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## Occupational and environmental medicine – a component of responsible care in the chemical industry

**Abstract** Safety, environmental protection and health are the three key elements of the responsible care program of the chemical industry in Europe. A paper concerning these points has just been published by CEFIC. Health protection focuses on three target groups: workers, neighborhood residents and customers. With regard to health protection of the workers occupational medical prevention plays the central role. In addition, acute treatment, documentation and evaluation of the data, risk management and special preventive programs are of significance.

The protection of the neighborhood residents includes a well-functioning management of chemical plant incidents and effective, open risk communication. Consumer protection in general means the professional information including the provision of special expertise or scientific documentation concerning particular products. The advantages of responsible care, especially health protection, benefits the workers as well as the employer, the residents in the neighborhood and the customers. Logically these advantages should be expressed in performance measures. This includes process, outcome and impact evaluation.

Occupational and environmental medicine is increasingly facing the question of cost/benefit analysis. The answer is certainly difficult, because it is dependent on national and cultural factors as well as specific legal regulation. Therefore exact documentation in the field of health protection is of great importance.

**Key words** Environmental health · Employees' health service · Occupational health service

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### Introduction

With its latest responsible care program the chemical industry has committed itself to improving safety, health and the environment permanently. The issue of costs and benefits is the central issue in the debate on occupational and environmental health policy today. It is a crucial issue at the enterprise level for employers, employees and the experts for safety, health and the environment. CEFIC, the European Association of the Chemical Industry, held a workshop in 1997 to consider the added value of occupational and environmental health services. Three main points, the employees' health service, environmental health and the occupational health services for the customer as targets for occupational and environmental health strategy will be presented in detail.

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### Employees' health service

Employee health care is the traditional area of occupational health activity. It is concerned with prevention of work – related disorders, treatment activities and some health promotion initiatives. Work-related ill health might arise from chemical, biological, physical, ergonomic or mental hazards. Four main activities can be identified.

### Occupational medical prevention

In Germany, the workers' compensation as the occupational insurance system has established an extensive health prevention program. Within that program the 44 specific occupational medical guidelines are of significance. They give detailed information to the examining physician concerning the nature of the danger to health, e.g. solvents, heavy metals, carcinogens and noise, as well as the extent and frequency of the medical check-

ups, criteria for ability or disability and technical details like biomonitoring. In 1996 more than 300 000 of these occupational preventive examinations were carried out by occupational physicians working in the chemical industry in Germany. In less than 1% were there medical objections to leaving a worker in a specific workplace. The four main occupational medical examinations are health prevention for noisy workplace (30 000), for monitoring processes, transport of heavy goods, drivers of forklifts and cranes (29 000), air supply equipment (28 500) and for computer workplaces (23 500). In the case of exposure to carcinogens specific postemployment medical preventive programs are required due to the long latency period for illnesses associated with these substances. For example the number of asbestos-related diseases is still increasing, although current exposure to the substance is constantly decreasing. In 1996, 48 000 of these specific postemployment examinations were carried out. The advantage of occupational medical prevention for the employee is obvious: early detection of possible work-related health hazards and effective treatment. Also the advantages for the employer are obvious: lower rate of work-related illness; lower insurance premiums because these are based on the average of the work-related diseases within a specific industrial branch.

#### Medical treatment

The program depends on the number of employees and the type of occupational health concerns. The range of services include regular medical examinations, first aid for all injuries and for acute illness occurring at the workplace, return-to-work evaluations to ensure proper placement, primary care of illness and disability evaluations.

Benefits to employees: Early treatment of injury or illness. Specific expertise in chemical accidents or occupational diseases. Reduced social and economic disruption. Early reintegration into the workplace.

Benefits to employers: Reduction in lost time from accidents and illnesses, both occupational and nonoccupational.

#### Data bases and health-related studies

Epidemiological analysis of health surveillance data and the design and conduct of targeted health studies is significant for efficient health protection as well as the exact documentation of all health-related data, including exposure data.

Benefits to employees: Reassurance that health is protected and preventive measures are adequate.

Benefits to employers: A measurable health and safety outcome and risk assessment. Identification of primary prevention possibilities. Documented improvement in employee health. Reassurance of customer and

neighbors that their own health is not being negatively affected by any industries' activities or products.

#### Risk management

Prevention of occupational disease and injury is best achieved through a process of hazard identification, risk assessment and risk management. This involves good communication with the workers and management, medical surveillance and risk reduction measures in the workplace.

Benefits to employees: Health protection.

Benefits to employers: Reduction in lost worktime. Reduced compensation payments and therefore lower insurance premiums. Increased productivity.

#### General health promotion

This is a variable activity and with can produce considerable benefits. It should be regarded as a medium- to long-term investment. Programs may include information about general health risks (drugs, alcohol, smoking) and specific diseases (diabetes, high blood pressure).

Benefits to the employee: a healthier lifestyle.

Benefits to the employer: A healthier workforce, reduced absenteeism.

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#### Environmental health

Occupational health as far as local residents' health is concerned is a comparatively new area of activity as a result of the increased awareness within the communities surrounding chemical industrial sites. It has two different components.

(a) Emergency preparedness: Occupational health professionals have become involved in emergency planning for local communities as well as in the acute handling of major chemical accidents. Their experience is important with regard to assessing the health relevance of these incidents.

(b) Risk communication: By means of risk communication the chemical industry can proactively help to influence the risk perception within the local community. In order to communicate effectively and accurately, it is important to gather sound data. Occupational health professionals will be involved in this, using supporting data from occupational and environmental surveys along with the knowledge of epidemiology, toxicology and occupational medicine. Means of communication vary from personal counselling of concerned individuals to media coverage of whole communities.

The benefits from such activities are clear, both to employers and their local communities. Measuring the benefits is, however, more difficult and may be, to some extent, subjective.

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### Customers' occupational health services

This area of activity is often seen as an extension of the product stewardship activities. However, it can, and should, be much more than this. It can be, for example, a fully operating advisory service to customers, involving audit, education, policy setting as well as registration-based services, involving the expertise of various specialist working within a team. The services may extend to risk assessment or toxicology response and will involve a multi-disciplinary approach. Data made available by customers can also be used for epidemiological purposes, supplementing those already gained in-house. Such activities can lead to better knowledge of adverse effects as well as lower litigation claims and poisoning incidents, all of which are negative performance indicators. Through extending activities and building on relationships, it should be possible to impact and reduce these negative indicators.

However, the benefits remain difficult to measure. They are probably based upon the positive relationships, which arise out of a favorable company culture, pro-activity, good marketing and effective communication.

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### Performance measures

The European Chemical Companies Association has agreed that, by the year 2000, all member federations should be able to report, through appropriate indicators, their performance in occupational and environmental health. The performance measures will depend on the range of services provided. An evaluation component will be developed at the beginning and pertinent information will be collected at appropriate intervals. As experience is gained, the range of performance measures can be extended. Evaluation can be focused on measures of process, outcome and impact.

- (a) Process evaluations measure the content and quality of a program. This may be based on either internal or external benchmarking.
- (b) Outcome evaluations measure the effect which an intervention has had on the employee, e.g. occupational illness, disability period, alternate work assignments.
- (c) Impact evaluation determines the effect of the intervention on the company or the employee population as a whole, e.g. lost time claims, accident rate, visits to medical facilities.

Cost-effectiveness can be calculated from outcome and impact evaluation.

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### Conclusion

The central question is where the added value in all this can be found. There is a general agreement that effective occupational and environmental health services contribute to fit and healthy workforces, understanding and informed neighbors and satisfied customers. In order to decide whether these achievements stand up to a cost/benefit analysis, it is necessary for every occupational health service to consider its own position. The answers will depend on the local and national culture, legal framework and national healthcare arrangements. Appropriate performance indicators may also vary from one location to another. Where it is possible to show improvements in performance, it should be possible to relate this to economic benefits.

Although performance is often difficult to measure we must try to do so wherever possible and set targets based upon it. Management must clearly take responsibility for achievement of these targets. By these means, it is possible to create a culture of continuous improvement and added value.