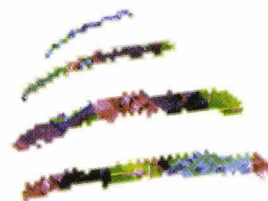


nia'tno



*Abstracts of the European Conference on Costs &
Benefits of Occupational Safety and Health 1997*

TNO ARBEID Bibliotheek
Postbus 718
2130 AS Hoofddorp

Recordnr.

100000314

Plaatscode

101-13

© NIA TNO B.V.

Niets uit deze uitgave mag worden
verveelvoudigd of openbaar gemaakt
door middel van druk, fotokopie, microfilm
of op welke andere wijze dan ook, zonder
voorafgaande schriftelijke toestemming van NIA TNO.

De Boelelaan 30
Postbus 75665
1070 AR Amsterdam



**Economic and social costs of work-related ill health:
comparisons of methodologies and results**

**Mark Beatson, Health and Safety Executive
United Kingdom**

The economic and social costs of work-related ill health can be very high. In the United Kingdom (UK), the total cost to society of work-related ill health in 1990 was estimated to be approximately £4.5-5 billion, about 1% of national output at the time.

The paper discusses the methodological issues involved in estimating the size of the cost burden, using the UK estimates as an example. The most difficult issues are probably estimating the numbers of cases of work-related ill health, and estimating the 'subjective' costs of pain, grief and suffering associated with ill health. In the latter area, techniques developed in the health care field to measure quality of life may have a role, although further research is necessary if they are successfully to be applied to the most common occupational health conditions.

The paper then compares the UK estimates with similar estimates produced elsewhere, principally in the Nordic countries. Differences in the data sources used, the methodology adopted, and national institutions, such as the financing of health care and social security, mean that international comparisons are fraught with difficulty.

Finally, the paper discusses the practical value of estimates of this kind. UK experience suggests two main uses. One is to help assess the benefits of control measures. The other is to raise general awareness of the burdens that occupational ill health places on society. A good example of their publicity value can be found in HSE's on-going Good Health is Good Business campaign, where the costs of ill health to business is a central part of the message.

Fallstudie selbstverwalteter Systeme im Arbeits- und Gesundheitsschutz

Wilfried Coenen,
Hauptverband der gewerblichen Berufsgenossenschaften e.V. (HVBG)
und
Karlheinz Meffert,
Berufsgenossenschaftliches Institut für Arbeitssicherheit beim HVBG (BIA)

Auch wenn sich die Versicherungssysteme zum Schutz bei Arbeitsunfällen und Berufskrankheiten in Europa im Detail voneinander unterscheiden, gibt es eine Reihe auffälliger Gemeinsamkeiten. Auf zwei Gemeinsamkeiten wird in diesem Beitrag besonders eingegangen. Dies ist zum einen die Beteiligung der Sozialpartner (Arbeitnehmer und Arbeitgeber) in den sozialpolitischen Steuerungsgremien aber zum Teil auch in den mehr fachlich orientierten Arbeitskreisen. Zum anderen ist es die Ausstattung mit einem mehr oder weniger weitreichenden, gesetzlich verankerten Präventionsauftrag. Trotz dieser Gemeinsamkeiten gibt es, was den faktischen Einfluß der Sozialpartner und die praktischen Möglichkeiten zur Prävention betrifft, ausgeprägte Unterschiede. Dies ist nicht zuletzt auf Besonderheiten im rechtlichen Status der Versicherungssysteme und ihnen Beziehungen zu den nationalen staatlichen Behörden zurückzuführen

Im Rahmen der Fallstudie wird eine kurze vergleichende Systembetrachtung der wichtigsten selbstverwaltenden Versicherungssysteme für Arbeitsunfälle und Berufskrankheiten in Europa gegeben. Außerdem werden die grundsätzlichen wirtschaftlichen, humanitären und sozialen Auswirkungen einer Selbstverwaltung durch die Sozialpartner behandelt. Auf die Einwirkungsmöglichkeiten der Sozialpartner im Leistungsbereich (Rehabilitation und Kompensation) und die Entscheidungswege beim Eintritt eines Versicherungsfalles wird zum Verständnis des Gesamtzusammenhangs eingegangen der Schwerpunkt liegt auf der Darstellung der Entwicklung der Kosten und Leistungen am Beispiel der selbstverwalteten deutschen Unfallversicherung. Abschließend wird auf die wichtigsten und wirksamsten Instrumente für die Prävention von Arbeitsunfällen und Berufskrankheiten eingegangen.

Integrating lay public opinions in cost benefit valuations

Vincent Placer

Groupe de recherche sur le risk, France

The management of long term risks (= health risks, environmental risks, natural hazards...) is one of the major concerns for both policy makers and private managers. In order to mitigate these risks, decision makers (either public or private) may undertake safety investments. For public decision making, each safety improvement can have simultaneously costs and benefits over different social groups. Risk analysis embodies several decision aiding tools defining some criteria to balance benefits with costs to assess the social desirability of these improvements (Decision Analysis, Cost Benefit Analysis, etc.).

According to the importance given to lay public opinions, preferences, etc., Social Risk Analysis varies between two extreme position: the **technocratic model** in which social decision making relies only upon expert judgments and the **democratic model** where lay public opinions are given high consideration throughout the decision process. In Europe, and especially in France, the technocratic model has long been the main influence for social risk management. Nevertheless, under the influence of American experiences, social risks management in the recent years cares more in more of lay public opinions. [Although we choose to focus on collective decision making, integrating individual values is also a current trend for health and safety decisions in firms. For an application concerning training pro gram see Wynne [1994]¹, concerning nuclear safety, see Poumadere [1996]²]. In this paper we would like to show first how lay public opinions might be integrated in social risk management. Second, we would like to insist on the impact of the democratic values on Costs and Benefits valuation techniques.

Social Risk Management seems to evolve toward the democratic model. Lay public opinions are more and more integrated in risk analysis. With risk perceptions surveys, for example, risk communication is improved by using the words that should give the public a sense of security. In anticipating collective responses to some regulations, public agencies, using game theory results, forecast the degree of compliance to the regulations... On one hand, democratic values are appealing to public decision maker because it reinforces the perceived credibility of risk management decisions. If lay public opinion is one of the major guides of risk management - through surveys, involvement during assesment tasks and negotiation process... - institutional decision makers increases general trust [Slovic, 1993]³. On the other hand, integrating democratic values or lay public opinions can be disadvantageous for long term or equity concerns. Future generations, for example, whose opinions cannot be accounted for directly could be inequitably treated if the present is too highly valued.

After having briefly reviewed the main challenges of integrating democratic values in risk management, we would like to focus on cost benefit valuation specifically. Health benefits assessment has always been controversial. As no market price on health exists, valuation task is more complicated than for other economic goods. Under the technocratic values, health benefits or statistical deaths avoided have been assessed through determinist methods. During the last ten years, new techniques relying heavily on surveys and public preferences show that democratic values also influence valuations techniques. The last part of the paper will be dedicated to a presentation of the so called « contingent valuation method ».

1. Wynne, R., 1994, « Workplace Health Promotion - A Specification for Training > ~ , WP/94122
2. Poumadere, M., 1996, Nole de Recherche du GRID, 94-16
3. Slovic, P., « Perceived Risk, Trust and Democracy », Risk Analysis, vol 13, n°6

Surveillance by a national cohort and hospitalization register data

**Ib Andersen, Elsa Bach & Vilhelm Borg
National Institute of Occupational Health**

Cost/benefit analysis can be a useful tool to compare a proposed health promotion on working environment action with other national priorities.

To provide the best possible data, the National Institute of Occupational Health in Denmark has set up two new tools to provide basic data for such analysis. These are a national cohort for working environment studies (NCW) and a register for hospitalization in different job categories.

The NCW cohort was set up in 1990 and consisted then of about 10,000 subjects, 18-59 of age as a random sample of the total population. 6,000 of the total cohort was wage-earners and they were interviewed by telephone about personal data, working environment conditions and health.

In 1995 the members of the cohort were interviewed again with the same questions plus new extra questions. A new random sample of subjects 18-22 years old were added to the group. 5,600 wage-earners and 2,500 unemployed was interviewed in 1995.

The size of the cohort allows for subdivisions into about 60 job categories. Examples will be given of the general data and of the effects of an action program for reduction of repetitive work run by the social partners. We have from 1990-1996 not been able to find a reduction in the number of subjects with repetitive work overall and in job categories with extensive repetitive work there has only been statistical non-significant changes.

To supplement this overall picture of the state of the nation with specific health data the institute has set up a hospitalization register with the diagnosis of hospitalized patients (ah. 1 million/year) in different job categories. The register has data back to 1981 and the size of the register allows for studies of even quite small job categories.

The disease pattern in a job category is a function of the working environment and the environment, the quality of the residence and the life style of the subjects in the job category and has to be adjusted for social group effects.

Examples will be given of the different disease patterns in different job categories and of developments over time.

The hospitalization register can be expanded by addition of data on disability, data on out-patient services etc. and in this way a register-based, very comprehensive health profile of the different job categories can be established.

Some job categories have very high hospitalization rates, and as the daily expenses for hospitalization are well known, the register data will make it possible to calculate the direct total cost of working conditions and life style in different job categories and to study the effects of actions taken to improve working conditions and organization of work as well as the effects of workplace health promotion.

**A model of costs and benefits of working conditions;
Theory and application**

Jan Willem Velthuisen (SEO-UvA)

Jos C.M. Mossink (NIA-TNO)

Lately, the conditions under which the workers (blue collar as well as white collar) in the Netherlands have to work - the occupational safety and health conditions (OSHC; ARBO in Dutch) - have been a favourite subject of policy makers and researchers. Especially absenteeism and the growth of disability allowances contributed to this interest. Reducing these phenomena is not only an interest of society, but also a necessity on the grounds of costs considerations.

From an employees' point of view, good working conditions add to the attractiveness of a job. Attempts to model that issue started in the early eighties (a.o. Hartog, 1991). From an employers' point of view, improving working conditions can be regarded as an investment, to which marginal cost-marginal benefit criteria apply. In contrast to traditional investment theory, the investment in OSHC improvement not just increases the own-productivity of equipment, but also the productivity of the other production factor labour. This angle has not been modeled before by economists.

In this paper we present a prototype theoretical model of OSHC improvement. The model is tested empirically, on the basis of existing Dutch data sources.

It is demonstrated that it is possible to build an adequate economic OSHC model. It also turns out however that the existing data sources are not suitable to estimate such a model, as they lack crucial information, most notably continuous time historic information on the individual level. Additional ad-hoc data collection is necessary.

Can we compare the national levels and costs of work-related diseases between countries? - methodological considerations based on a study on the costs of work stress.

**Per Lunde-Jensen, Economic Advisor
Danish Working Environment Service**

The methods used to quantify the volume of (work-related) diseases should receive much more attention in economic analysis. In many analyses, cases that are notified and/or recognized to some authority are considered as "safe ground" for economic analysis. For some diseases (e.g. cancer and cardiovascular diseases), the extend to which they are related to work can only be determined by epidemiological methods, not by individual diagnosis of patients. A more practical objection to the "safe" data is that we need estimates at the point in time where "new" problems appear and preventive activities is planned. Broad recognition - and incentives to notify - are unlikely to appear at this point.

Two alternative data sources are evaluated: broad work force surveys and epidemiological studies.

From a methodological point of view, the preferable method is to calculate the work-related part of total sickness occurrence by means of etiologic fractions. This can be accomplished by secondary analysis of epidemiological studies which associate exposure factors (e.g. night work or repetitive tempo work) with excess sickness occurrence (e.g. cardiovascular disease, excess sickness absence) .

This procedure is preferable from two perspectives: it quantifies a part of sickness occurrence which is likely to preventable, and therefore directly relevant in cost-benefit analysis; and the results are better suited to international comparison, as they are less likely to be influenced by lifestyle and other "competing" causes.

A number of relevant exposures are quantified in the European Surveys of the Working Environment 1991 and 1996. From this basis we have calculated etiologic fractions for cardiovascular diseases related to repetitive tempo work for the EU Member States. Furthermore, we have estimated the costs of stress-related sickness occurrence in Sweden and Denmark, using a traditional cost-of-illness model founded on human capital methodology. This estimate is compared to a background estimate covering all work-related diseases (measured from general health surveys).

The role of cost-benefit analysis in occupational safety and health regulation

Jens Svenson

The proper role of cost-benefit analysis in shaping occupational safety and health regulations will depend on theoretical applicabilities, technical possibilities, and policy considerations.

Theoretically, cost-benefit analysis is the tool that enables the prioritization of potential regulatory actions to achieve risk reduction goals most efficiently, that identifies the most cost effective solutions for specific risk factors, and that provides rigorous support to justify regulatory actions. But a focus on cost-benefit is not the panacea for regulatory dilemmas requiring broader perspective.

In practice, technical limitations may hinder the ability of cost-benefit analysis to provide definitive answers for complex policy decisions. For some applications, adequately detailed data may be unavailable, or time and resource constraints may be prohibitive. Analytical results may depend critically on estimates that involve subjective judgments, and useful conclusions do not necessarily constitute indisputable proofs.

Perceptions regarding the implications of applying cost-benefit analysis to safety and health regulation also help shape its role in the regulatory process. Current debates regarding proposed regulatory reform legislation show how widely these perceptions can vary. Some demand cost benefit analysis as a test to provide evidence of proper regulation; others rely on the credibility of an analysis to facilitate informed decision-making, providing awareness and support within recognized limitations; and still others see the use of cost-benefit analysis as (at best) unnecessary delay and use of resources and (at worst) an attempt to protect profits at the expense of worker safety and health.

The use of cost-benefit analysis can touch on sensitive issues that are matters of policy as much as of science. Protection of worker safety and health requires decisions based on moral values, fairness, and tolerance of risk. Cost-benefit analysis can be broadened to include all kinds of indirect effects, such as family-related effects of worker injuries or regulatory effects on wages and productivity or (as proposed under President Bush) health effects resulting from regulatory effects on national income and growth.

For the above reasons, cost-benefit analysis cannot simply be applied straightforwardly to obtain the "right" solutions in addressing safety and health problems. The lack of consensus on its applicability and its practical limitations in incorporating all relevant considerations reflect the inability to reduce safety and health regulation to a formula. Conversely, rejecting any role for cost-benefit analysis would be antithetical to achieving safety and health improvements more successfully. Cost-benefit research and analysis provides a valuable tool for identifying promising directions and avoiding unjustifiable positions, enabling more efficient and effective regulation and better protection of occupational safety and health.

The importance of taking technological innovation into account in estimating the costs and benefits of worker health and safety regulation

**Nicholas A Ashford
Center for Technology, Policy and Industrial Development
Massachusetts Institute of Technology**

Regulation of worker health and safety is acknowledged to result in health benefits to workers and economic costs to employers. The latter are sometimes shared by workers and consumers in the form of lower wages/salary increases and higher prices. However, the history of occupational health and safety regulation in the United States over the last twenty years reveals that this simplified view of regulation neglects the important role that technological innovation plays in (1) reducing the actual costs of compliance with a new regulation to a fraction of pre-promulgation estimates, (2) yielding a benefit in terms of savings in material, water, and energy costs, and (3) changing the nature of process and product technology, resulting in reduced environmental damage and its associated costs and compliance burden. The U.S. Office of Technology Assessment recently completed an investigation of the technology-forcing aspects of standards promulgated by the U.S. Occupational Safety and Health Administration over the last twenty years and found that (1) technological innovation usually resulted from stringent regulation and (2) traditional cost-benefit analysis performed prior to a standard's implementation failed to anticipate significant economic benefits accruing to the innovating industrial firm. Research done by the author and his colleagues at the Massachusetts Institute of Technology over the last 15 years suggests that there is a strong theoretical, as well as an empirical basis, for predicting that technological innovation will result from stringent standards, and further, that cost-benefit analysis should be revised to include its effects.

Strategische und operative ansätze zu verbesserter wettbewerbsorientierung im arbeits- und gesundheitsschutz

Prof. Hans Pornschlegel, Dortmund
Gastprofessor der Technischen Universität Wien
Vorsitzender des Fachausschusses Forschung und Forschungsarrwendung
der Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA), Dortmund

Im Jahr 1996 wurde das neue Arbeitsschutzgesetz für die Bundesrepublik Deutschland beschlossen, mit dem relativ spät die Europäische Rahmenrichtlinie auf die nationalen Bedingungen umgesetzt und verbindlich werden. Damit sind erhebliche Umstellungen für alle Bereiche von Wirtschaft und Verwaltung verbunden, die nun auch bisher nicht vollständig erreichte Bereiche des öffentlichen Dienstes ebenso berühren wie kleine und kleinste Betriebe mit Arbeitnehmern. In der Politik und bei den Betroffenen werden vielfach diese neuen Vorschriften ebenso wie beispielsweise die zur Bildschirmarbeit als kostentreibend sowie wettbewerbsverzerrend und hindernd wahrgenommen (was sie - unkritisch betrachtet - auch sein können).

Ein Expertengremium des Fachausschusses Forschung und Forschungsanwendung der Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA), Dortmund, hat mit den Fachleuten dieses Instituts, ausgehend von vorausgehenden Fachveranstaltungen und einem speziellen Workshop "Arbeits- und Gesundheitsschutz als Wettbewerbsfaktor" im Oktober 1995, zur strategischen Orientierung der Akteure im Feld des Arbeits- und Gesundheitsschutz Leitgedanken entwickelt. Die ökonomische Rolle des Arbeits- und Gesundheitsschutzes wird in verschiedenen Facetten dargelegt. Eine knappe und exemplarische Analyse wesentlich erscheinender Wettbewerbshindernisse und -verzerrungen wird - mit möglichen Ansätzen zu deren Beseitigung oder Abschwächung - vorangestellt. per nach wie vor entscheidende sozialund gesundheitspolitische Stellenwert wird nachhaltig betont. Es werden die besonderen Aufgaben benannt, die sich für die "Regelsetzer", die Anbieter von Arbeits- und Gesundheitsschutzleistungen sowie für deren Zielgruppen stellen, um Wettbewerb mit diesen Leistungen zu fördern, in nationalen, im europäischen und globalen Rahmen.

Einige Modellvorhaben der Bundesanstalt für Arbeitsschutz zu neuen Konzepten des Arbeits- und Gesundheitsschutz in den Jahren 1992 bis 1994 in den neuen Bundesländern erbrachten zukunftsweisende Einsichten und Erfahrungen (insbesondere im Kraftfahrzeughandwerk "Werkstatt 2000", bei Steinmetzen und Steinbildhauern mit einem Kompetenz- und Demonstrationszentrum). Hier wurde der Einsatz ganzheitlicher Gestaltungskonzepte bei der Werkstatt- und Baustellenplanung, helm Betriebsmitteleinsatz und einer sicherheitstechnisch wie ergonomisch gleichermaßen optimalen Auslegung Wettbewerbsvorteile für die Nutzer der Modellkonhepte brachten.

Die Kernaussage lautet: Im System des Arbeits- und Gesundheitsschutzes müssen - bei gefordertem Sicherheitsniveau - Wettbewerbshindernisse und verzerrungen für die betroffenen Betriebe und Beschäftigten von den Regelsetzern, den Anbietern und bei den Zielgruppen abgebaut werden. Sie sind durch wettbewerbsfördernde, ganzheitliche und innovative Ansätze und Vorgehensweisen zu ersetzen. Die positiven Markterfolge entsprechend gestalteter Automobilkonzepte, von Hardware und Software im weiten Feld der Datenverarbeitung, auch noch vor vollständiger Gesetzgebung, seien als beispielhaft und richtungweisend genannt.

**Costs and benefits of the UK health and safety
(display screen equipment) regulations (1992)**

**Philip McCrea, Health and Safety Executive
United Kingdom**

The Display Screen Equipment (DSE) Directive (90/270/EEC) was adopted in 1990 and implemented in the UK by the DSE Regulations on 1 January 1993. The objective of the Directive was to reduce risks associated with DSE work, such as the development of upper limb disorders, temporary eyestrain, headaches, fatigue and stress.

In common with all other proposals for new health and safety legislation, the Health and Safety Executive undertook a cost benefit assessment (CBA) of the Regulations before their implementation. There were several difficulties in estimating costs and benefits. However, using a number of assumptions, the additional cost to employers was estimated at between £340m and £470m over a ten year period in present value terms (1991 prices). It was not possible to quantify the benefits of the Regulations. However, the CBA concluded that if, one in ten users were to take 1 ~ 2 days less sick absence each year, then the output gain would fully offset the additional cost.

An independent post-implementation evaluation of the DSE Regulations was carried out in 1995/96. The aims of the evaluation were to find out the extent of awareness and compliance with the Regulations, what actions employers were taking, what costs and benefits could be identified, and the views of employers and workers. The evaluation methodology involved a postal survey of some 3,000 employers carried out by the Institute for Employment Studies (IES), complemented by 30 case studies, a survey of employees and a telephone survey of trade union safety representatives.

The evaluation provided only limited data on costs and, particularly, benefits. Nevertheless, the IES estimated that the average cost of compliance per user could be between £125 and £180. There are difficulties in making comparisons with the original cost benefit analysis, but the evaluation results suggest similar overall costs, although perhaps up to a third higher than anticipated. Within this, the cost of providing information and training appears to be higher and the cost of eye tests lower than expected. The evaluation suggests that the benefits to employers may be significant: improved staff morale, reduced staff stress and increased productivity were each reported by about a third of employers.

Outline of paper on the economic impact of OSH regulation

V.C.A. van Polanen Petel

C.Th. Zandvliet

J. de Koning

1. A standard for manual lifting: Benefits/Cost Analysis at industrial level.
Benefit/costs for enterprises, per industry; no social-economic considerations
 - a) How many workers do have "heavy" manual lifting tasks?
 - b) Estimating the relation between working conditions and (health) damage
 - c) Benefits: curative costs: costs of sick leave, occupational injuries
 - d) Costs: prevention costs: the costs of measures to improve working conditions
2. A standard for manual lifting: Impact on employment
 - a) Direct impact on employment, through benefits and costs, own industry
 - b) Indirect impact on employment, through prices, own industry
 - c) Spill-over (positive and negative) to other industries
3. Generalising the methodology
 - a) Theoretical background: prevention and curative costs; external effects
 - b) Application to other specific Occupational Safety & Health regulations, like limits to the exposure to noise
 - c) Application to other more generic Occupational Safety & Health regulations, like obligatory use of an Occupational Health Service

What are the costs to the private sector of regulation of working conditions? This question was at the heart of the research, conducted by the Netherlands Economic Institute during 1994/96 into the impact of the introduction of an obligatory standard for manual lifting in the Netherlands. The research was directed towards the industry-level, and not to the company-level.

Firstly, a financial cost-benefit analysis was carried out for the Dutch economy, for 15 industries, covering the whole economy. The approach was to consider the introduction of a manual lifting standard as an investment project for Dutch enterprises. In the analysis the difference between the situation with and without the standard has been estimated, and consisted of a profitability analysis (the question how to finance it was not investigated). Costs evidently relate to the measures, often investments by enterprises. Benefits are to be found in a lower level of sickness absence and occupational injuries, and relate to lesser or lighter manual lifting tasks.

Secondly, an analysis of the impact on employment was carried out. Based on standard theory of supply and demand of labour, relations per industry were estimated in order to calculate the direct and indirect impact. The direct impact is a consequence of the change in labour (and capital) costs, the indirect impact is a consequence of the change in product prices. Finally, input-output analysis was used to establish the spill-over effects to other industries.

Thirdly, we considered the possibilities to generalise the methodology used. The theoretical background is to be found in theories of prevention and curative costs; and those of external effects. In the possible application to other areas, a difference has been made between other specific Occupational Safety & Health regulations, like limits to the exposure to noise, and other more generic Occupational Safety & Health regulations, like obligatory use of an Occupational Health Service.

**OSH as a competitive factor:
optimising working conditions for streamlined production**

Rainer Thiehoff (BAuA, D)

The problem in most European industrial locations is the high cost of labour and labour related expenditure. In the effort to reduce production costs, one area is often overlooked: OSH. Apart from the **savings potential** that has been achieved by avoidance of undesirable incidents (accidents, occupational diseases, work related illnesses) OSH has additional **fortifying effects** for industrial locations and on competitiveness:

- OSH serves to secure "uninterrupted production";
- OSH improves productivity;
- OSH promotes productivity and quality of process - and of course;
- direct reduction of personnel and personnel related expenditure by OSH;
- indirect reduction of personnel costs by relieving the social insurance.

The benefit of OSH as an operational competitive factor requires an efficiency system integrated into the management. Appropriate procedures are those of extended economic efficiency calculation and the OSH controlling on efficiency management. For the enterprise this is a **precondition of streamlined production**. Success can be demonstrated by taking the health quota as an example. - The **limits** of OSH as a competitive factor must however also be taken into account:

- the product related further benefit is depend ant on the "willingness to pay" of the customer;
- instead of inflexible and rigid regularisation "consultation and coaching" is needed;
- SME's need simple and practical systems.

Contingent versus genuinely joined interests - A structure of the evidence of OHS-profitability

Kaj Frick

Occupational health and safety (OHS) and profits are widely believed to be opposite interests. This view is supported by abundant clashes between them. Nevertheless, it is a false simplification as it recognises the costs of improvements but ignores their possible economic benefits. How the separate interests of OHS and of profits can be combined is instead an empirical question, determined by differing circumstances of production.

A growing amount of empirical evidence of the (frequent) profitability of OHS investments is accumulated to motivate such improvements:

- I. How improved OHS reduces the costs of purchasing labour has been calculated for most of a century, divided into the costs of:
 - Accidents (these calculation also take other factors into account).
 - Absenteeism, which together with the costs of
 - Labour turnover, is increasingly related to poor OHS.

However, these expenses are largely forced on employers, through the political and labour market balance of power. Employers thus often try to change these rules of the game rather than to invest in improved OHS.

- II. OHS- and profit-interests can be more genuinely joined when you also take into account the effects of OHS on the output of labour. In recent years, a growing number of studies have documented how good OHS enhances productivity, even in cases of cheap and unqualified labour. These benefits can only be gained by improving the conditions of work.
- III. The case studies have also often shown how an OHS-focus at the same time gives new insights and opportunities for technical rationalisations.
- IV. However, the C/B calculations are as determined by the less noticed possibilities to cut the costs of OHS investments as by their possible benefits. More and more examples of sharply reduced abatement costs, through competent and integrated planning, are spread from OHS-professionals to managent. Such knowledge can again make improvements pay off also when labour is cheap.

This evidence doesn't mean that market forces alone will create safe and sound workplaces. There are systematic obstacles for management to recognise and act on this evidence and many hazards will remain unprofitable to abate. Nevertheless, to improve OHS the use of economic arguments is one of the major roads ahead.

Correlation between the working environment and productivity
(a case study in the company level)

**J. Kuusela, Ministry of Labour,
L-M Bjurstöm & H. Rouhesmaa**

Productivity means the ratio between outputs and inputs. Considered by type of cost, inputs consist of material inputs, human resources, capital, and a number of special inputs. At the corporate level, productivity is a measure of the company's ability to combine the various inputs in order to achieve maximum performance. The basic elements of productivity are the human input, the well-being, skills and know-how of the staff, the available technology and the management's capabilities to supervise the system made up of these components.

Studies on the inter-relationship between the working environment and productivity have revealed a positive correlation between the two. Thus, steps taken to develop the working environment have also improved productivity, while measures adopted to increase productivity have had a positive impact on the standard of the working environment. However, few organisations monitor this relationship by means of economic indicators, and there seems to be little knowledge about which individual areas of the working environment have a particular effect on productivity.

One potential explanation for the positive correlation between the working environment and productivity is the following: As safety at work improves, material damage and malfunctions decrease and accidents and the number of sick days decline, while the volume of production increases and quality improves.

At the same time, the management system and policy adopted by the company or the organisation affect the way in which employees perceive their working conditions. Poor conditions are reflected in accidents, occupational diseases, other health effects and an excessively high turnover of workers. In contrast, good working conditions manifest themselves as a high level of well-being, improved quality, and increased productivity.

The survey was made in order to find out which factors in the working environment have a significant impact on productivity and also to recognise the difference in productivity between companies, where the quality of working environment varies. Studies show that companies investing in production to cut down throughput times and to increase productivity, also improve the standard of safety in the workplace as a by-product.

How can the working environment become a competitive tool? How does the working environment contribute to the company's financial performance? How do investments made to improve working conditions affect the company's productivity?

The survey discusses how investments made in the various areas of production affect productivity. The models of financial calculations to evaluate for example costs of absenteeism, costs of accidents, the increase in production or sales, training costs as well as the pay-back period for the investment are presented in cases.

The competitiveness of industry depends on productivity and its continual improvement. Measures to improve productivity should be accompanied by steps to ensure that work is meaningful, varying and educational. Through employee involvement, it is possible to get people interested in improving productivity, in reducing costs, and in developing the workplace and the work itself. Excellent work performance, high productivity and a high quality of life as well as the staff's

well-being can only be achieved if the work itself, the working conditions, the work community and the employees are in good shape.

MANAGEMENT AND INVOLVEMENT
MEANINGFULNESS OF WORK AND MOTIVATION
ATMOSPHERE AT WORK
ERGONOMICS
WORK ORIENTATION
CLEANLINESS AND ORDER
LIGHTING
TEMPERATURE CONDITIONS
NOISE

EFFECTS ON PRODUCTIVITY----->

Figure 1. Effects of improvements to the working environment on productivity in the light of the latest research findings. In practice, the internal order of the effects on productivity achieved as a result of investments in the working environment may vary considerably on a case-by-case basis.

The profitability of investments in work life rehabilitation programmes: A measurement of perceptions

**Ulf Johanson, Associate Professor, Ph.D.
Personnel Economics Institute, School of Business, Stockholm University**

On July 1, 1990 the Swedish Work Life Fund was established with the objectives to improve health and increase productivity in Swedish work life. Employers could apply for grants devoted to rehabilitation and other measures, to improve the work environment

The Fund was terminated according to Schedule on July 1 1995. At that time 10 billion SEK had been paid to help finance 25,000 workplace programmes. About half of this sum was spent on work organisation programmes, while one fifth each was expended on physical investments and rehabilitation. The majority of the programmes included different measures to improve working conditions, such as changed work organisation, changed work methods, competence development, medical treatment and physical investments. The Majority of the programmes included some sort of rehabilitation.

In this project the following questions were formulated:

1. From an organisational viewpoint, what is the pay-back period for investments in work life oriented rehabilitation programmes, as based on the opinions of the employers?
2. What are the characteristics of the rehabilitation programmes with the shortest pay-back period, as based on the opinions of the employers?

The idea underlying the Project was to quantify the employers opinions about the pay-back period. The opinions include objective data, such as changes in sickness rates and productivity, or purely subjective opinions concerning the causal relationship between the investment and the effect. These opinions, which are based on both the objective and subjective data, are supposed to influence the decision maker in his future willingness to invest in rehabilitation.

Of the 120 randomly selected programmes, 10 could not be evaluated because the organisation no longer existed. Another two were excluded from further statistical treatment because the data obtained was judged to be unreliable. This means that 108 pay-back calculations were available for further analyses.

The findings indicate that the investments, which were carried through, contributed to a decrease in sick-leave and an increase in productivity. Changes in productivity is in all respects the most dominant effect. The respondents are more certain concerning this effect than the effects upon sick-leave.

The median value of the pay-back period was estimated to 3.0 years. Public organisations, many employees involved, a high percentage of women, a significant reduction of sick-leave and an ongoing organisational change are characteristics of investments with a short pay-back period. The study also indicates that the grants from the World Life Fund were critical as an initial force in the implementation of the investments.

Advocating Occupational Safety and Health from a financial standpoint

**Amy D. Cadle
and
Keri Holmes, CSP**

Outside of North America, there is a general belief that injury costs cannot be controlled because they are funded under national social security systems. While this is nominally true in many locations, the amount of the "tax" is often dependent on the business' safety experience.

This study provides conclusive evidence that added safety measures are justifiable from a financial, as well as humanitarian standpoint. The resulting document, **WORK RELATED INJURIES AND ILLNESSES: FUNDING OVERVIEWS AND COST-CONTAINMENT GUIDELINE**, contains country-specific abstracts which detail the mechanism used to pay for worker injuries and illnesses, as well as specific suggestions for eliminating, reducing or controlling many of the associated costs.

As the guideline details, the cost of an employee injury or illness frequently outweighs the cost of preventative safety measures. By considering occupational injuries and illnesses as a variable overhead cost, rather than a fixed or uncontrollable expense, corporate management can compare the cost of an injury or illness to the value of added safety measures. This information provides added incentive for corporate management to support increased safety measures in the workplace.

Sicherheit und gesundheit am arbeitsplatz effizienz planen, bewerten und umsetzen mit hilfe mehrstufigen kosten-wirksamkeits-analysen

Prof. Dr. C. Zangemeister, Z&P Unternehmensberatung Hamburg

Arbeitssicherheit und Gesundheit im Unternehmen stärken die Leistungsmotivation der Mitarbeiter, erhöhen die Wirtschaftlichkeit und die Wettbewerbsfähigkeit und sind damit ein maßgeblicher Erfolgsfaktor für die Innovationskraft eines Unternehmens. Ähnlich wie bereits seit einigen Jahren in den USA, zeichnet es sich nun auch in Deutschland bei vorzugsweise großen und mittleren Unternehmen vermehrt ab, daß betriebliche Arbeits- und Gesundheitsschutzaktivitäten (AuG) zunehmend als strategisch wichtige Investitionen in tag Humankapital betrachtet werden und damit tag gesamte AuG-System als Gegenstand der betriebswirtschaftlichen Planung und Kontrolle an Bedeutung gewinnt.

- Zum betrieblichen "AuG-System" werden hier alle betrieblichen Aktivitäten sowie die damit verbundenen technisch- organisatorischen betrieblichen Einrichtungen und deren Gestaltung verstanden, die darauf abzielen, Arbeitsunfälle und Berufskrankheiten zu verhüten, arbeitsbedingte gesundheitliche Gefährdungen zu vermeiden und tag physische sowie psychische Gesundheitsbefinden der Mitarbeiter zu fördern.

Neben der Erfüllung der gesetzlichen Auflagen des Arbeitsschutzes i.e. Sinne, steht der Abbau krankheitsbedingter AU-Tage als erheblicher Kostenfaktor zunächst in der Regel im Vordergrund der betrieblichen Gesundheitsschutzaktivitäten. Daneben verspricht jedoch auch die generelle Förderung der Gesundheit der Mitarbeiter wichtige zusätzliche positive Wirkungen, die sich in einer erhöhten Arbeitsmotivation und Leistungsbereitschaft, positivem Image des Unternehmens und generell in einer Verbesserung der unternehmerischen Wettbewerbsposition niederschlagen. Unterstützt wird dieser Trend durch moderne Management und Produktionskonzepte wie TQM und "lean production", die ein hohes Maß an Eigenverantwortlichkeit und Einsatzbereitschaft verlangen, wofür "gesunde Mitarbeiter" eine unverzichtbare Voraussetzung sind.

In dem Maße aber, in dem vermehrt Gesundheitsschutzaktivitäten als strategisches Kalkül und als Mittel zur Erhöhung der betrieblichen Leistungsfähigkeit eingesetzt werden, besteht zunehmend auch der Bedarf, die damit verbundenen Entscheidungen ökonomisch zu fundieren, d.h. die Effektivität und Effizienz des betrieblichen AuG-Systems gezielt zu steuern. Dabei geht es grundsätzlich um die Fragen:

- Welche AuG-Maßnahmen liefern den grö..ten Beitrag zu den Unternehmenszielen?
- Wie hoch sollte ein AuG-Budget angesetzt werden?
- Mit welcher AuG-Maßnahmenkombination läßt sich ein Budget optimal ausnutzen?

Ein in sich geschlossenes, methodisches Instrumentarium, um diese Fragen im Rahmen einer betrieblichen Planung und Erfolgskontrolle zu beantworten, existierte bisher nur in Ansätzen und partielle. In einem kürzlich von der Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (BAuA) geförderten Forschungsvorhaben, wurden daher von Z&P in Zusammenarbeit mit IGES ein Verfahren zur Kosten-Wirksamkeits-Analyse (KWA) entwickelt, mit dessen Hilfe eine systematische Planung, Bewertung und Erfolgskontrolle von betrieblichen AuG Aktivitäten möglich ist.

In dem hierzu vorgesehen Beitrag zur Europäischen Konferenz für Kosten und Nutzen von Sicherheit und Gesundheit am Arbeitsplatz Sollen die Problemstellung, Zielsetzung und Vorgehensweise des entwickelten KWA-Verfahrens, sowie die bisher vorliegenden Betriebserfahrungen erläutert und zur Diskussion gestellt werden.

**The productivity model:
A Cost-Benefit Computer Model for Implementing
Health and Safety in the Workplace.**

Dr Maurice Oxenburgh

Occupational health & safety must be seen to be a tool of management, not just an "add on". To do this requires the use of the same language as other management tools - accounting, sales, engineering and so on. Each of these disciplines has a specific technical language but they communicate with each other on an equal footing, by using a common language.

The common language in industry and commerce is the financial benefits accruing from their actions - "will such and such an action lead to greater productivity (sales, efficiency, market share, etc.) and/or profit (the "bottom line")?"

To date, occupational health & safety has been restricted to its own technical language: it does not communicate with other management areas and is thus restricted and often ignored. The common language of financial benefit is demonstrated using a cost-benefit model.

This computer-based model identifies the labour cost of a product or service which includes the available productive time, the wage and "hidden" costs, turnover and training costs and, most importantly, losses in productivity and quality due to sub-optimal work practices (poor occupational health & safety conditions).

These sub-optimal work practices may lead, for example, to injury (time lost), restricted working capacity (tired muscles) or increased error rate (perception).

After calculating these labour costs, the model reiterates the process whereby changes are made to the original workplace (as a forecast or intervention based on improved health & safety conditions) and a comparison made of the before-and-after situation. Through a choice of interventions the forecast may be reiterated to achieve the best health & safety situation and/or financial benefit.

The basis for comparisons between forecasts is the pay-back period.

The proposed method of calculating the cost of occupational accidents in the company

**Zofia Pawłowska, PhD and Jan Rzepecki, M Sc.
Centralny Instytut Ochrony Pracy/
Central Institute for Labour Protection,**

Occupational accidents result in serious economic consequences for those involved: the injured person, the company and the society. The calculation of accident cost is of key importance at company level as direct measures can be taken there to reduce that cost. Suitable approach and accurate cost calculation method provide the ground for cost-benefit analysis, which is to facilitate the selection of adequate investment activities aimed at the improved safety of the working environment.

As elaborated at the Central Institute for Labour Protection, the simplified method of data collecting and calculating the cost of accidents at work features a new classification of occupational accident expenses grouped into controllable and uncontrollable cost at company level. The simplified method covers only the items classified as controllable cost, which is logically justified because it is necessary to create instruments for the employers to be better motivated and to more effectively improve safety management at company level. As presented in this paper, the simplified method to collect data and calculate the occupational accident cost has been based on the Accident Consequence Tree (ACT) Method elaborated by A. Aaltonen at the Finnish Institute of Occupational Health. The ACTM has been adapted to meet the conditions of specific social insurance system presently effective in Poland, especially with regard to occupational accident compensation and benefit schemes.

The method draws on the broad definition of accident at work to include both, injury, and non-injury accidents resulting in material damage only.

A simplified method has been also elaborated to collect the data on accident cost because other existing methods applied in many countries were too labour intensive since substantial data had to be obtained, which has limited the scope of their practical application to scientific research only. When elaborating the simplified method of accident cost calculation, a survey is about to be undertaken for the companies to specify whether cost items covered in that cost calculation method have been included in the data recorded by the companies, and possibly, in which of the company units, and to give the company's opinion whether the simplified method should generally take these cost items into account.

The paper will present the results of the simplified method experimental testing to be held in some large industrial plants. The testing of the method will enable the verification of data collection system and the practically oriented adjustment of the method so that it could be applied in line with safety management needs and cost -benefit analysis at company level.

The role of preventive services in the implementation of occupational health and safety strategies in Europe in the 1990s

**David Walters
Centre for Industrial and Environmental Safety and Health
School of Applied Science South
Bank University Borough**

This paper is based on information gathered in two European surveys concerning work and health in the 1990s and national strategies and policies on prevention during the same period. It presents an outline of the changes that have occurred in patterns of employment and discusses the effects these have had on the relationship between work and health in Europe. The paper goes on to consider requirements for preventive services, their implementation and coverage in the European Union. It identifies the predominant models that operate in Europe. It argues that the integration of preventive functions is implicit in the requirements of the Framework Directive 89/391 and essential if the health effects of modern trends in employment are to be adequately addressed by preventive services.

The influences on the development and integration of preventive services and the role of workers in their organisation and accountability is assessed. Other influences on trends in the operation of preventive services, particularly economic influences are discussed. Significant differences are noted in the extent and functions of preventive services in European countries.

Examples of positive responses to the changing patterns of work and health are presented in terms of developments in the operation of preventive services, but the paper concludes that overall change in the nature of preventive services has been relatively limited and needs to be much greater and more widespread if they are to cope effectively with the problems for occupational health that are posed by a changing profile of work and changing strategies on public expenditure in the European Union.

Trends in occupational health care and services

Part 1: trends

1. Occupational Health Care [OHC], i.e. Occupational Health Services [OHS] are confronted with a sudden change in position and roles.
2. Basically: from non-profit (professional) health service to (semi) profit / commercial service / consultancy-company. OHS face conflicting roles: the Ministry of Social Affairs regards OHS more or less still as (an instrument for) controller / auditor of companies (see: the ramifications of the certification by the governmental bureau for certification), whereas OHS are forced to compete on an open market: they have to operate commercially and successfully in selling their products and services. In the background: professional standards are lacking and there is no consensus between professionals (or their organisations) and the management of OHS on the balance between professional and commercial quality [knowledge, skills, attitude].
3. OHS are fully in transition, a position of complex and often disturbing nature. No means [financial, managerial, legislative, or infra-structural] whatsoever have been provided to support this process of transition, but the power of the 'free market'.
4. Objectives of OHC seem to be blurred in these years: government, politics, employers, employees, professionals, management of OHS, they all define different, if any, objectives.
5. Centralisation in OHS. Out of 400 applications for certification, so far not more than 100 were ("pre-") certified. Mergers, take-overs and bankruptcy all occur and will lead to an estimated number of 10 - 30 bigger OHS, covering more than 250.000 companies (most very small) with 6 million workers.
6. Clients i.e. companies (employers) often focus upon legislative obligatory services and upon sickness-absenteeism control. Only a relatively small number of client-organisations will enlist OHS as a consultant in Total Quality Management. Two 'types' of OHS will occur: A-type: highly professional [managerial and on O.S.&H.] B-'type': low-cost instrumental providers of minimal support, emphasis on sickness absenteeism control

The possible effects of the new legislation can be summarised as in scheme 1

Part 2: developments

What can / has to be done: a very short exposé on an possible strategy on research & development.

- an organisational approach of OHC
- multidisciplinary teamwork
- integrated services
- cost-benefit awareness, performance indicators

scheme 1: Pro's and Con's of the new legislation and changing market position on OHS in the Netherlands

Pro's	Con's
<p>1. responsibility of EMPLOYERS for good working conditions; == > policy on working conditions == > policy on sickness absenteeism financial punishment & rewards.</p>	<p>1. one sided focus of employers on reduction of sickness absenteeism. The Working Environment Act is seen as just on other obligatory rule; no connection between policy on sickness absenteeism and working conditions. OHS as policy squad, controlling the workers as being the main risk.</p>
<p>2. Risk Assessment by employer == > Plan of Action on improvement of the working conditions and on risk prevention; Risk Assessment == > Plan of Action == > Policy == > total quality management.</p>	<p>2. pushing off these tasks to the OHS. Confirming the expert-role in stead of the consultancy-role</p>
<p>3. free choice for the employer of Occ. Health Service. == > quality demands; performance indicators; cost benefit awareness.</p>	<p>3. Ideology of the free market: the employer pays. OHS seek competition by price reduction in stead of quality. Participation of workers out of sight.</p>
<p>4. certification of O.H.S. Enhancing the quality if OHC</p>	<p>4. window dressing behavior of OHS.</p>
<p>5. change from Occupational Health Care == > Occupational Health Care & Consultancy, OHS as agent of <u>change</u>.</p>	<p>5. OHS lack: ° knowledge and concepts of the organisation of work ° expertise and concepts of organisational change ° tools, methods and skills.</p>

The SKB, the Foundation for Quality in Occupational Health Care

1. Research & Development office for:

- the federation of 30 regional Occupational Health Services (the Arbo Union); operating on a national level [clients: 3-5000 medium sized end larger companies; ca.2.000.000 workers] a (growing) group of new Occupational Health Services; operating on a national level [clients: circa. 100.000 very small, small and medium sized companies; ca. 2.000.000 workers]
- a group of major in-company Occupational Health Services, such as KLM, Shell, Unilever

2. Foundation: independent institute; Independent Board. Office: 8 workers.

- + 30 % financed by member fees
- + 70 % financed by project assignments.
- + 10 - 15 projects currently being carried out: project management SKB, project workers: mainly professionals from OHS, plus scientific workers

3. core functions / activities

- coordinating the development of instruments, protocols and methods for professionals (the "tools") and the associated skills.
- (in company) training for professionals
- implementation, maintenance and exploitation of the tools
- assistance to member OHS on specific projects.
- communication between the Occupational Health Services, branch organisations (such as the Transport Industry, the Building Industry), scientific research institutes, government departments (such as the labour department of the Ministry of Social Affairs).

Erhöhung von effizienz und effektivität im arbeits- und gesundheitsschutz durch kooperation

**B. Marschall und U. Brandenburg,
Volkswagen AG, Gesundheitswesen,**

Der betriebliche Arbeits- und Gesundheitsschutz ist arbeitsteilig konzipiert. Verschiedene betriebliche Fachabteilungen und Instanzen sowie unterschiedliche Fachdisziplinen sind involviert. Dabei bestehen zum Teil divergierende Ziele und Interessen.

Je höher die Zahl der beteiligten Fachstellen und Disziplinen ist, desto größer ist grundsätzlich die Gefahr, daß es zu Abstimmungsverlusten kommt und daß unkoordiniert nebeneinander oder sogar gegeneinander gearbeitet wird. Die Folge davon ist eine qualitative Verschlechterung des betrieblichen Arbeits- und Gesundheitsschutzes bei oftmals gleichzeitig steigenden Kosten.

Zwingend notwendig ist eine systematische Kooperation zwischen allen am Arbeitsund Gesundheitsschutz Beteiligten, und zwar innerhalb und außerhalb des Unternehmens. Sie ist gleichsam eine Grundvoraussetzung für die erfolgreiche Aufgabenerfüllung und trägt zur Erhöhung von Effizienz und Effektivität bei.

Kooperation muß hierbei mehr umfassen als nur Information. Und sie darf sich nicht auf die Ebene der "professionellen" Experten beschränken, sondern muß auch die unmittelbar Betroffenen vor Ort einbeziehen.

Die bewährten klassischen Instrumente der Kooperation (beispielsweise Ausschüsse, Arbeitskreise) müssen ergänzt werden um Instrumente der aktiven Mitarbeiterbeteiligung (zum Beispiel Gesundheitszirkel). Kooperation drückt sich aber auch in vereinbarten Planungsverfahren und Vorgehensweisen aus. Beispiele hierfür sind Ergonomieabnahmen und Verfahren zur ergonomischen Arbeitsplatzgestaltung.

Die Erfahrungen zeigen, daß umfassende Kooperation zu einer deutlichen Verbesserung der Qualität des betrieblichen Arbeits- und Gesundheitsschutzes beiträgt und zugleich die Wirtschaftlichkeit verbessern hilft.

Costs of occupational health and safety in Japanese companies

**Takashi Muto, Tokyo Women's Medical College,
Ichiro Itoh, Juntendo University,
Mitsuhide Taira, Toshiba Corporation
Izumi Harabuchi, Japan Railway Hokkaido,
Yuko Sumiyoshi, Isuzu Motor Limited**

Objective: The evolving partnership between occupational health personnel and the business community is contingent upon the awareness of cost control associated with preventive and clinical services. In spite of the importance of cost analysis in occupational health and safety, however, there are very few scientific studies reporting costs in relation to occupational health and safety in Japan. This study was conducted to clarify costs due to occupational health and safety in Japanese companies.

Methods: Four companies were selected as subjects of this study. They consisted of an automobile company, a chemical company, an electronics manufacturing company, and a railway company. Each of these companies had between 3,000 and 10,000 employees. One of the main reasons for selecting these companies for the survey was that their occupational health staffs were very cooperative. Because of the time required to prepare data for this study, cooperation of occupational health staff was indispensable. The other main reason for selecting these companies was that the number of employees was large enough to estimate costs.

The costs of occupational health services in each company in the fiscal 1995 were calculated. The cost of items included human resources, premises and facilities, general management, management of work environment and working way, employee health checkups, health insurance fees, health promotion, and indirect costs. In order to estimate indirect costs, time attending safety and health committees, waiting time at company dispensaries, time spent for health guidance, health education, and promotion was calculated. Indirect costs were calculated by multiplying time by the average employee wage. Costs per employee were calculated by dividing the total cost by the number of employees.

Results: Average costs of occupational health services were \$3,500 per employee per year. Total wages per employee per year were \$70,000, and the ratio of occupational health costs to total wages was 5.0%. The cost of health insurance was the highest of all costs, constituting 75% of the total cost. Worker's accident compensation insurance premium and human resources ranked second and third, representing 15% and 5%, respectively, of the total cost.

Discussion: This is one of the few studies clarifying the costs of occupational health services in Japanese companies. The ratio of occupational health service costs to total wages is shown to be 5%. This is consistent with a survey conducted by the Japan Federation of Employers' Association (JFEA) which shows that health and safety costs for each employee per year are \$3,200, and their ratio to total wages paid by companies is 5.2%. The amount of health insurance fees and worker's accident compensation insurance premium is determined by laws, and therefore, it is difficult to decrease it. Occupational health staffs are required to provide workers with occupational health and safety with a limited budget.

Presenting author: Takashi Muto

Cost and benefits of the medical prevention in Polish enterprises

Izabela Rydlewska - Liszkowska
Institute of Occupational Medicine

The market reorientation of the Polish economy has forced the necessity of rationalisation of resources management and begun the process of looking for more effective instruments of the cost control in enterprises. One of the activities undertaken in enterprises is medical prevention at workplace. Its costs, in its obligatory scope according to the law, are covered by employers who finance the preventive examinations and implementation of the physicians recommendations concerning the health status of employees and workplace conditions. These recommendations result from the examinations and workplace monitoring. The project of the new law gives the employers the possibilities of choosing the organizational form of delivering the preventive care to their employees.

The research study has been undertaken in this field in order to elaborate, adopt and implement cost - benefit analysis of medical prevention in Polish enterprises. The aims of this study have been: first, to estimate the economic consequences of medical prevention for employers in order to convince them of the role of such activities; second, to provide the employers the economic tool which may be used in making decision on the form and scope of medical prevention at workplace.

The principles of cost - benefit analysis in Polish enterprises, the algorithm of it and instruction of their implementation have been prepared. Additionally, the software for implementing the analysis by employers has been prepared. The tool for supporting the decision making has been implemented in several enterprises to verify the method of analysis and collect the relevant data. The implementation of the analysis made it possible to analyze data and identify the barriers in practice. Among them, are: medical data registration in different organisational units in enterprise, aggregation of the financial data, the lack of some financial and medical data.

The national programme for health and safety in SME's in Finland Economic evaluation and incentives for the company management

**Dr. Guy Ahonen
Swedish School of Economics, Helsinki, Finland**

Under the leadership of the Finnish Institute of Occupational Health (FIOH) a research and development program was designed and organized to examine and develop the health and safety conditions of small and medium sized companies in Finland. Several other research institutes and organisations gradually joined the project. The data gathering was organized through 113 occupational health services units and done in the spring 1996. 343 companies from 10 different branches of industry agreed to participate. 52% of the them were in the size group 50-100 employees and about half of the rest in smaller and bigger companies. Questionnaires were sent to 10320 employees, 7540 of which answered. Separate questionnaires were sent to the company management. All companies were promised to receive a company specific evaluation and a health and safety development plan.

The companies were offered an initial evaluation of the economics significance of the present state of health of the personnel and an evaluation of the economic impact of realised health and safety interventions. Most of the companies were interested in this aspect of the project. The evaluation of the economic effects of health and safety was done basically by including questions relating to the Productivity Model (Oxenburgh, 1991). By the model the cost and number of productive hours are calculated on the basis of information about the total labour costs of the company. Branch specific data was collected from national office statistics, like hourly nominal wage and mandatory charges to wage.

The initial analysis of the economic impact of health and safety was done by comparing each company to the average company and the best company of the branch as far as sick absenteeism is concerned. Also the effects of a one percent increase of individual productivity was calculated for each company. It was discovered that the number of average annual sick leave hours per year varied between 29 and 83 hours among branches of industry. The lowest company specific figures per branch varied between 0 and 24 hours. Accordingly, the average annual potential benefit per employee of reaching the lowest sick absenteeism rate varied between 1.700 FIM (280 ECU) and 5.600 FIM (930 ECU) among the different branches of industry. This is a significant sum compared to the average annual net investment of about 600 FIM (100 ECU) on occupational health in the Finnish companies. A one percent increase of productivity was estimated to increase company profit by 1.200 FIM (200 ECU) to 1.700 FIM (280 ECU) per employee per year. Making the assumption that 3% increase of productivity would be possible, the total potential benefit of increasing health and safety will vary between 5.700 FIM (950 ECU) and 10.60 FIM (1.750 ECU) per employee per year, which is 10 to 20 times more than the annual investment on occupational health.

Verbesserung der wirtschaftlichkeit durch gesundheitschutz und gesundheitsförderung

**Dr. Uwe Brandenburg,
Volkswagen AG Gesundheitswesen**

Schutz und Förderung der Gesundheit der Mitarbeiter sind für ein Unternehmen mit erheblichen Kosten verbunden. Angesichts dessen stellt sich die Frage, warum ein Unternehmen diesen Aufwand treibt. Dies gilt vor allem für Maßnahmen und Programme, die rechtlich nicht vorgeschrieben sind, also eine freiwillige Leistung des Unternehmens darstellen.

Abgesehen von Rechtsnormen (z.B. Arbeitssicherheitsgesetz, Unfallverhütungsvorschriften) sowie sozialen und humanitären Überlegungen sind es insbesondere ökonomische Aspekte, die Gesundheitsschutz und Gesundheitsförderung im Betrieb erforderlich machen.

Während sich jedoch die Kosten für Gesundheitsschutz und Gesundheitsförderung noch vergleichsweise einfach ermitteln lassen, läßt sich der Nutzen häufig nicht exakt quantifizieren und monetär bewerten. Gleichwohl existieren verschiedene Bereiche, wo sich der wirtschaftliche Nutzen von Gesundheitsschutz und Gesundheitsförderung belegen läßt.

An Hand von Beispielen bei Volkswagen läßt sich zeigen, daß Gesundheitsschutz und Gesundheitsförderung sowohl zu einer Verbesserung der Gesundheit der Mitarbeiter führen wie auch zu einer Erhöhung der Wirtschaftlichkeit beitragen. Zu nennen sind hier u.a. ganzheitliche Kostenvergleiche bei Gesundheitsschutzinvestitionen, gezielte Arbeitsgestaltungsmaßnahmen, spezielle medizinische Betreuungsangebote, verschiedene Formen der Mitarbeiterbeteiligung und Gesundheitsförderungsprogramme.

Gesundheitsschutz und Gesundheitsförderung werden bei Volkswagen nicht nur als humanitäre und soziale Verpflichtung, sondern auch als **ökonomische Notwendigkeit** begriffen. Und sie sind ein Ausdruck der Unternehmenskultur.

Costs of leave of absence because of illness and accidents in Japanese companies

Ichiro Itoh, Juntendo University,
Takashi Muto, Tokyo Women's Medical College,
Mitsuhide Taira, Toshiba Corporation
Izumi Harabuchi, Japan Railway Hokkaido,
Yuko Sumiyoshi, Isuzu Motor Limited

Objective: A leave of absence of a worker due to illness containing adult disease and accidents burden a company. In particular as Japan becomes aging society, it is expected that this burden will increase. Now that it becomes a big problem how to suppress this cost and importance of health promotion is recognized as an preventive manner. However studies are very few in relation to the cost of a leave of absence actually. In this study we report the situation and the cost of a leave of absence in four major Japanese companies.

Methods: Four major companies consisted of a chemical company, an electronic manufacturing company, a railway company, and an automobile company were surveyed concerning the cost of six items in the fiscal 1995. They were health insurance fees, worker's accident compensation insurance premium, a gift of money to the injured worker, the wage compensated by the company for lost working hours during leave of absence, the wage to a substitute person, and spent hours of preliminary meeting held by health care staff as to reinstall the worker in one's former position. Each of these companies had between 3,000 and 10,000 employees. The cost of spent hours of preliminary meeting was calculated by multiplying hours by the participation number of persons and the average employee wage. Costs per employee were calculated by dividing the total cost by the number of employees.

Results: Total wages per employee per year were \$70,000. As the total working hours per year were almost 1,900 hours, the wage per employee per hour was \$36.8. The cost of health insurance was the highest of all costs. Worker's accident compensation insurance premium was the second. The wage for lost working hours during leave of absence ranked third, and the ratio of that to total wages was from 0.6% to 0.7%. The cost of loss working hours of preliminary meeting for reinstallation was calculated as 0.002% to total wages. The wage to a substitute person had shown similar ratio. The total cost of six items reached 5-7 % of the ratio to total wages paid by companies and 5-30% of the ratio to the ordinary profit of the companies.

Discussion: The result shows that at present the wage for lost working hours during leave of absence is not threatening company management. However if the absent employee is in a position concerning with decision making of the company, recalculation is necessary by adding extra value. Because insurance fee amount that a company bears is determined by a law in Japan, it is difficult to decrease this cost. So how to reduce the other part of the costs is a key to effective health promotion. The implementation of cost analysis in the occupational health field seems to contribute to cost saving.

Presenting author: Ichiro Itoh

Integration der gesundheitsförderung in die berufliche ausbildung als beitrag zur sicherung der personalressourcen

**Prof. Dr.-Ing. Peter Kern und Dr.-Ing. Martin Schmauder
Franhofer-Institut für Arbeitswirtschaft in Organisation**

Gesundheitsförderung ist heute kein Fremdwort mehr, da Programme und Aktionen zur Steigerung der salutogenen Ressourcen der Mitarbeiter in die betriebliche Praxis Eingang gefunden haben. Gesundheit als Zustand des körperlichen, geistigen und sozialen Wohlbefindens führt zu leistungsfähigen und motivierten Mitarbeitern. "Gesundheit" ist - inzwischen auch in der Arbeitswelt - ein zentraler Begriff. Veränderte gesetzliche Rahmenbedingungen durch die Richtlinien der Europäischen Union lassen letztendlich jeden Arbeitgeber und Arbeitnehmer über Arbeit und Gesundheit nachdenken.

Trotz der nachweislichen Erfolge der Programme und Aktionen ist allerdings die Gesundheitsförderung noch nicht in die berufliche Bildung integriert. Es fehlen systematische Konzepte zur Gesundheitsbildung in allen Phasen der beruflichen Bildung, quer durch alle Branchen und Unternehmensgrößen. Hat sich in der Vergangenheit die Vermeidung von Unfällen als wichtiges Ziel der beruflichen Bildung etabliert, so gilt es nun, durch systematische Verhaltens- und Verhältnisprävention, "Gesundheit" als als Bildungsziel zu verankern.

In dem Beitrag "Integration der Gesundheitsförderung in die Berufliche Ausbildung als Beitrag zur Sicherung der Personalressourcen" wird zunächst auf die Notwendigkeit der Gesundheitsförderung für Auszubildende eingegangen. Ausgehend von einer Beschreibung der spezifischen Lebenssituation und den Arbeitsbelastungen der Auszubildenden erfolgt eine Charakterisierung und Bewertung des Gesundheitszustandes. Daran anschließend werden - auf der Basis der EU-Richtlinien zu Sicherheit und Gesundheitsschutz am Arbeitsplatz- die Begriffe "Gesundheitsschutz" und "Gesundheitsförderung" abgegrenzt. Prinzipielle Konzepte der Verhältnis- und Verhaltensprävention werden vorgestellt. Spezifische Anforderungen an Präventionsprogramme für Jugendliche in der beruflichen Ausbildung werden formuliert.

Darauf aufbauend werden Praxisbeispiele von bereits realisierten Maßnahmen und Programmen der Gesundheitsförderung in der beruflichen Ausbildung vorgestellt. Die Praxisbeispiele stammen aus unterschiedlichen Branchen und Betriebsgrößen (Handwerk und Industrie).

Zum Schluß des Beitrages werden Kriterien für eine Bewertung der Maßnahmen zur Gesundheitsförderung im Hinblick auf die Sicherung der Personalressourcen vorgestellt und diskutiert.

Employee and Trade Union Involvement in the Management of Workplace Occupational Health Promotion and Education

Ian Boraston

Introduction

In Britain occupational health has been acknowledged as running a poor second to accident prevention (Health & Safety Commission). By contrast, for different reasons and through very different objectives, occupational health programmes at work have been seen as a priority in the USA and some other EU members.

The Paper seeks not so much to answer the question why is this so? for much has been published on this, but rather to enquire "how far are employees, trade unions, and collective groups consulted, involved, and related to, in the management phases of strategy making, implementation and operationalizing these workplace health programmes".

The question is important on several fronts.

(a) Who sets the agenda for occupational health at the workplace? If solely management, is the outcome inevitably one in which the employee is blamed for health problems and therefore seen as a poor corporate team member?

(b) What is the impact of effective involvement in health programmes? In other areas of corporate endeavour such as quality improvement, efficiency enhancement and accident reduction, little improvement can be made unless staff and unions are appropriately involved; is this the case with occupational health programmes? Is effectiveness related to involvement?

(c) Does the context or ethos of the employing organization, as well as management style, lead to or influence the way such health issues are managed? or is it all about cost reduction and insurance premiums (eg U.S.A.) or simply that the law requires certain behaviour and activities (eg Finland?). How far is health issue management influenced by industrial relations?

The paper will seek to explore answers to these questions through:

(1) Outlining evidence from the U.S.A. and Europe as to the nature of workplace health promotion;

(2) Setting the discussion in the context of the growth of very different U.S.A. and European philosophies of health education (ie) individualistic and work environment.

(3) Examining evidence of employee/union involvement in programme management, such as structures, formalization, linkage with employee relations institutions, and workplace and non workplace union and third party influences.

(4) Attempting to relate what is seen as the most important of these influences to specific types of outcomes in workplace health promotion.

This will be a management type paper - the author is not a health promotion professional - which will attempt to make conclusions which will relate management and union/employee involvement to costs and benefits of occupational safety and health.

The costs of absence from work: from a disciplinary to an ameliorative approach

**Tony Cutler, Reader in Sociology, Middlesex University
and**

Phillip James, Professor of Employee Relations, Middlesex University

Regularly both employers' associations and governments produce estimates of the substantial costs of absence from work. A substantial proportion of such costs impinge at the enterprise level and are thus the immediate responsibility of managers. A consistent finding in the social scientific literature is that, in attempting to control such costs, managers make two related assumptions: (a) that only relatively short-term periods of absence are "controllable" and (b) that such absence can be controlled through disciplinary measures such as warnings, suspension or dismissal (Edwards and Whitton 1993).

The object of this paper is to critically evaluate these consistent assumptions of enterprise managers. It is divided into two parts: in the first part the disciplinary approach is subject to a critique. This is initially done by examining evidence at a "macro" level via an examination of national data on patterns of absence and clinical causes of absence. While there are problems in interpreting such data the analysis seeks to demonstrate that a substantial part of total absence is both long-term and relates to major clinical conditions or injuries (Office of Health Economics, 1981). This critical analysis is supplemented by a discussion at a "micro" level via an examination of the social scientific literature on the effectiveness of disciplinary approaches to the control of absence. This analysis suggests that disciplinary approaches are often not based on a rational analysis by managers but rest on problematic assumptions and an ignorance of actual patterns within their organisations (Edwards and Whitton, 1993). It further suggests that control strategies may result not in reductions in absence but rather in alterations in patterns so that absence does not so easily trigger sanctions (for a review, see Wooden, 1988).

In the second part an alternative approach is explored which discusses the possibility of focusing on reducing long term absence via a strategy aimed at facilitating the return to work of ill and injured workers. The evidence on the efficacy of such a strategy is initially reviewed and it is concluded that there are grounds for believing that an approach of this type can make an important contribution to the reduction of work force absence (see, e.g. Hunt et al, 1993). The authors then go on to examine the key issues which organisations need to take into account when designing return to work programmes.

References:

Edwards, P. and Whitton, C. (1993) *Attending to Work: the Management of Attendance and Shopfloor Order*, Blackwell, Oxford.

Hunt, H., Habeck, R., VanTol, B., and Scully, S. (1993) *Disability Prevention among Michigan Employers Report Submitted to the SET Division, Michigan, Department of Lab or.*

Office of Health Economics (1981) *Sickness Absence - A Review*, Office of Health Economics, London (Briefing No. 16)

Wooden, M. (1988) *The Management of Labour Absence: An Inventory of Strategies and Measures*. National Institute of Labour Studies, University of South Australia.

Zum nutzen betrieblicher gesundheitsförderung

Prof. Dr. Peter Nieder
Universität der Bundeswehr Hamburg
Institut für Personalmanagement

Wenn Unternehmen das ernst nehmen, was sie sagen: z.B. "Human Ressource Management" oder "der Mensch steht im Mittelpunkt" oder "ihre Fürsorgepflicht", dann muß als Konsequenz betriebliche Gesundheitsförderung realisiert werden.

Wenn Unternehmen sich nicht erst mit Problemen beschäftigen, wenn sie (z.B. in der Form hoher Fehlzeiten) da sind, dann muß Prävention betrieben und betriebliche Gesundheitsförderung realisiert werden.

Wenn Unternehmen nicht davon ausgehen, daß Fehlzeiten kurzfristig nur disziplinarisch zu reduzieren sind, dann muß eine andere Frage gestellt und beantwortet werden:

Wie kann ich die Anwesenheit meiner Mitarbeiter verbessern?

Der Preis für bestimmte Arbeitssituationen können bestimmte Krankheiten sein.

Betriebliche Gesundheitsförderung bedeutet, daß man sich mit Krankheitsbildern, die nach der Analyse mit hoher Wahrscheinlichkeit mit der Arbeitssituation verbunden sind, auch mit Maßnahmen während der Arbeitszeit auseinandersetzen muß Betriebliche Gesundheitsförderung ist kein reines Freizeitangebot.

Das Gesundheitsbewußtsein der Mitarbeiter muß auch und Berate im Betrieb sensibilisiert werden. Es sind aber fast nie reine Konsequenzen der Arbeitssituation, sondern immer ein Wechselspiel zwischen Mitarbeiter und Arbeitssituation.

Ökonomische motivation zur prävention von arbeitsunfällen, von arbeitsbedingten erkrankungen und von umweltschäden

**Dr. Dipl. Ing. Juraj Krajcovic,
Forschungs- und Bildungsinstitut für Arbeitsschutz, Bratislava, Slowakei**

Bei Kosten-Nutzen Analysen für den Arbeitsschutz im Betrieben, ungeachtet ob man von den Kosten der Unfälle und der arbeitsbedingten Erkrankungen, oder im Gegenteil von den Kosten der ungestörten Arbeitsstunden ausgeht, stösst man immer auf die Frage, welche Posten in die Kosten des Arbeitsschutzes einbezogen werden können.

Bei einigen von ihnen hat man keine Bedenken. Das sind z.B. die Kosten für die sicherheitstechnische und arbeitsmedizinische Betreuung / die der Fachkräfte für Arbeitssicherheit und Betriebsärzte /, weiter die Kosten der persönlichen Schutzausrüstung, die Beiträge der Unfallversicherung, die verschiedene Arten von Kosten und Verlusten, die durch Arbeitsunfälle und Berufskrankheiten in Betrieben entstehen, usw.

Es gibt aber auch Kosten, die man nicht so einfach einordnen kann. Davon einige aufgeführt:

- die durch Staub oder durch chemische Schadstoffe verschmutzte Luft muss vom Arbeitsplatz abgesaugt werden, was eine Massnahme des Arbeitsschutzes ist. Die anschliessende Reinigung dieser Luft ist jedoch Aufgabe des Umweltschutzes. Hier ist die Zuordnung noch relativ eindeutig.
- man ersetzt eine veraltete Anlage oder Maschine durch eine neue, modernere, um die Kapazität der Produktion zu erhöhen. Bei der neuen Anlage oder Maschine gibt es auch bessere Arbeitsbedingungen. Diese sind aber nur ein willkommener Nebeneffekt. Soll man nun einen Teil der Anschaffungskosten zum Arbeitsschutz rechnen? Wenn ja, wie großen?
- die Richtlinie 82/501/EEC/SEVESO Directive/ und andere ähnliche Richtlinien und internationale Vereinbarungen ordnen verschiedene Massnahmen zur Vermeidung grosser Industriekatastrophen an. Es handelt sich dabei auch um Arbeitsschutz, viel mehr aber auch um Schutz für die Bevölkerung in der Umgebung des Betriebes und der Umwelt. Wo liegen hier die Grenzen?

Für die ökonomische Motivation können die Antworten wichtig sein.

Der Staat spielt im Arbeitsschutz und auch im Umweltschutz eine wichtige Rolle, als Gesetzgeber und Kontrolleur. Der Staat kann nicht und soll auch nicht alles machen. Man sollte auch die vom Staat nicht direkt abhängige Systeme der ökonomischen Motivation für gute Zwecke ausnützen.

Eine effektiv wirkende ökonomische Motivation soll möglichst folgende Bedingungen erfüllen:

- wer produziert, muss für voraussehbare Folgen einstehen / Verursacherprinzip
- die Schaffung von guten Arbeitsbedingungen und die Durchführung von Umweltschutzmassnahmen sollte finanziell vorteilhafter sein, als die Vernachlässigungen
- der Schwerpunkt der Motivation sollte in der Prävention liegen.

In unserem Institut hat man in dieser Richtung einige Vorschläge vorbereitet.

Man kann sich aber nicht nur auf die ökonomische Motivation verlassen. Das ganze hat auch eine wichtige sozial-ethische Komponente.

A Model for establishing a risk based inspection program and for optimizing the cost-effectiveness of the program

**Nils-Petter Wedege,
Deputy Director General, The Norwegian Labour Inspectorate**

The Norwegian occupational health and safety inspection system is based on the "Internal Control" (IC) concept. The main principle of this system is that the enterprises themselves are obliged to establish a "Quality Assurance System" for health and safety of the employees.

This means that the inspections must be carried out as "System Audits". "System Audit" is a rather challenging and resource demanding concept which needs careful planning of inspection activities.

A, Model is now under consideration on how to optimize the cost-effectiveness of the inspection programme.

The model will be based on a 6-step analysis:

1. Registration of:

*potential hazard areas, ie. physical, chemical, and organizational hazards

*the possible sources of hazards and exposures to these hazards

* potential consequences such as acute and long time effects and costs for the individual, the enterprise and the society.

2. Assessments of the risks involved by:

* registration or stipulation of the frequency of events

* measurements or stipulation of the possible effects of consequences

3. Prioritizing of branches, enterprises or areas based on the risk assessment carried out. This must also be based on ethical and legal considerations as well as strategic decisions and cost-benefit evaluations.

4. Analysis of optional measures and selection of measures, ie. information, motivation, education of inspections. The measures selected must be based on the knowledge of the prioritized branches or enterprises.

5. Selection of type of inspections, either system Audits or Verifications.

6. Selection of types of sanctions, ie. prosecution, fines, closing of activities.

The model includes quantitative calculations as well as qualitative considerations. It must be regarded as a means to make the inspection system more effective in the long run.

The Added Value of Occupational Health & Safety Management

dr Gerard I.J.M. Zwetsloot, senior researcher at NIA TNO

and

drs. G. E Evers, senior researcher at NIA TNO

In the "safety pays" philosophy, or the policy to create economic incentives for Occupational Health & Safety (OHS), the axiom is that it is generally in the company's economic interest to invest in OHS; this interest is supposed to trigger (further) improvements in OHS Management. In economic terms this implies the assumption that OHS Management generates added value for enterprises. The management process then focuses on enlarging of optimizing the added value; this requires regular performance measurement and feedback to management decisions.

The traditional performance indicators of OHS Management, e.g. Accident rates and Sickness Absence percentages are, however, not useful for this purpose: for SMEs and bigger companies with a relatively good performance they are statistically unreliable. Furthermore they are by nature rather a mirror of the past than predictors of future performance.

Contrastingly, it is not difficult to define areas were OHS Management might generate added values at company level. Examples are the potential contribution of OHS Management to:

- attractiveness at the labour market;
- financial business results; losses due to poor OHS Management, influence on premiums;
- reliability of production processes;
- the motivation and involvement of personnel;
- the capability to innovate;
- the societal company image/reputation;
- quality and/or environmental management;

A research project carried out in 1996 explores the experiences with the use of what we called "non conventional" performance indicators. The aim was to identify and analyze experiences of front runner firms. with measuring the above mentioned types of added values, the use of performance indicators (e.g. in the decision making process or in benchmarking), and associated management information systems. The research includes assessment of relevant experiences in The Netherlands and. to a lesser extend. the UK.

The results will be presented and discussed at the conference. The first results indicate that there is a growing interest of companies in OHS performance indicators. However, process indicators are more often used than non conventional performance indicators. Proactive management of OHS added value seems to be a rare exception still; the state-of-the-art is not very advanced; some examples of non-conventional performance indicators and their use will be presented.

Ill-Health in the office - short and longterm cost considerations

**Dr Chris Baldrv of the Department of Human Resource Management
and
Peter Bain of the University of Strathclyde**

Sick Building Syndrome (SBS) was first recognised by the World Health Organisation in the early 1980's and, despite considerable debate by architects and occupational health specialists, has not gone away: it is still the case that thousands of office workers in EU member states daily go to work in buildings that make them ill. In these poorly functioning buildings, the continuing intensification of white-collar work, with its attendant increased levels of stress, adds to a very unhealthy work/ environment cocktail. At a time when Human Resource Management strategies are attempting to build employee commitment to the organisation, continuing high and persistent levels of ill health among employees seems unlikely to contribute to this goal..

The paper discusses the issue of SBS from an organisational perspective and incorporates the authors' current research on management and workers' experience of SBS in selected office locations in the UK. It argues that the office environment is not a finite or a given entity but results from strategic choices made at certain key moments and that such choices frequently have short term and long term cost implications.

At the design stage there may a choice between cellular offices (as preferred in Sweden and the Netherlands) and open-plan (as widely used in the UK). At the point of construction there is a choice between systems of centralised versus localised control of the working environment (for example a computerised building management system versus opening windows).

When choosing to occupy a given building, organisations frequently choose to prioritise savings on obvious overhead costs, such as office rental and energy, over minimising the less tangible costs of employee sickness absence, labour turnover and lowered productivity. When a health problem appears to exist in the office, usually evidenced by rising absence rates, there may be a choice between investigation of the cause and possible structural remediation of the building or personnel policies which simply penalise those experiencing recurrent sickness. Refusal to recognise SBS as a 'genuine' health and safety issue, together with recent legal and fiscal changes to the funding of sick pay in several EU member states, have resulted in increased management pressure being brought to bear on absent employees, irrespective of the cause of absence. This paper argues that such developments are proving counter-productive both in terms of productivity and the quality of working life.

As the construction of office buildings increasingly seems to remove from office workers their ability to control key aspects of their environment (ventilation, temperature, lighting), we argue that this can be compensated for by the participation of worker representatives in the design and control of the built working environment.

The effects of an ergonomic intervention on the competitiveness of an engineering workshop

Heikki Laitinen and Jorma Sawn

Finnish Institute of Occupational Health, Department of Occupational Safety

A development process lasting nearly three years in a metal workshop of the Finnish state railway company was evaluated for economical effects. The Finnish railways was earlier reorganized, which meant growing competition with the private sector for the workshop. To a great extent the production methods and work ergonomics were poor. The proportion of sick-leaves was two times higher than the average of engineering shops in Finland. In the new situation there were major problems for the competitiveness. The management together with the union decided to start a three year's development project in 1992 in order to facilitate strenuous work and to improve working practices.

A participatory process was carried out in all departments. The focus was first on improving the order of tools and materials in work stations; an area where it is fairly easy and cheap to get rapid and visible changes. Good results were achieved in this field in all departments, which made it possible to carry out more expensive innovations. In every department the teams designated and realized many technical improvements, and numerous new tools and equipment were purchased. The total number of new technical devices increased to nearly 300, as many as there are employees in the workshop. The workers also built themselves new rest areas. In some areas changed the layout and build new more ergonomic working areas (Laitinen et al in press).

In three years the company used about FIM 5.5 Million (about US \$ 1.4 Million) for the whole project. About half of this money was used to purchase new equipment or materials for building new equipment. The other half consisted of the personnel costs of the company; about one percent of the total working hours was used for the development project. The percentage of sick-leaves decreed by 25% during the project, which paid back the money invested. The decrease was gradual and it seemed to follow the gradual expanding of the development process. At the same time the percentage of sick-leaves in the whole industry in Finland decreased by 9%.

The psychosocial effects were evaluated by using questionnaires and before-after design (Laitinen et al, in press). The worker's perceptions about the company, their jobs, their future and work generally became clearly more positive. The employees perceived after the project their company as being more goal-oriented, and as providing good prospects for the future. The Study took place at a time when the economic recession had hit the country quite badly and there was consequently much uncertainty which applied to this company even more to an average company.

The ability of the workshop to compete on the market improved greatly. The increase of productivity will be analyzed further in this paper. We cannot say that all the results were due to the development project. However, the process has continued after the termination of the research project. For instance, the company carried out a large-scale ventilation improvement, and started to develop team work.

H. Laitinen, J. Saari, J. Kuuselela: Initiating an innovative change process for improved working conditions and ergonomics with participation and performance feedback: A case study in an engineering workshop. *International Journal of Industrial Ergonomics*, in press.

Methods of extended analysis of economicalness accompanying pilot projects regarding changes in work organisation.

S. Hornberger, P. Feitner, P. Knauth
University of Karlsruhe

When changes in work organisation are planned, the problem arises as to how to assess the possible solution alternatives to be selected. Since, in general, each alternative inevitably involves not only monetary effects, but also those, which cannot be expressed in monetary terms, the business management methods used up to now would appear to be unsuitable instruments for a complete assessment of possible solution alternatives. Methods are necessary, which set off the required monetary and non monetary efforts against the actual benefits.

Since about the mid seventies in connection with the planning and introduction of innovative techniques and forms of organisation for work arrangements, methods of extended analysis of economicalness (EAE) have been developed. An important characteristics of EAE is the fact, that for the purpose of reaching a decision regarding the selection of alternatives, in addition to the results from investment calculations and the subsequent costs, also criteria are taken, which are difficult or impossible to assess in monetary terms. In the meantime, extensive work has been carried out, in which EAE methods have also been used in a modified or further developed form for the decision orientated assessment of alternatives in the personnel field. However up to now, for this purpose always the costs and benefits of several future, rather still theoretical alternatives have been determined, and thus a particular uncertainty factor was involved.

Our research group uses the EAE methods in order to quantify the monetary and non monetary effects of work organisational changes, such as the introduction of new working time arrangements, time autonomous groups or telework, during the pilot phase. As opposed to the applications of EAE known up to now, in the changes in work systems, which we accompany during the pilot phases, we do not compare any theoretical alternatives but two real situations. First of all data for the initial work system before the pilot phase are determined, and then a year later these are compared with the data of the work system tested in the pilot phase. At the end of the pilot phase a decision must be made either to maintain the new system or a modification or to return to the previous system. The results of the EAE serve to aid the process of reaching of a final decision and to achieve transparency of the decision making process.

The following steps are taken:

- Subgoals are derived from the aims of the project and corresponding monetary and non monetary criteria for checking the achievement of these aims are defined. These are listed and described in a catalogue of criteria.
- The non monetary criteria are weighted by the different groups of the project participants and the decision makers (e.g. management, workers' council and external consultant) with regard to their importance in the decision making at the end of the pilot phase.
- The extent of fulfilment of the individual monetary and non monetary criteria in the old work system is determined before the start of the pilot phase. For this purpose, the economic data of the business concerned, the questionnaires of the employees involved as well as the so-called "talks with experts" to determine the fulfilment of certain criteria, which cannot otherwise be ascertained, are used.
- For the initial situation of the work system the so-called "work system value" with regard to the non monetary effects is determined and compared with monetary effects.
- At the end of the pilot phase the degree of fulfilment of all criteria in the "new" work system and the "work system value" are determined and the data are prepared for supporting a decision.

Analogous to the data collection in pilot work system, the data is also collected in a control

work system, which is not affected by the work organisational changes, in order to be able to carry out a proper interpretation of the results.

The application of EAE demonstrated here for the quantification of the monetary and non monetary effects of the work organisational changes, opens up additional potentials for the use of cost-benefit analyses. The assessment of alternatives is achieved on the basis of testing in practice, so that uncertainties can be minimised. Furthermore, this approach makes it possible to clearly formulate the preferences of individual decision makers and to render the decision making more transparent.

Selected literature on the topic:

Elias, H.J., Gottschalk, B. and Staehle, W.H.: Gestaltung und Bewertung von Arbeitssystemen. (Design and assessment of work systems). Campus Verlag, Frankfurt, 1985

Sengotta, M. and Schweres, M.: Entwicklung und Evaluation eines Verfahrens zur erweiterten Wirtschaftlichkeitsrechnung zur Bewertung komplexer Arbeitssysteme. (Development and Evaluation of the Methods of Extended Analysis of Economicalness for the Assessment of Complex Work Systems). Schriftenreihe der Bundesanstalt für Arbeitsschutz, Bd. Fb 704, Wirtschaftsverlag NW, Bremerhaven, 1994

Zangemeister, C.: Erweiterte Wirtschaftlichkeitsanalyse (EWA). (Economic viability analysis). Schriftenreihe der Bundesanstalt für Arbeitsschutz, Bd. Fb 676, Wirtschaftsverlag NW, Bremerhaven, 1993



Das BALY-Verfahren (Beteiligungsorientierte Arbeitsplatzanalyse) zur Umsetzung der EU-Bildschirmrichtlinie

**Ulla Kreutner und Thomas Reuschenbach
DGB Technologieberatung e.V. Berlin**

Zusammenfassung

Die Bildschirmrichtlinie 90/270/EWG schreibt Arbeitsplatzanalysen an Bildschirmarbeitsplätzen vor. In der Praxis tauchen immer wieder Probleme in der Erfüllung dieser Vorschrift auf. Die häufigsten Fragen beziehen sich auf die Probleme:

- Wie soll der Prozeß der Arbeitsplatzanalyse begonnen werden?
- Welche Personen sind als betrieblichen Akteure sinnvollerweise zu beteiligen?
- Welches Verfahren sind als ausgewählt werden?
- Wer führt die Analysen durch?
- Was kostet das den Betrieb?

Die DGB Technologieberatung e. V. hat unter dem Titel: "Qualifizierungs- und beteiligungsorientierte Analyse und Gestaltung von Bildschirmarbeitsplätzen" mit finanzieller Förderung der Berliner Senatsverwaltung für Arbeit und Frauen, des Europäischen Sozialfonds und durch Eigenmittel der beteiligten Unternehmen ein Verfahren entwickelt, das sowohl den Analysegesichtspunkt (An 3) berücksichtigt als auch der Forderung weiter unten in der Richtlinie nach Unterrichtung und Unterweisung (Art. 6) gerecht wird

Das BALY-Verfahren ist beteiligungsorientiert, das heißt, daß die Analysierten am Analyseentwurf mitwirken. In einer betrieblichen Projektgruppe, die sich aus Betroffenen und Planern sowie Verantwortlichen des Betriebes zusammensetzt, werden Ziel, Vorgehensweise und Konsequenzen der Arbeitsplatzanalyse festgelegt. Diese Gruppe begleitet den Analyseprozeß bis hin zu Maßnahmen der Umgestaltung als Resultat aus den Analysen.

Vor die Analysen ist vor allem in größeren Betrieben ein Filterprozeß gesetzt. Hier werden gleichartige bzw. gleichwertige Arbeitsplätze identifiziert und Repräsentanten ausgewählt. Voraussetzung bei diesem Filterprozeß ist die Einvernehmlichkeit der betrieblichen Parteien

Die Analyse selbst findet in einem zweitägigen Workshop mit den Beschäftigten der zu untersuchenden Arbeitsplätzen statt. Hier werden einerseits die arbeitswissenschaftlichen Standards durch die Moderatoren vermittelt und andererseits die Abweichungen davon durch die betrieblichen Angehörigen ermittelt. Das Resultat der Workshops ist eine Auflistung der wesentlichsten Gestaltungsdefizite einschließlich der im Workshop diskutierten möglichen Beseitigungen.

Das BALY-Verfahren wurde aus dem KABA-Verfahren 1 mit dem Ziel entwickelt, die hauptsächlichen Analyse- und Gestaltungsschwerpunkte auch Nicht-Experten zugänglich und damit verständlich und brauchbar zu machen.

Die gemachten betrieblichen Erfahrungen (drei mittelständische Unternehmen) sind ausgesprochen hoffnungsvoll. Sie zeigen, daß Beschäftigte bei ausreichender Information, Anleitung und einer fachlich gut qualifizierten Moderation zu solch dezidierten Beurteilungen der gesundheits- und sicherheitsrelevanten Aspekte ihrer gestalteten Arbeit fähig sind, daß diese selbst Anforderungen von Expertinnen standhalten.

Der Vortrag wird die Einzelschritte des Verfahrens, die gemachten Erfahrungen die Beantwortung der einleitenden Fragen und die Möglichkeit der Verwendungen des Verfahrens auch in anderen Betrieben näher erläutern.

Cost effectiveness of improvements of working conditions in the building industry

ir. Truus Grondsma
Netherlands School for Advanced Studies in Construction
Delft University of Technology

Despite legislation about working conditions and despite recent improvements in the situation the building sector is a relatively unsafe and unhealthy sector for hand workers. Therefore, extra measures have to be implemented.

Such measures can be of a political and/or organizational kind. Specimen are covenants between the central government and the organizations of labourers and employers, concerning the involvement to reach a certain level of safety and health within a certain period. The organizations thus have the task to organize changes in the way individual companies/labourers in the building sector think and act.

An important drive in this respect can be a positive cost effect of improvements, in other words: a effect/cost-ratio exceeding one.

An increasing amount of research is carried out about the effectiveness and efficiency of improvements of working conditions in the building sector. In (nearly) every case the results are positive improvement costs money, but output exceeds input, even if output only is measured in money, including reduction in costs of illness. The results become more positive in case 'immeasurable' qualities are incorporated such as better feelings about working conditions.

Relating to the improvement of working conditions we can distinguish between two types of costs, those of a 'hardware' kind and those of a 'software' kind.

'Hardware' costs are costs, made for special apparatus or robots. In other branches of industry hardware of this kind is a normal feature. In the building industry industrialization of this kind nowadays is extending, because its positive effect not only on safety and health but also on productivity.

'Software' costs are the costs of communication/consultation between organizations and companies in the building sector, between employers and employees, between staff and hand workers within a company. There also are, for instance, costs of training of personnel. At first glance these 'software' costs only are input, generating no output. However, research shows that also for these costs the effect/cost-ratio can exceed one, depending on the way 'immeasurable' effects are quantified.

If costs made for improvements indeed are effective, being a real case is one thing, being known to the actors in the building sector is another. Communication is an issue in this respect. Communication about a safer and less unhealthy building industry also is important to generate future labour force, especially hand workers.

Ankündigung eines KOPAG-Wortbeitrags

Dr. Alfons Schoer

Das "Kooperationsprogramm Arbeit und Gesundheit" (KOPAG) ist Bestandteil eines Modellvorhabens zur Bekämpfung arbeitsbedingter Erkrankungen und wird durch das Bundesministerium für Arbeit und Sozialordnung gefördert. KOPAG wird gemeinsam vom Bundesverband der Betriebskrankenkassen und vom Hauptverband der gewerblichen Berufsgenossenschaften durchgeführt und verfolgt das Ziel, Methoden zur gesundheitsgerechten Gestaltung der Arbeit auf der Basis von Analysen der Belastungen und Beanspruchungen zu entwickeln und modellhaft einzusetzen. Im Mittelpunkt der Aktivitäten von KOPAG steht die Erhaltung und Förderung der Gesundheit und Zufriedenheit der Mitarbeiter in den Betrieben. Zur Sicherung der Problem- und Bedarfsorientierung arbeitet KOPAG eng mit 5 Modellbetrieben zusammen.

Die betriebliche Umsetzung der gewonnenen Erkenntnisse gelingt umso besser, je mehr die Gestaltungsvorschläge durch die Entscheidungsträger und Beschäftigten der Unternehmen mitgetragen werden. In diesem Zusammenhang ist auch das Bestreben von KOPAG zu sehen, ökonomische Ursache-Wirkungs-Zusammenhänge im betrieblichen Gesundheitsschutz hinsichtlich der Kosten und des Nutzens darzustellen.

KOPAG hat die Erweiterte Wirtschaftlichkeitsrechnung nach dem 3-Stufenverfahren als eine geeignete Methode zur betriebswirtschaftlichen Bewertung von Maßnahmen zur gesundheitsförderlichen Arbeitsgestaltung adaptiert und setzt das Verfahren in unterschiedlichen Modellbetrieben ein. In spezialisierten betrieblichen Projektgruppen wird die traditionelle Investitionsrechnung stufenweise erweitert, um auch die Aspekte der Gesundheitsförderung mit in die Kalkül einbeziehen zu können. Für eine nutzwertanalytische Betrachtung werden Zielrahmen, Bewertungskriterien/Indikatoren, Gewichtungsfaktoren und Zielwerte ermittelt, um den Entscheidungsprozeß für Investitionen im Arbeitsschutz und in der Gesundheitsförderung transparent und sicherer zu machen.

Neben der Strategie des gesamten Kooperationsprogramms werden erste Praxisergebnisse der betriebswirtschaftlichen Bewertung vorgestellt.

Economics of the working environment and human resource reporting

Heikki Rouhesmaa, Lars-Mikael Bjurström and Johanna Kuusela

Introduction

Since the 1960s, determining the financial value of staff has attracted considerable attention particularly in the United States. To this end, staff is seen as "human capital" that includes the knowledge, experience, and skills of the individual employees and their financial value to the company, as well as the investments made in the development of human resources. From a wider perspective, human capital also includes the psychological energy and motivation of the staff, which, together with the other assets listed above, can be harnessed by the organisation for a certain period of time in order to produce goods and services.

A debate on the economic impact of the working environment was initiated in Scandinavia in the 1980s. According to the theory expounded, successful corporate operations are determined by the standard of the working conditions, which will affect the company's profits both directly and indirectly by reducing absenteeism and staff turnover. Other factors affecting productivity are the skills and level of education of the personnel. While the tangible framework for the working environment is provided by its physical characteristics, the actual contents are created by the organisation and the individuals working in it.

The impact of the working environment on corporate activities can be clearly shown by means of a few simple indicators. The most important of these are absenteeism, staff turnover, and training, which can be easily measured in terms of numbers. Environmental factors can thus be given specific monetary values that help illustrate the financial impact of the working environment on corporate performance.

The concept of the economics of the working environment was introduced on a broader front in Finland by the Committee on Working Conditions in its report of 1991 where it underlined the importance of developing programmes for influencing decision-making to promote policies favourable to the working environment. Furthermore, it was pointed out that there was a need to devise simple calculation models to help companies improve their ability to monitor the financial impact of the working environment. At the same time, the idea of increasing awareness of the working environment, both within the organisation and outside it, by publishing a balance sheet, similar to the standard financial statement, on human resources.

Balance sheet on the personnel

The Committee on Working Conditions expressed the need for to develop a personnel balance sheet. A number of organisations have already drawn up such balance sheets. A working party set up by the Ministry of Finance is developing a framework model for personnel balance sheets to be used by governmental organisations.

The purpose of the balance sheet on human resources is to give the shareholders, management, personnel officers and the staff itself information on current trends in the volume and structure of human resources, the use of working hours, costs, work skills and training, the state of the personnel, rewards, efficiency, and service capacity.

If correctly applied, personnel balance sheets will become a valuable part of the management's information system that is worth developing and investing in. For the staff, the personnel balance sheets are equally important because they underline the importance of investing and developing the personnel and looking after its well-being.

The working party on personnel accounting proposes a framework model that includes the following components:

- Number and make-up of personnel
- Demand and supply of personnel
- Use of working hours
- Sick leaves
- Training
- Requirements, work performance and performance-based compensation plans
- Cost of labour
- Turnover of staff
- Economic indicators
- Job satisfaction
- Customer satisfaction
- Personnel replacement costs

The idea is that the organisation selects suitable items from the list and prepares a personnel balance sheet based on the data collected. The data must be gathered using the same methods for several years to reflect the changes in the workings of the organisation and the correlation between personnel issues and such changes.

The economic aspect of working conditions changes policy and practice

Lars-Mikael Bjurström

Economic aspects have not earlier been used purposefully in the working environment policy. Investments in working conditions and personnel have been considered merely as costs. In the last few years our knowledge about the economic importance of the working conditions has increased. Attitudes have also changed. Changes in the working environment policy and also in the prevention work on company level can clearly be seen.

Economic effects of the working environment can be assessed from numerous standpoints. To start with, the evaluations can be divided between those relating to the national economy and to company economies. Social economic evaluations can be either norm-related impact analyses or they can analyse the costs to the community of given phenomena. In the Nordic countries impact analyses have been worked out since the beginning of the eighties. According to calculations made by the Ministry of Labour in Finland the costs of work-related deceases and accidents are almost 4 % of the GNP

Measures to improve working conditions can be either profitable or not to the company. Profitability depends on the situation of the company, the area of working environment under consideration, the appraisal interval or, for instance, the know-how of the company. Nowadays, it is very common to emphasize the positive effects of good working conditions on productivity and quality. Especially if we use a broad definition of working environment, improving working conditions can be considered profitable in most cases. The question is quite complex but there is a growing interest to deal with the subject within the workplaces.

Calculations connected with the working environment on company level, generally take the form of investment calculations, separate estimates of accident or illness costs and human resource accounting or reporting. Their purpose is to support the decision making in the company. The Ministry of Labour in Finland has done a lot of development work on analysing and calculation models on this subject. There seems to be a growing need for useful models within all kind of organizations. Further development work and application is required.

Improving working conditions is not always profitable and need not to be. Measurements in order to make sure that the working conditions fulfil the minimum level required by the law are part of the production costs. On the other hand companies do not usually have to pay for all accident and illness costs. Non-profitable improvement of working conditions motivated by socio-economic costs or welfare objectives forms the bases for using and developing special economic incentives.

Taking into account the economic effects of working conditions is a big challenge for the safety and health authorities too. The economic aspect influences the general policy as well as inspection methods.

Targeting accidental loss

N.H. New and A.S. Gay

The UK health and Safety Executive's Operations Unit is currently sponsoring two research projects in this area.

In the first evidence of the relationship between accidental losses and health and safety management failures is being sought. Successful Health and Safety Management contained a model which has been widely accepted in the UK and beyond, while the Costs of Accidents at work described some case studies on accidental losses together with a methodology for calculating costs which could be used in larger companies. If the costs of particular accidents can be linked to specific management failures, expenditure could be directed in a structured way towards particular improvements.

A simplified costings methodology has been trialed together with a root cause analysis tool. A baseline health and safety audit gives a scored picture of current strengths and weaknesses of the management system. A data collection exercise of all accidents in one month using the 2 methodologies (Feb 1997) should reveal both where failures are occurring and how much these are costing. If this matches the audit score the results from both can be used to draw up an improvement plan. After an agreed period a further audit could be run to check the effectiveness of implementation of the plan.

The other project aims to identify the costs of accidents and ill health to SMEs and the cost effectiveness of different ways of improving health and safety performance. We aim to find out whether poor performers actually do lose money through inadequate control of health and safety. The researchers are examining matched pairs of firms (size and industry) with one good and poor performer in each. The required information may not be available to test the hypothesis. If it is the next phase will be an intervention to try to improve the poor performers followed by a data collection exercise on accidental losses and the cost of implementing improvements. This should reveal a pattern of the most cost effective actions SMEs should take.

**Research into the cost-effectiveness of
occupational health & safety management:
methods and industry trials**

**Andrew D Livingston
WS Atkins Safety & Reliability**

The principles and process of effective occupational health and safety management have been widely acknowledged as being synonymous with those of Total Quality Management, and have been published by the UK Health & Safety Executive (HSE) and more recently as British Standard BS8800. The premise being that good health and safety management will prove to be financially cost-effective as well as improving organisations' health and safety performance. This paper presents research commissioned by the HSE into the development and industry testing of an integrated set of methods designed to systematically assess the cost-effectiveness of occupational health and safety management regimes and initiatives.

This paper outlines the research methods developed, which comprise a practical accident / incident costs calculation method, an accident / incident root causes analysis method, and a health and safety management audit method used to assess the adequacy of an organisation's safety management system. The application of these methods is discussed in terms of how the costs of accidents / incidents are linked to the root causes (health and safety management inadequacies), and how these root causes equate to the key elements of the health and safety management audit. The audit being applied both before and after the implementation of any safety management initiative, with the implementation costs of such initiatives being calculated.

Finally, the paper reviews the results of an industry pilot study which tested the methods developed and collected data on the root causes and costs associated with all accidents and incidents occurring within a manufacturing organisation over the study period. This data is then compared to the findings of the audit which evaluated the organisation's health and safety management system. Based on this pilot study and a planned full-scale study within industry, the potential of these methods for the accurate, reliable and objective measurement of the cost-effectiveness of occupational health and safety management is considered.

Coûts et avantages de la prévention le point de vue français

Sebti Chaabane et Hubert Seillan

professeurs à l'Université de Bordeaux - revue Préventique Sécurité.

résumé: Deux idées fondamentales permettent de comprendre le système français de prévention.

- 1- Le système français de prévention a été constitué sur le modèle social du 19^{ème} siècle. A cet égard, il reste encore très fortement influencé par *l'individualisme*, tant du point de vue de l'obligation de sécurité du chef d'entreprise que du fonctionnement de la Médecine du travail, et des règles de l'indemnisation.
- 2- Le système français de prévention a été constitué sur le modèle administratif français. Le recours à la loi et au règlement plutôt qu'au contrat et à la négociation entre partenaires sociaux donne à l'ensemble une dimension formelle dont les effets sont difficilement perceptibles.

Sur cette base, nous observons que le système français a été construit autour des règles suivantes:

- 1- Une obligation de sécurité du chef d'entreprise constituée de règles multiples et hétérogènes manquant de principes. Obligation qui a eu pour effet de placer le salarié en situation d'objet plutôt que d'acteur. Obligation dont la sanction est restée longtemps peu dissuasive.
- 2- Une participation marginale et faible de la collectivité des travailleurs. L'existence d'un CHSCT après 1982 ne doit pas faire illusion, le rôle actif des partenaires sociaux et des salariés est négligeable.
- 3- Les institutions d'expertise comme la médecine du travail et les CRAM de la SS ont fonctionné depuis leur origine, après 1945, comme des structures éloignées des centres de décision et des lieux du travail, fonctionnant en outre selon un modèle de profit et d'assurance. Ces deux institutions n'ont pas réellement envisagé le système de prévention en termes de coûts et de bénéfices.
- 4- Le contrôle de l'ensemble par l'inspection du travail a également manqué d'efficacité en raison notamment d'un fonctionnement individualiste et administratif. Coupé généralement des autres institutions de prévention, le contrôle étatique n'a également pas envisagé la question des coûts et bénéfices.
- 5- Les mécanismes de la responsabilité ont également fonctionné dans des cadres étanches: le système d'indemnisation et le système répressif continuant à s'ignorer, ne permettent pas l'évaluation économique de leurs actions respectives.

Cependant une évolution semble en cours en raison, essentiellement, de l'introduction des principes européens, notamment depuis la directive cadre de 1989. Parmi ces principes, l'évaluation des risques nous semble devoir occuper une place importante dans la question qui nous est posée en raison de sa triple dimension, technique, organisationnelle et financière. Nous discuterons dans le cadre de cette conférence les exigences de l'application d'un tel principe.

Costs and benefits of reemployment

**Frans Marcelissen, Harriet Vinke, Frans de Haan
NIA TNO B.V., Amsterdam**

Reemployment can be described as the process of keeping those at work, who have a high chance of becoming incapacitated for work in the company. It can also be described as the process of finding work for (former) incapacitated workers. At the moment reemployment is one of the most important issues in the social security system in the Netherlands, as a result of the high number of incapacitated workers and consequently the high costs of reemployment. Reemployment has great financial consequences particularly for the authorities. Many companies are hesitant to employ incapacitated workers, because they are afraid of the extra costs it might involve. Another problem with this is that the companies do not have any idea how high these extra costs will be. The project described in this paper consists of an investigation of the possibilities to map a company's costs and benefits of reemployment. Furthermore, the costs and benefits of several companies, that were taken as an example, were investigated and compared with each other.

The costs of reemployment are in the first place those costs that have to do with the direct working conditions: adaptation at the workplace, transport facilities, etc. These costs can easily be calculated, but they are nothing in comparison with the indirect costs, which cannot be calculated so easily: the costs the organisation has to make for guidance and the lower productivity, which (sometimes) has to be accepted as a consequence. Finally, companies (in the Netherlands) have to deal with the high costs of absenteeism, whenever and ex-disabled worker is absent as a result of his disability. The benefits of reemployment are mostly formed by the savings that are being made because the worker does not have to receive a social security benefit any more. However, these are benefits for the Dutch society as a whole, and not for the individual companies. For the companies the benefits are in the first place formed by the possibility to keep suitable employees at work in the company and in the second place by the value of the social image that the company builds up; something that cannot be expressed in money.

In our project it appeared to be possible to make an estimation of the (direct and indirect) costs and benefits of reemployment. We focused on the biggest (and most difficult) group: the (potential) incapacitated workers with psychological and psychosocial disorders. The costs for this group turned out to be around f 50.000,- a year, especially when reemployment eventually proved not to be successful. The companies, that served as an example in this project, generally did not realize that the costs were this high.

The conclusion of this investigation is that, without special measures, reemployment mostly involves a high financial risk. It is therefore not surprising that the most successful examples were those cases where the disabled workers were deployed by employment agencies specialized in incapacitated workers and the costs for guidance, loss of productivity and absenteeism did not have to be paid by the organisations themselves but were payed by these agencies.

Healthier health care
**The implementation of an ergonomic-educational programme in Dutch nursing--
homes**

J.A. Engels MSc, Dep. of Occupational Medicine, University Nijmegen
W.A. Gebhardt PhD, Dep. of Clinical and Health Psychology, University Leiden
J.W.J. van der Gulden PhD, Dep. of Occupational Medicine, University Nijmegen
M. van der Doef MSc, Dep. of Clinical and Health Psychology, University Leiden
F.M.T.J. Kittel PhD, Dep. of Clinical and Health Psychology, University Leiden
Th.F. Senden MD, Dep. of Occupational Medicine, University Nijmegen
C.M.J.G. Maes PhD, Dep. of Clinical and Health Psychology, University Leiden
The Netherlands

In 1992 a comprehensive health-promotion project: "Healthier Health Care" was initiated in seven nursing-homes in The Netherlands. A part of the project was designed to implement an ergonomic-educational programme, with the intention to reduce physical workload and to bring about safe working in order to prevent work-related musculoskeletal complaints. An important goal was that employees of the nursing-homes should be able to proceed with the programme independently after a period of external support by the project team.

The programme is mainly based on the theories of planned behaviour and on concepts of habitual behaviour. To reach continuity in the execution of the programme, steering committees were installed in each of the nursing-homes to promote and to guide the implementation of the programme. Next, small groups of nurses were trained to inculcate the necessity of following these safe working guidelines in their own wards. The trainees met on a regular basis once the training course was over and tried to solve minor ergonomic problems on their own. The main task of these "ergonomically trained" nurses ("ET-nurses") is to bring their colleagues to see the advantages of safer working habits and to transmit relevant skills and knowledge. To stimulate intended behavioral change and to guard against a relapse into unsafe working, lifting protocols for each individual patient and guidelines for riskful tasks were introduced. The steering committee's task was to direct the implementation of the programme and take care of those problems which the ET-nurses could not handle themselves.

The programme got off to a good start in all the nursing-homes and the recruitment and training of ET-nurses passed off successfully. We studied the behaviour of ET-nurses and nurses who did not follow the ergonomic-educational course during the performance of four standardized tasks before and after the course [Engels et al., in press] under laboratory conditions. From the results we can conclude that the ET-nurses know how to behave in a safe way. It is as yet too early for definitive conclusions to be drawn regarding their actual behaviour during daily work and regarding that of their colleagues. Relevant data are now being analyzed. However, it has already become obvious that the process to transmit knowledge and skills toward the colleagues in the wards and the guardance of the continuity of the programme of all the involved employees is a timeconsuming one. In order to make nurses "watch their back" continuously, behavioral rules should be imbedded in the nursing activities. It is still a long way to reach a situation in which nurses recognise that safe working does not interfere with good care for the patients. It is our intention to present the aims, content and approach of the ergonomic-educational programme and the results of its effect and process evaluation at the European Conference on Costs & Benefits of Occupational Safety & Health 1997.

Reference:

Engels J.A., B. Brandsma, J.W.J. van der Gulden. Evaluation of the effects of an ergonomic-educational programme: the assessment of "ergonomic errors" made during the performance of nursing tasks. in press.

Costs and Benefits of Occupational Health in a Transitional Economy - perspectives from India

**Mr G.R. Ralmanath, Manager - Human Resource and Training
Ace Designers Ltd. Bangalore, India**

and

**Professor K.B. Akhilesh
Chairman - Dept of Management Studies
Indian Institute of Science Bangalore, India**

The paper provides a historical perspective of the colonial India through its independence era about the evolution of social security in India. India provided a legal framework to sustain occupational safety and health as well as social security at the enterprise level. Legal framework included several legislation linked to the health, safety and welfare (the Factories Act, 1948, the Maternity Benefits Act, 1929, the Workmen's Compensation Act, 1923, the Payment of Gratuity Act, 1971). The legislation recognised needs and wants of the workers. These needs and wants got converted into matter of rights and became issues of bargaining at the enterprise level. This resulted in constrained and cost based approaches to the management of occupational safety and health at the work place

The legal framework contributed to various initiatives at the enterprise level through bipartite and tripartite settlements. Conventions and practices contributed to the better management of occupational health and safety. Such practices were more driven by the constraints of technology and the nature of business performance. Restrictive practices were seen in the private enterprises and innovative initiatives were seen amongst the public sector enterprises before the liberalization era. Post liberalization era has created opportunities for progressive organizations and threats to the organizations who have followed short term approaches to the occupational health and safety.

The current era has been witnessing lot of attention by the Governmental agencies in controlling environmental pollution. Specific provisions have been laid out in respect of Air Pollution, Water Pollution and Environment Pollution control measures in industries. Though licencing has become liberalized it is screened with attention to all the above parameters when a new industry is approved - More so for process industries. The media and the organized lab or on the other hand are shaping many conflictive expectations.

The paper provides current pressures for maintaining occupational health and safety. It also provides some of the challenges created because of the factors of the current environment. It concludes with an action agenda at the policy level. The factors included in the environment are technology, competition, trade unions, changing combination of work force and legislation. The challenges identified are workplace automation, supervisory competence, enforcement machinery and worker attitudes. The action areas proposed are - standardization, workers' education, academic discussions and debates, integration of enforcement machinery with the beneficiaries and employers.

Zeit- und Kostenabschätzungen für die Durchführung der Arbeitsplatzevaluierung (Ermittlung und Beurteilung der Gefahren und erstmalige Erstellung der Sicherheits- und Gesundheitsschutzdokumente)

**K. Wittig
Allgemeine Unfallversicherungsanstalt**

Anhand zweier Beispiele aus der Praxis (tatsächlich durchgeführte Evaluierungen) sollen Anhaltspunkte für die verbrauchten Zeit- und Geldressourcen geliefert werden ~

Die Evaluierungen wurden nach einer einführenden Beratung durch AUVA-Mitarbeiter unter Verwendung eines branchenbezogenen Instrumentes (z.B. AUVA) von Betriebsangehörigen selbst durchgeführt.

Die AUVA-Beratung war zwar kostenlos, es wird jedoch für die Beispiele ein Beraterhonorar von ATS 1500,- pro Stunde (in Anlehnung an die Gebührenordnung für industrielle Technik der Bundesingenieurkammer) in den Ansatz aufgenommen.

Für das Evaluierungsinstrumentarium werden keine Kosten angesetzt, da sowohl die AUVA als auch das WIFI ihre Unterlagen kostenlos zur Verfügung stellen. Kosten für Kopien der Formulare usw. werden beim Gerneinkostenzuschlag berücksichtigt.

Evaluierung und Dokumentation erfolgten unter Ausnutzung der von Gesetz und Verordnung her möglichen Vorteile, also zusammengefaßte Dokumentation gleichartiger Arbeitsplätze bzw. Tätigkeiten und Gefahren.

Da es sich jeweils um einen "Kleinbetrieb" handelte, war die Verwendung einer datenbankgestützten Evaluierungssoftware nicht notwendig.

Die Dokumentation erfolgte vor Ort durch handschriftliches Ausfüllen der vorgefertigten branchenspezifischen Formulare.

Aufgrund der Tatsache, daß der Chef bei der jeweiligen Evaluierung zumindest zeitweise persönlich anwesend war, fielen keine separaten Kosten für Maßnahmenberatung und -festlegung an.

Die Umsetzungskosten eventuell notwendiger Maßnahmen sind nicht Bestandteil der Evaluierungskosten und werden somit in den Beispielen nicht berücksichtigt.

Beispiel 1:

Supermarkt, ca. 1120m² Verkaufsfläche, 30 Angestellte Eröffnung Okt. 1996, gesamte Ausstattung (Maschinen, Kühlanlagen etc.) neu

Stundensätze - laut Auskunft des Chefs - sind branchen- und ortsübliche Durchschnittswerte.

1. Einführende Beratung:

Dauer: 0.5 Stunden

Anwesende:	Stundensatz	Kosten
Chef	1.500	750
Maktleiter	400	200
externer Berater	1.500	750

Summe: 1.700

2 Begehung, Festlegen der Evaluierungsbereiche:

Der Supernmarkt wurde in insgesamt 10 Evaluierungsbereiche unterteilt.

Dauer: 1,0 Stunden

Anwesende:	Stundensatz	Kosten
Maktleiter	400	400
externer Berater	1.500	1.500
Summe:		1.900

3 Beispielhafte Evaluierung eines Evaluierungsbereiches:

Die Obst- und Gemüseabteilung wurde vom Maktleiter und dem externen Berater unter Einbeziehung der für diese Abteilung hauptverantwortlichen Verkäuferin evaluiert.

Dauer 0,6 Stunden

Anwesende:	Stundensatz	Kosten
Maktleiter	400	240
externer Berater	1.500	900
Verkäuferin	200	120
Summe:		1.260

4 Abschließende Besprechung:

Abklären eventueller Unklarheiten mit dem externen Berater Durchsprechen der weiteren Vorgangsweise.

Dauer: 0,4 Stunden

Anwesende:	Stundensatz	Kosten
Chef	1.500	600
Maktleiter	400	160
externer Berater	1.500	600
Summe:		1.360

5 Selbständige Evaluierung der restlichen Evaluierungsbereiche

Die restlichen neun Evaluierungsbereiche werden vom Maktleiter unter Einbeziehung der jeweils hauptverantwortlichen Verkäuferinnen bzw. Verkäufer selbständig evaluiert. Wenn nötig, ist der Chef beizuziehen (Annahme: 1/3 der Zeit).

Dauer: durchschnittlich 0,75 Stunden pro Evaluierungsbereich

Anwesende:	Stundensatz	Kosten
Maktleiter	1.500	375
externer Berater	400	300
Verkäuferin	200	150
Summe pro Bereich:		825

$825 \cdot 9 = 7.425$

6 Sonstige Tätigkeiten, Gemeinkosten

Für diverse Nebentätigkeiten (Kopieren der Formulare, Ablegen etc.) wird ein Gemeinkostenzuschlag von 10 % angenommen.

Evaluierungstätigkeiten, die sich auf die gesamte Arbeitsstätte beziehen (Erste Hilfe, Brandschutz etc.) können in diesem Fall einfach den Gemeinkosten zugerechnet werden, da davon ausgegangen werden kann, daß diese Bereiche durch das jüngst abgeschlossene Gewerbeverfahren abgedeckt sind.

7 Gesamtkosten

$$\text{Gesamtkosten} = \text{Kostensumme} + \text{Gemeinkostenzuschlag} = 13.645 + 10\% = 15.009,50$$

Aufgeteilt auf die 30 Arbeitsplätze im Supermarkt ergeben sich also

Evaluierungskosten von rund 500,-- pro Arbeitsplatz.

8 Zusammenfassende Aufstellung der Zeiten:

	Chef	Marktleiter	ext. Berater	Verkäuferinnen
Einführende Beratung	0,50	0,50	0,50	
Begehung		1,00	1,00	
Beispielhafte Evaluierung		0,60	0,60	0,60
Abschließende Besprechung	0,40	0,40	0,40	
Selbständige Evaluierung	2,25	6,75		6,75
Summe	3,15	9,25	2,50	7,35

9 Bemerkung

Aufgrund der Betriebsstruktur (jeweils mehrere Arbeitnehmer pro Evaluierungsbereich mit den selben Gefährdungen und Relastungen) und der vollkommen neuen Ausstattung des Supermarktes durften die Kosten pro Arbeitsplatz in diesem Beispiel am unteren Ende der Skala des üblichen Bereiches liegen.