

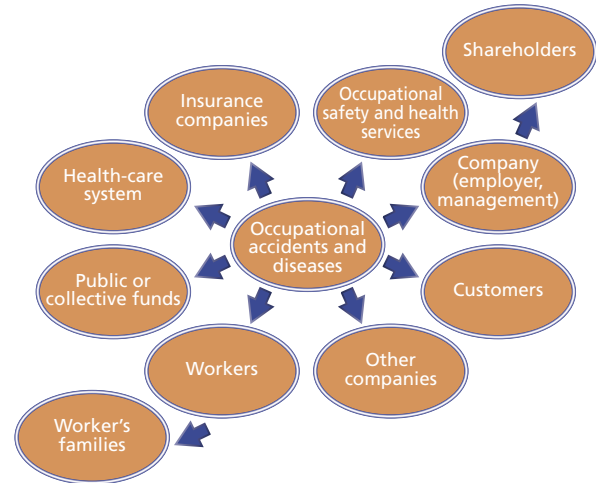
## Inventory of socioeconomic costs of work accidents

### Introduction

Improvement of health and safety at work can bring economic benefits for companies, workers and society as a whole. Accidents and occupational diseases can give rise to heavy costs to companies. For small companies particularly, occupational accidents can have a major financial impact. But it can be difficult to convince employers and decision-makers of the profitability of safer and healthier working conditions. An effective way can be to make financial or economic estimations and give a realistic overview of the total costs of accidents, and the benefits of preventing accidents. Total costs and benefits will include both obvious and hidden costs, together with the costs that can easily be quantified and those that can only be expressed in qualitative terms.

### Costs and benefits for whom?

Work accidents are a burden for many parties. Companies often do not bear the full costs of occupational diseases, occupational injuries or work-related illnesses. Accidents also lead to costs for other companies, individual workers and for society as a whole. For instance, the company may not cover health-care costs for workers, or disability pensions may be borne by collective funds.



Source: Krüger, 1997 (1)

In many countries regulations exist that somehow bring back the costs to the company or person who caused the costs (so-called cost internalisation). This may function as an economic incentive to prevent future injuries or diseases (Table 1).

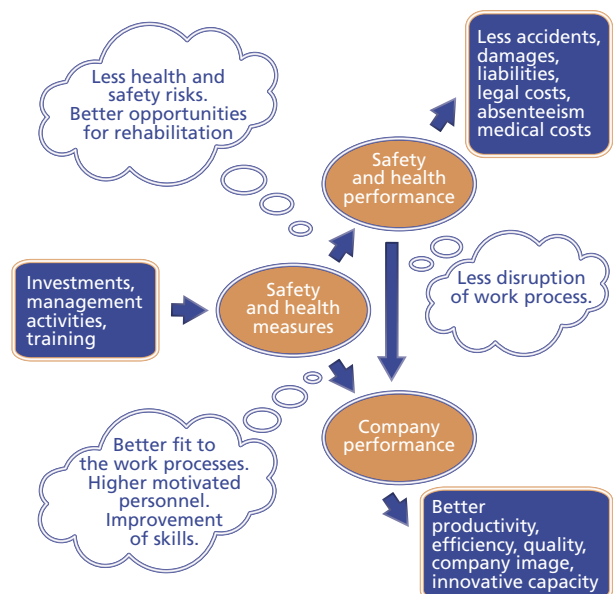
Table 1. Principles for internalising costs of accidents to companies.

Method of cost internalisation	Principle or examples
Liabilities	Workers or insurance companies can claim damages due to occupational injuries or diseases
Legal sanctions, fines	Labour inspectorate can give financial penalties, demand improvements or temporarily stop production
Differentiation in premiums	Insurance companies or public funds adjust premiums for increased risk of accidents, occupational injuries and diseases. Premiums may also be adjusted according to past performance
Payment of sick leave	Obligation to (partly) pay wages during period of sick leave or disability
Market regulation	Attractiveness for new personnel, advantages in obtaining government orders Improvement of the 'accident rating' for subcontractor in case of call tenders Effects of company image

### Prevention of accidents has more benefits than only reducing damages

Preventing work accidents, occupational injuries and diseases not only reduces costs, but also contributes to improving company performance. Occupational safety and health can affect company performance in many ways, for instance:

- healthy workers are more productive and can produce at a higher quality;
- less work-related accidents and diseases lead to less sick leave. In turn this results in lower costs and less disruption of the production processes;
- equipment and a working environment that is optimised to the needs of the working process and that are well maintained lead to higher productivity, better quality and less health and safety risks;
- reduction of injuries and illnesses means less damages and lower risks for liabilities.



(1) Krüger, W., 'Ökonomische Anreize-Möglichkeiten und Probleme eines modernen Arbeitsschutzsystems', *Neue Ansätze zur Kosten-Nutzen-Analyse des Arbeits- und Gesundheitsschutzes*, Dortmund/Berlin, Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, 1997, pp. 26–37.

## Inventory of cost factors

The best way to obtain good insight into the costs of work accidents is to make an economic assessment. This can be done at different levels, namely:

- (1) at the level of the individual worker;
- (2) at company level;
- (3) at the level of society as a whole.

There is no ultimate list of cost factors to be included in an assessment. However, a minimum set of cost factors has emerged from practice and theory. Additions or modifications are to be made depending on the purpose of the assessment, the structure of social security in a country and so on. Constructing the list of cost factors is one of the key activities in any economic appraisal. Tables 2 and 3

offer an inventory of cost factors that can be used as a starting point for assessments at the individual level and at society level (?).

It takes a few steps to estimate the cost effects of a work accident. Some effects of accidents can easily be expressed in money. However, effects like fatalities, sick leave and turnover require some further elaboration. The outcomes should support decision-making, but also the process of making such an assessment is important from the learning point of view.

**Be aware** that the outcomes of economic analyses are much influenced by the underlying assumptions and the scope of the assessment. The cost factors and calculation principles should be adjusted according to the national practice of each country.

**Table 2. Overview of variables directly related to costs of injuries and illnesses at individual level.**

Variable	Description	How to obtain money value
Health	Hospitalisation (bed-days) Other medical care, such as non-hospital treatment, medicines. Permanent disability (numbers, age of patient) Non-medical (e.g. vocational) rehabilitation, house conversions	Expenditures for health care that are not compensated by insurance or employers
Quality of life	Life expectancy, healthy life expectancy Quality adjusted life years (QALY) Disability adjusted life years (DALY)	Willingness to accept, willingness to pay Height of claims and compensations
Grief and suffering	For victims, but also for relatives and friends	No reliable method available
Present income losses	Loss in income from present and second job	Reduction in present income, loss of wages
Loss of potential future earnings	Also including the second job	Differences between total expected future income and total compensation or pensions
Expenses that are not covered by insurances or compensations	Examples are costs for transportation, visits to hospitals, costs arising from fatalities such as funerals	Sum of all other expenses for a victim and his/her family (that are not compensated)

**Table 3. Overview of variables directly related to costs of injuries and illnesses at the level of society as a whole.**

Variable	Description	How to obtain money value
<b>Health-related costs</b>		
Health	Hospitalisation (bed-days) Other medical care, such as non-hospital treatment, medicines. Permanent disability (numbers, age of patient) Non-medical (e.g. vocational) rehabilitation, house conversions	Actual expenditures on medical treatment and rehabilitation
Fatalities (numbers, age of patient)		Willingness to pay or willingness to accept
Quality of life	Life expectancy, healthy life expectancy Quality adjusted life years (QALY) Disability adjusted life years (DALY)	Willingness to pay or willingness to accept. Total amount of indemnities and compensations
Grief and suffering	For victims, but also for relatives and friends	Willingness to pay or willingness to accept. Total amount of indemnities and compensations
Present production losses	Lost earnings due to sick leave, absenteeism and disability	Total lost earning during period of absence
Loss of potential future earnings and production	Lost earnings during whole period of permanent disability	Sum of lost income during expected disability period, in which both the income and the period are estimated on statistical data
<b>No health-related costs and damages</b>		
Administration of sickness absence, etc.		Total wages spent on the activity
Damaged equipment (by accidents)		Replacement costs, market prices
Lost production due to incapacity of personnel and production downtime		Market price of lost production

## Further information available from the Agency

The full report 'Inventory of socioeconomic costs of work accidents' is available in English on the Agency's web site at <http://agency.osha.eu.int/publications/reports/> where it can be downloaded free of charge.

More information is available on the Agency's fact sheet 'Economic appraisal of preventing work accidents at company level'. The fact sheet is available in all EU languages at <http://agency.osha.eu.int/publications/factsheets/>.

The magazine 'Health and safety at work — A question of costs and benefits?' (Issue 1) provides various articles on the topic written by

the specialists. The magazine is available at <http://agency.osha.eu.int/publications/magazine/>.

The report 'Economic impact of occupational safety and health in the Member States of the European Union' provides an overview of how economic factors are related to the formulation of occupational safety and health policy in the Member States. The report is available at <http://agency.osha.eu.int/publications/reports/>.

Links to further information on accident prevention can be found on the Agency web site at [http://europe.osha.eu.int/good\\_practice/risks/accident\\_prevention/](http://europe.osha.eu.int/good_practice/risks/accident_prevention/).

This fact sheet is available in all EU languages at <http://agency.osha.eu.int/publications/factsheets/>.

(?) The Agency's fact sheet presents a model for assessing costs of accidents at company level. (See the chapter 'Further information available from the Agency')