eco-management and audit scheme (EMAS) for industrial enterprises, the management commits to the environmental protection goals so that the managing of environmental issues is an integral part of managing the enterprise. The publicity of the enterprise's environmental problems and the goals of environmental protection is also central, and is handled by regular informing.

The International Organization for Standardization (ISO) has published the environmental management system standards ISO 14001 and 14004. Even a small enterprise can develop its own environmental management system by selecting those parts of the standards that relate to its own activity. Enterprises using the quality system according to the ISO 9000 should include environmental issues in it. The efficient management of environmental issues includes the principle of sustained improvement of the environment (Figure 19).

Figure 19.

Mastering environmental issues in an enterprise



Eco-labels

Consumers demand more information about the environmental effects of producing and disposing of the product they have bought. As these demands have increased, eco-labelling systems have been developed. The best known of these is the Nordic swan label in Finland. Labelling criteria are prepared for product groups, for which the raw materials used, the energy consumption, the durability of the product, its recyclability, and the effects of its use and disposal on the environment, i.e. the product's life span, are considered.

Recognizing and preventing environmental and health hazards

Health and environmental effects of chemicals

Hazardous chemicals may be hazardous to health and the environment; they may also be flammable, reactive or explosive. The safety data sheets indicate, in addition to the composition and characteristics of the chemicals, first aid instructions, instructions in case of fire, instructions for preventing emissions, for preventing exposure, suggestions regarding protective equipment, and the handling of wastes, etc. At present, the classification of chemicals hazardous to the environment is mostly based on the effects that the chemicals have on the ecological system of waterways.

Chemical safety

A plant which handles chemicals needs a plan in which its safety system and strategy for handling accidents are described. The occupational health personnel participate as experts in the planning of first aid readiness, and, if necessary, of other instructions, together with the enterprise management and other experts (e.g. fire and rescue personnel) (see Chapter 19 First aid readiness and operation in a catastrophe).

The safety goals of an enterprise which handles chemicals are, for instance: care and safety in the use of chemicals (clarify toxicity and using conditions)

- ▶ servicing and maintenance of the premises and equipment
- ▶ the operators and servicing and installation personnel must master the instructions on use and servicing
- ▶ sufficient safety training and guidance for the personnel
- ▶ preventing the chemicals from spreading in accidents (door frames, embankments, protective basins, etc.)
- ▶ following storage instructions (chemicals that form dangerous reaction products)
- ▶ first-aid readiness in case of an accident.

Precautionary measures against explosions, fire, leakages and other accidents:

- ▶ preparing action plans in case of accidents
- ▶ determining tasks and responsibility areas in case of accidents
- ▶ reserving enough personal protective gear, emergency showers and eye rinses
- ▶ installing an appropriate alarm system
- ▶ training a rescue group to lead the rescue operations and to give first aid in case of an accident.

Waste

Inappropriate handling and storage of hazardous wastes may be hazardous to the environment or to health. The entrepreneur must know, whether the waste can be utilized, whether it can be disposed of safely in a dump, or, whether it is hazardous waste, entailing special requirements for handling and usage. Hazardous waste includes, for instance certain oils, pesticides, paints, and certain hospital wastes. Another aim is to improve the handling of some waste products: e.g. collecting biodegradable waste decreases the nitrogen emissions of the runoffs at dumps. The expertise of occupational health personnel is needed in the assessment of the health hazards of waste.

Noise

Industrial noise may be a source of inconvenience to the residents in the vicinity of a noisy industry. For example, in residential areas, the noise level (L_{AEQ}) outside should not exceed 55 dB in the daytime and 45 dB at night. The noise coming from outside may not exceed 35 dB in the daytime and 30 dB at night inside the residences. In teaching and lecture rooms, the daytime standard level is 35 dB, and in business premises and offices 45 dB. Noise emissions can be decreased by replacing noisy machines with quieter ones, stopping the propagation of noise by noise attenuators, and by improving, e.g. the noise insulation of windows.

Biological factors

Industrial plants where microbes are handled may also cause environmental hazards. Microbes may be a health hazard also at work places, schools, kindergartens and homes that have suffered from water damage, even though the total numbers of microbes in the air may be within accepted limits. When assessing risks caused by moulds and bacteria in buildings, microbial growth in damaged materials or in surface samples should be examined. Wet and water-damaged structures must be removed or dried and repaired. The employees' symptoms may be investigated first by a questionnaire on the indoor air quality.

Connecting environmental protection with planning of work places

When new work places and working methods are being planned, the requirements set by the environment must be considered. For instance, environmental noise can be prevented at a significantly lower cost in new buildings than by repairing old ones. When planning new work places, levels are set for e.g. chemical emissions, and occupational health personnel can inform about environmental and health issues and assess the plans from the viewpoint of environmental health (see Chapter 17 Participative planning of work places).

Follow-up, assessment and development of activity

The goals that enterprises set for environmental protection are based on their own resources. On the other hand, other interest parties, such as neighbours and the authorities, set requirements for the enterprise. Environmental and water permits pose conditions on emissions into the air, on the utilization and disposal of wastes, on emissions into waterways and the sewage system, on noise levels, etc. They can be used in the follow-up of environmental protection, as can the accident statistics of the enterprise, and the complaints raised by the residents of the surrounding area concerning the risks caused by the activity. If the goals are met, the new environmental protection goals can be raised.

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