Betriebliches Gesundheitsmanagement und Prävention arbeitsbedingter Gesundheitsgefahren
Band 33

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Indicators for work-related health monitoring in Europe

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The Project WORKHEALTH receives financial support from the European Commission. The information contained in this publication reflects the authors' views. Neither the European Commission nor persons acting on its behalf are liable for the use of this information.

Published by:
BKK Bundesverband
Federal Association of Company Health Insurance Funds
Health Department
Kronprinzenstraße 6
D-45128 Essen

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Printed by:
Wirtschaftsverlag NW
Verlag für neue Wissenschaft GmbH
Bürgermeister-Smidt-Straße 74 - 76
D-27568 Bremerhaven

First edition, December 2004

ISBN 3-86509-248-9

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Band Nr. 33

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Further valuable input is acknowledged from Hansjürgen Gebhardt and Marco Römhild. For technical assistance with this publication we would like to thank Vivien Peters and Susanne Winkler.

Abbreviations

ECHI	European Community Health Indicators Project
ECHP	European Community Household Panel
EFILWC	European Foundation for the Improvement of Living and Working Conditions
EODS	European Occupational Diseases Statistics
ESAW	European Statistics on Accidents at Work
ESWC	European Survey on Working Conditions
EU	European Union
ILO	International Labour Organization
LFS	The European Union Labour Force Survey
MS	Member States of the European Union
OECD	Organisation for Economic Co-operation and Development
OSH	Occupational Safety and Health
SLIC	Senior Labour Inspection Committee
WHO	World Health Organization

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Executive Summary

Need for work-related health monitoring in Europe

Since the 1990s, considerable efforts have been undertaken in the European Community to establish a health monitoring system at European level. The framework for these activities was first provided by the Health Monitoring Programme[1] that was in place between 1997 and 2002 at the Directorate General Health and Consumer Protection. Since 2003, the health monitoring activities have been subsumed under strand 3 ("health information") of the new public health programme[2], which will last until 2008.

In traditional public health monitoring schemes at European level, the world of work has so far played only a minor role. On the other hand, traditional monitoring systems from the occupational health and safety perspective usually focus on "traditional" aspects such as occupational diseases and work accidents (although the scope of occupational health and safety has recently broadened considerably).

However, there is an increasing awareness that work does have a major impact on public health and that bad working conditions can create considerable costs to society. Neither of these aspects have been taken into consideration so far in traditional OSH monitoring system assessment processes. This is emphasised by the figures below:

- With respect to loss of life years, WHO and the World Bank attribute 3 % to the factor work[3].
- Estimates from Denmark, published by the Nordic Council, suggest that working conditions cause about 20% of total morbidity, with for example 33 % for musculoskeletal disorders and 45 % for skin diseases[4].
- The International Labour Office estimates that work-related diseases and accidents account for economical losses as high as 4% of the world-wide gross domestic product[5].
- And in studies that were carried out in Germany, the costs of work-related diseases were estimated to be at least 28 billion EURO for the year 1998 alone[6].

Against this background, the WORKHEALTH project ("Establishment of indicators for work-related health monitoring in Europe from a public health perspective") was launched in the year 2002. The aim of the project, as the title suggests, is to establish indicators which can be used in a future work-related health monitoring system that adequately reflects the impact of work on

public health. One of the major concerns in this project was to stress the importance of taking an inter-sectoral approach, which is why in addition to the experts from public health science, there are also experts in the group representing the fields of occupational health and safety, labour inspectorates and social insurance institutions. This ensures that the different professional groups that have an interest in work-related health monitoring are represented in the project and that they contribute to the project with their specific expertise.

Aim and scope of a work-related health monitoring

Work-related health monitoring aims to provide an overview on the health status of the labour force from which the necessary action can be determined, priorities set and recommendations made for activities which address issues relevant to work-related health. Health monitoring can and should be used as tool by politicians to set specific targets and to control the implementation of these targets. A general course of action should be envisaged for different

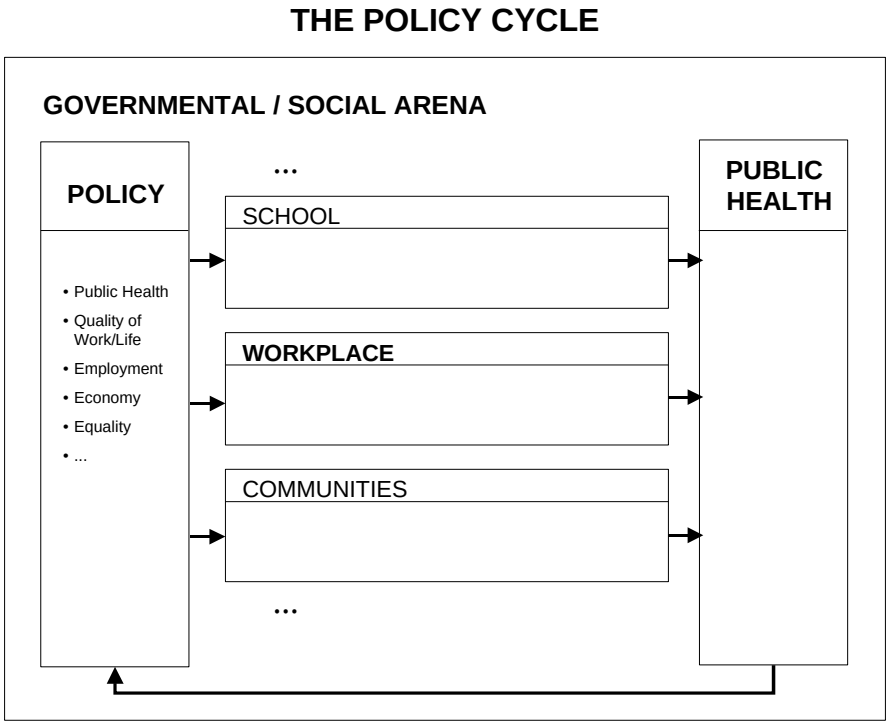

Figure 1: The policy cycle in different settings.

settings, such as the workplace, communities or schools, where high level strategic policies are adapted to the specific settings and relevant activities are introduced which ultimately have an influence on the people in those settings and on public health in general (figure 1).

The policies relevant to the WORKHEALTH project are those which subsequently influence the “workplace” setting and the resulting outcome “health”. There are several distinct stages within the workplace setting, where high level policies can be translated into action and ultimately affect public health (figure 2). This policy cycle serves as the theoretical model for work-related health monitoring.

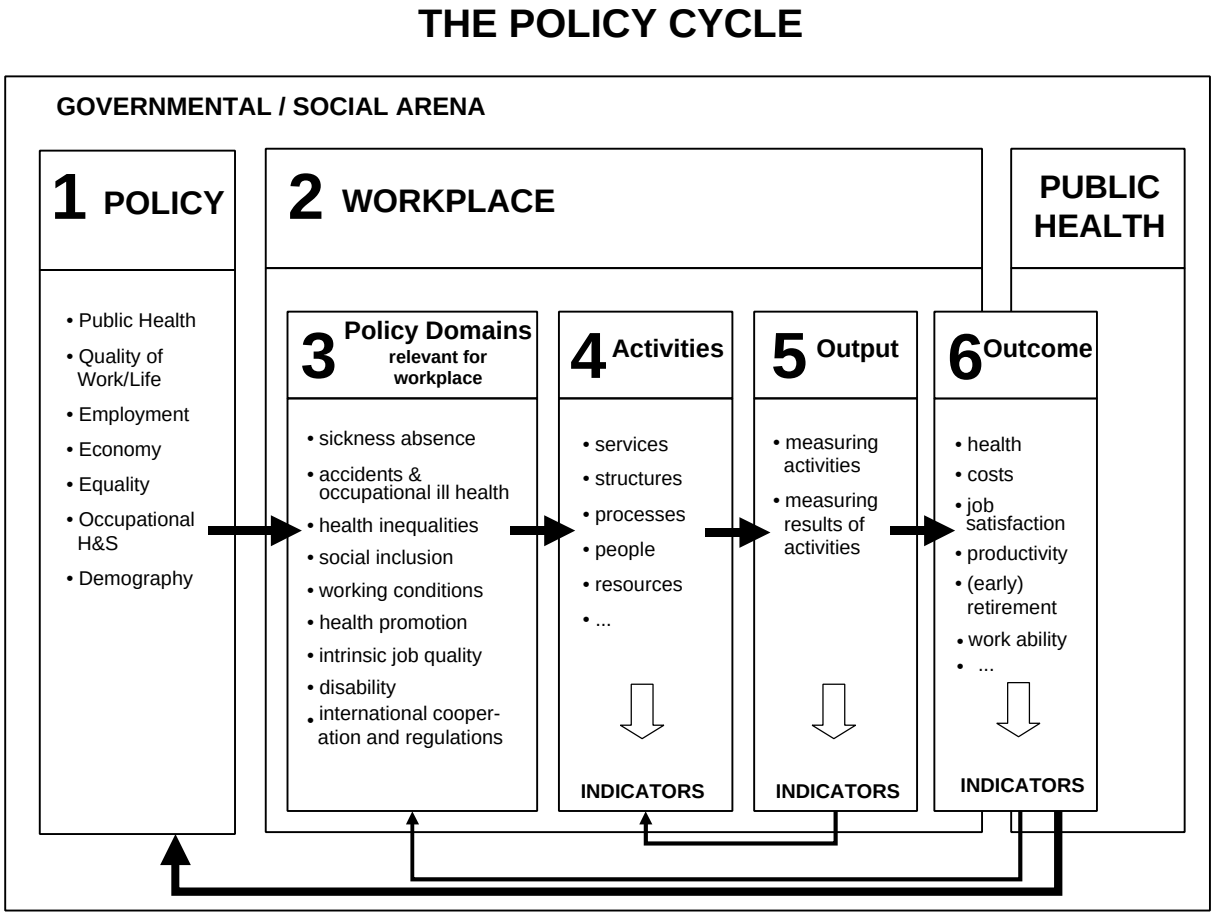

Figure 2: The policy cycle model of work-related health monitoring from a public health perspective.

To define the scope of work-related health monitoring, it has to be seen in relation to other monitoring approaches, specifically occupational safety & health monitoring, and monitoring of quality of work.

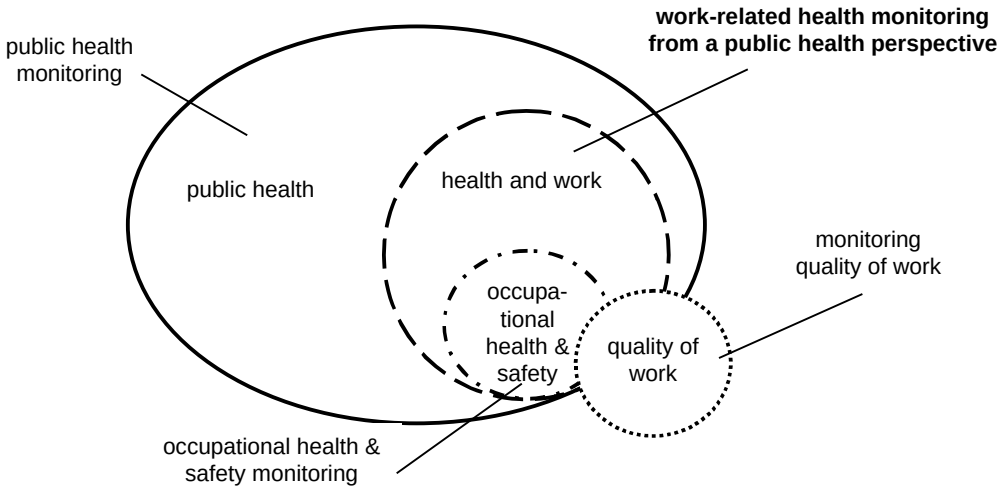

Figure 3: Scope of work-related health monitoring from a public health perspective.

Figure 3 illustrates that work-related health monitoring is seen to be one part in the whole field of public health monitoring where, as mentioned before, the aspect of work has been rather neglected up to now. According to this illustration, OSH monitoring is seen as one area of work-related health monitoring which has traditionally dealt with the prevention of occupational diseases and work accidents. However, it is also seen within the scope of work-related health monitoring as it is understood in the WORKHEALTH project. Further overlap is illustrated here with the "Quality of Work"[7] concept which has been advocated at European level since the Lisbon summit in 2000, where the strategic goal was set for the European Union to become the most competitive and dynamic economy in the world with not only more but also better jobs. Later that year, as part of the Social Policy Agenda[8], the aim of creating "more and better jobs" was outlined again under the label "Quality of work" which is now also being monitored at European level.

The demand for an intersectoral health strategy in the Commission's new public health programme[2] is met again by using an integrated approach in addressing the issue of work-related health, by linking public health to other policy areas. This is all the more necessary since health monitoring with a focus on work is obviously an intersectoral issue between the Directorate Generals Health & Consumer Protection and Employment & Social Affairs which is in charge of most aspects of working life in Europe.

Indicators for work-related health monitoring

To assess what had already been developed in this area by the different professions, a synopsis on work-related indicator sets was compiled[9]. On this basis, a comprehensive list ("masterlist") was created of all international and European indicators relevant for the work-related health monitoring. Some sets of indicators included are for example the European Survey on Working Conditions[10] by the European Foundation for the Improvement of Living and Working Conditions, the indicators related to health from the Quality of Work-concept[7] by the European Commission, the indicators proposed in the concept "Health, Environment and Safety Management"[11] by WHO Europe, and all work-related from the ECHI-project[12]. Against this background, the different professional perspectives represented in the project (public health science, occupational health and safety, labour inspectorate and social insurance) were able to identify gaps where indicators were still missing and could establish additional indicators accordingly.

Based on this very long list of indicators the so-called "domain windows" were established: As pointed out before, a policy-oriented approach was pursued in the project. In this context, a number of policy domains were defined which should be monitored and evaluated by such a work-related health monitoring system (see figure 2: Policy domains relevant for workplace). To be able to do this, a set of indicators suitable for monitoring this specific area of interest was compiled for each of the policy domains defined.

Based on the "masterlist", a short list of indicators was also selected by the experts in the project, that reflected the four different professional perspectives. In establishing a short list of indicators, the political request was met for a practical, quickly available and easy to handle basic health monitoring system on European level. However, in the absence of scientific regulations for deriving short lists from comprehensive compilations, health and health system outcome indicators were chosen which reflect the effects of working conditions. This means that the indicators partly need to be stratified by economic sectors and occupations in order to illustrate how diseases are related to work. Work-related health monitoring according to the proposed shortlist can give a rough indication of where national and European problems lie with respect to health at work. As a result it is possible to make a more detailed analysis from which action plans can be derived.

Table 1: WORKHEALTH short list of indicators

Indicators	***data available at European level****
Accidents at work	X
Occupational diseases	X
Work-related health risks	X
Sickness absence (by diagnosis)	X
Disability	X
Disease occurrence**	--
Job quality	(X)
Health promotion activities at the workplace	--
Reintegration/rehabilitation	(X)
Compliance with OSH regulations	--
Expenditures on occupational health & safety measures	--

* X = data available, (X) = only fragmented data available, -- = data not available

** The indicator gives morbidity by WHO (ICD) main groups. This is partly already included in the ECHI short list. From the WORKHEALTH point of view it is essential that morbidity is stratified by occupations and economic sectors. To our knowledge, such information is not available at the moment.

In the following, the indicators proposed are described in more detail.

Accidents at work

In the Eurostat ESAW project, an accident at work is defined as "a discrete occurrence in the course of work that leads to physical or mental harm"[13]. This definition includes accidents occurring in the course of work but outside the business premises, also those caused by a third party, and cases of acute poisoning. It excludes accidents on the way to or from work, occurrences of a medical origin, and occupational diseases. A "serious accident" is one that leads to more than three days' absence (excluding the day the accident occurred), a "fatal accident" leading to the death of the victim within a year (after the day) of the accident.

Serious accidents at work (total/male/female) and fatal accidents, belong to the Structural Indicators used to underpin the Commission's analysis in the Spring Report to the European Council. The development of work accidents was also used for monitoring of the Quality of Work-Strategy[14].

Data can be calculated as an annual index (with base year 1998=100) of the incidence rate. The incidence rate of serious accidents at work is the number of accidents at work resulting in more than 3 days' absence per 100 000 persons in employment. The incidence rate of fatal accidents at work is the number of fatal accidents at work per 100 000 persons in employment.
The incidence rate is calculated for the total of the so-called 9 common branches. Because the frequency of work accidents is higher in some branches (high-risk sectors), an adjustment is performed to acquire more standardised incidence rates. The data collection started in 1994 (pilot collection in 1993). The data collection in the Candidate Countries started in 2002, retrospectively from at least 1998 as a year of reference. For some of the new Member States and Candidate Countries gender specific data have been available only since 2001.

Occupational diseases

Occupational diseases, in a strict sense, are those diseases for which the occupational origin has been approved by the national compensation authorities[15]. Obviously, this is dependent on the national legislation and compensation practice. Compensation is usually restricted to those cases for which the occupational factor is the only or the most important cause.
Eurostat has collected data on recognised occupational diseases in Europe since 2001[16] although problems of comparability between countries are inherent to this concept, as legislation and compensation practice differs between the Member States.
Data are given as an incidence rate of occupational diseases per 100.000 workers covered by the recognition systems. One of the major problems in interpreting these data are the unsatisfactory comparability and underreporting aspects especially for occupational diseases that take decades to develop, such as some respiratory diseases[15].

Work-related health risks

The indicator "work-related health risks" reflects the subjective assessment of risks at the workplace. Data are provided by the European Survey on Working Conditions[10], which in 1990, 1995 and 2000 included the question "Do you think your health or safety is at risk because of your work, or not?". In the last survey, 27% of the workers considered their health and safety to be at risk, with the highest prevalence in the construction sector, followed by agricultural and fishing workers and those in the transport industry.

Sickness absence

Sickness absence is a major indicator which provides information on the health status of the employees. Sickness absence figures are often used for example to reveal the need for preventive activities if absence rates are high. At a national level, absence rates are usually examined according to economic sectors to determine what action is necessary. It is also common to consult absence rates at company level in order to determine which departments should be targeted by health promotion activities. The effectiveness of health promotion activities is then often evaluated by the changes in sickness absence rates.

Because of the difficulty in comparing social insurance data across the Member States, sickness should be monitored on European level by using the data from the European Labour Force Survey[17]. It assesses, with regard to a reference week, if employees were absent from a job or business due to "own illness, injury or temporary disability". The illness is not further specified, i.e. no diagnosis etc. is given.

It has to be noted, however, that sickness absence rates not only reflect the actual health status of employees. To some degree, they also depend on national sickness absence and disability regulations, e.g. the length of sickness absence before disability allowance is paid or could be influenced by social security system incentives (e.g. amount of the sickness benefits). They reflect macroeconomic changes as well, as sickness absence rates for example usually drop with high unemployment rates. This can be attributed to the fact that older and less healthy workers are no longer in employment and that people who feel ill choose to go to work rather than risk losing their job.

Disability

Disability is one of the most complex entities in all health related outcomes[18]. According to the WHO definition, this term refers to impairments, activity limitations and participation restrictions. At the same time the term describes a status defined in social legislation which is often associated with the premature termination of professional life and subsequent costs to society. Due to the complexity of definitions and differences in practices in the Member States, the comparability of this very important issue is limited at the moment and further standardisation is required. The data provided by the Labour Force Survey[19] and the European Community Household Panel[20] may serve as a preliminary assessment of this issue. For example, figures on the relative probability of being in work for those with moderate or no disability, compared to those with

severe disability may reflect the degree of social integration of those with a disability in the labour force in the different Member States[21]. The Labour Force Survey ad hoc module 2002[19] also enables an analysis to be made of the percentage of disabled persons by occupational class or economic sector.

Disease occurrence

This indicator gives morbidity by WHO (ICD-10) main groups stratified by occupations and economic sectors. By stratifying morbidity, the most prevalent diseases suffered by people working in specific occupations and economic sectors become visible, and show the need for preventive action. The stratification also shows how the diseases are related to work: Where a high frequency of disease is prevalent in specific jobs or sectors, it could be seen as an indication of the association between the working conditions in these jobs and morbidity.
Morbidity as such – without the suggested stratification – is already included in the ECHI indicator system[12]. To our knowledge, however, no data on morbidity are available at the time being which provide the information necessary for the stratification according to occupations and sectors.

Job quality

Throughout Europe “having a good job” is ranked as the main factor for a good quality of life[22]. And although the employed enjoy a better quality social life than the unemployed, the quality of job also plays a role: People who work overtime, in high intensity jobs, or in jobs that are physically or psychologically demanding, tend to rate the quality of their family life and social relations negatively. These factors and the degree of autonomy people experience at work also affect general life satisfaction[23].
However, measuring job quality is a complex issue. The European Commission’s concept of quality of work defines intrinsic job quality as one of ten dimensions, defined according to characteristics of a specific job which make it satisfying to the worker and compatible with career prospects in terms of wages and status, and measured by 1) transitions between non-employment and employment and within employment by pay level, 2) transitions between non-employment and employment and within employment by type of contract and 3) satisfaction with type of work in present job[14].
Other methods for addressing the issue of job quality include assessment of working conditions, e.g. such as creating several indices for different aspects of working conditions as conducted by the European Foundation, where

indices were established taking into consideration physical working conditions, psychological working conditions, work autonomy, work intensity and working time exceeding 48 hours[23].

Health promotion activities at the workplace

In the European Union workplace health promotion which aims to maintain and improve the health of employees is considered as an important public health issue. Therefore, the level of implementation of health promotion activities at the workplace should be monitored at a European level. Distinction should be made between comprehensive programmes, which according to recent literature reviews[24] are considered as most effective, and single programmes e.g. on smoking, physical activity, nutrition, stress management etc. By monitoring the existence of such programmes, it is possible to evaluate their impact and to identify where the implementation is still unsatisfactory and where relevant programmes are still needed.

Rehabilitation/reintegration

Activities for rehabilitation and reintegration at work after an accident or illness are important not only to the individual but also because of the economic burden placed on many countries in paying benefits to people off sick. It is important to obtain an overview of rehabilitation measures in the sense of best practice models (medical and also vocational rehabilitation) and models on reintegration measures (e.g. adapting workplaces). Legislation in the different countries should also be evaluated by its success on reintegration. In the Netherlands for example employers are responsible for reintegrating a sick employee in their own or another company.

Compliance with OSH regulations

Occupational health and safety regulations are an important measure for protecting the workforce against occupational health risks. However, it is crucial that they are complied with. This can apply to enterprises which violate the legal provisions or on another level, can apply to the way in which Member States implement European regulations on occupational safety and health issues. The extent to which non-binding conventions such as those by ILO are ratified in different countries is another aspect.

Expenditures on occupational health & safety measures

An indicator showing expenditure on occupational health & safety measures (as % of total health expenditure or % of GNP/GDP), can include a variety of different measures and their costs: It could include expenditure by the national work inspectorate, expenditure for the accident insurance in the Member States or expenses carried by enterprises to implement OSH measures, or even expenses covered by employees themselves on their personal protective equipment. Comparability of such figures is obviously very limited due to the diverse organisation of European OSH systems. Trends should therefore be examined instead on expenditure developments in the Member States.

Data sources

Data availability was a major concern when selecting these indicators and an assessment of this is given in table 1 in the column on the right. Nonetheless, the list is not restricted to indicators for which comparable data are available at a European level immediately as this would have meant omitting aspects that are essential from the perspective of the project. Rather, it is hoped that this will stimulate the creation of appropriate data in the remaining areas.
The most important data sources are outlined briefly as follows:
For accidents at work and occupational diseases, data are collected at European level in the projects “European Statistics on Accidents at Work – ESAW”[13] and “European Statistics on Occupational Diseases – EODS”[16]. The former data collection covers all accidents at work which lead to an absence of more than 3 calendar days (even if these days include Saturdays or Sundays) and fatal work accidents. This includes cases of road traffic accidents in the course of work but excludes accidents on the way to and from work (commuting accidents), which are collected separately. The latter project deals with occupational diseases and by collecting data from administrative sources in the Member States, aims to obtain gradually harmonised, comparable and reliable data and indicators on occupational diseases in Europe. Both projects try to tackle the problems of comparability arising from the fact that the underlying social law and administrative regulations differ considerably between the Member States.
The relevant survey picturing the world of work is the European Survey on Working Conditions[10] that has been carried out the European Foundation for the Improvement of Living and Working Conditions three times since the early nineties. It provides an overview of the state of working conditions in the

European Union and at the same time indicates the nature and content of changes affecting the workforce and the quality of work – including the aspect of work-related health risks.
Data on sickness absence within a specific week are provided by the European Labour Force Survey[17] which aims to provide comparable statistical information on the level and pattern of and trends in employment and unemployment in the Member States.
For disability in connection with employment, a relevant source of information is the 2002 ad hoc module of the Labour Force Survey on employment of disabled people which was carried out in order to provide data for the European Year of People with Disabilities 2003. However, data on disability has been regularly provided by the European Community Household Panel (ECHP)[20], a longitudinal, multi-subject survey covering many aspects of daily life which began in 1994. It included a question on chronic physical or mental health problems, illnesses or disabilities and the negatives effects on daily activities which can be stratified by information on occupational classes and sectors of activities. The new instrument EU-SILC (Statistics on Income and Living Conditions) replacing the ECHP, also includes aspects connected to suffering from chronic (long-standing) illness or conditions and the resulting limitations on normal activities. Linked to these questions is information on the occupation and on the economic sector. First data from 2003 are planned to be published at the end of April 2005[25].
For some of the indicators listed, as mentioned above, it is still very difficult or hardly possible at all to get any reasonable data at European level. This applies specifically to the aspect of workplace health promotion activities, compliance with OSH regulations as well as expenditures on OSH measures and disease occurrence stratifiable by occupations and branches.
Also for areas where data are available, comparability between Member States is a very challenging and complex issue.

Problems of data comparability

A central aspect of health monitoring is the analysis of data by regions. In Europe it is common practice to break down the figures by Member States. With the open method of co-ordination gaining ground also in the health sector, the practice of benchmarking between Member States can be expected to become more important in the coming years. Against this background, it is all the more crucial to be aware of the possible pitfalls in comparing the data suggested for work-related health monitoring[26;27].

With regard to problems in comparability, differentiation should be made between routine/administrative data and survey data.

As mentioned earlier, underlying policy and administrative regulations determine occurring data to a considerable effect. An example for the field of work-related data is the issue of occupational diseases. The number and distribution of occupational diseases highly depends on the regulations concerning their recognition as such. Which diseases and under which pre-requisites are recognised as occupational, however, differs considerably between the Member States. Therefore the number of occupational diseases in a country reflects to a large extent the national regulations in this field rather than the actual prevalence of diseases. Against this background it must be accepted that there are still serious reservations about using European data concerning this issue. Nevertheless, the EODS project[16] is trying to tackle these problems and hopefully it will succeed in increasing the explanatory power of this data.

The situation is similar, although less pronounced, regarding accidents at work. Here, a major difference here between the Member States is the reporting procedure, i.e. in some countries benefit payments depend on the accident being reported to the insurer, whereas in other countries there is a legal obligation to notify accidents, although benefits do not depend on them being reported first. Consequently, while reporting levels in the former countries are thought to reach about 100%, they are much lower in the latter (usually 30 to 50%), with the consequence that Eurostat can only estimate the actual number of accidents occurring in these states[13].

Another very complex issue is the routine data on sickness absence often held by health insurers. They are attractive to use as they contain information not only on the precise number and length of the sickness periods for the insured individuals, but also on the cause of absence, usually coded in ICD terms. Yet there are big differences in the amount of social insurance data routinely available in the Member States. Comprehensive data exists in Germany, Austria or Sweden for example and virtually none in the Netherlands. There are other factors as well, in terms of regulations applied by the respective social insurance systems which – apart from the actual sickness – influence absence from work and the number of days people take off. These factors include length of qualifying period, income-related vs. flat rate benefits, necessity to provide a doctor’s certificate, just to mention a few aspects which raise the question of validity when making comparisons across countries. This situation was the reason why routine data are regarded critically as a data source for sickness absence in the WORKHEALTH project. It is planned

however, to make further investigations into the possibilities for making use of these databases in the future.
One way of enhancing the comparability of administrative data to be mentioned is to compare trends over a period of time rather than using cross-sectional figures. This is also being applied to the indicator for accidents at work, where the index presented shows the evolution of the incidence rate of serious accidents at work in comparison to 1998, with the rate from 1998 defined as 100.
Another option for health monitoring is to rely more on surveys rather than routine data. Data from surveys are usually regarded as less prone to external factors and more favourable for making comparisons between countries. The prerequisite here for cross-country comparisons is to pay the utmost attention to the wording and translation of the questions, yet there is still no guarantee that questions will be really understood in the same way by people of different cultures. An illustrative example of how linguistic issues and cultural difference influence the comparability across countries can be seen from the European Survey on Working Conditions on exposure to cold: In response to the question “How often are you exposed at work to low temperatures either outdoors or indoors?” the Greeks (44%) and the Portuguese (33%) reported the highest prevalence, whereas, the Finnish (19%) and Swedish (22%) interviewees for example reported less exposure[28].
Also the Labour Force Survey ad hoc module on disabled people in 2002 shows such a wide variation between the countries on the percentage of the working-age population with a long-standing health problem or disability that this might also reflect how respondents understood the question: With only 5.8% of the respondents in Romania (6.6% in Italy) and 32.2% in Finland reporting a health problem or disability, the replies could have been influenced by cultural traits.
In spite of these cautions, surveys are in general a good source for gathering data which can to a large extent be compared between countries, and should be used if possible in preference to routine data.

Résumé

In summary, significant progress has been made in the WORKHEALTH project in establishing a set of European indicators for health monitoring that adequately reflects the impact of work on public health. The indicators proposed by the project group are now included in the Commission’s list of indicators which will be put into practice in the near future.

However, there are still challenges to be addressed in the field of work-related health monitoring in Europe. This specifically includes the necessity to enhance the data available at European level. To acquire reliable and comparable data, further surveys and standardised routine data will be necessary as well as further methodological approaches which should be developed for improving the harmonisation and comparability of the data.
Although a considerable amount of work still needs to be done, the efforts already made in emphasising the importance of the world of work for public health in European health monitoring should not be underestimated.

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1 Introduction

Working life issues have so far played only a minor role in public health monitoring. This is surprising considering that most people spend 8 hours a day, 5 days a week and many weeks a year at work, and that the relationship between people and work has been studied intensively from a political, economical, sociological, psychological, and medical point of view. On the other hand, traditional monitoring systems from an occupational health and safety perspective usually focus on the "classical" aspects such as occupational diseases and work accidents (although the scope of occupational health and safety has recently broadened considerably). However, there is an increasing awareness that work does have a major impact on public health thereby creating considerable costs to society – extending far beyond the aspects traditionally assessed by OSH monitoring systems. This is illustrated in the figures below:

- With respect to loss of life years, WHO and the World Bank attribute 3 % to the factor work[1].
- Estimates from Denmark, published by the Nordic Council, suggest that working conditions cause about 20% of total morbidity, with for example 33% for musculo-skeletal disorders and 45% for skin diseases[2].
- The International Labour Office estimates that work-related diseases and accidents account for economic losses as high as 4% of the world-wide gross domestic product[3].
- And in studies that were carried out by the BKK Federation, the costs of work-related diseases in Germany were estimated to be at least 28 billion EURO for the year 1998 alone[4].

In several Member States work-related health monitoring schemes do exist. These schemes often operate on a regional level or are related to branches of industry and focus on occupational diseases, work accidents, or merely describe the working conditions. However, both on national and international level, discussions have taken place on standardising reports, and proposals on key indicators have been put forward by several bodies, including the EU Commission and the WHO. These proposals are based on the still distinct lines of surveillance and quality of work indication from an occupational health and safety point of view. In contrast, health monitoring from a public health perspective tends to include indicators for policy impact analysis, as e.g. the existence and distribution of health promotion programmes. Furthermore, work-related health monitoring should basically provide an insight into the as-

sociations between work and health. Indicators for morbidity or working conditions alone may not provide sufficient evidence for introducing specific public health policies although they provide important aggregate information.
The objective of this project was therefore to establish indicators for work-related health monitoring from a public health perspective and make a contribution to a community-wide network for sharing health data.

Role of work-related health monitoring

These figures illustrate that there is a need for health monitoring which adequately assesses the effect of work on public health. Work-related health monitoring has different aims: it should obviously describe the health status of employed people and provide knowledge on the status quo. This can provide a data basis to identify priority areas for action and to evaluate the activities.
This can be achieved for example, by providing feedback information for improving relevant policies or by benchmarking the health status in the Member States to stimulate efforts for improvement. On the other hand, work-related health monitoring should, from a public health perspective, provide insight into the associations between work and health and provide the knowledge necessary for changing the influencing factors and ultimately improving the health status.
With respect to current developments in Europe, work-related health monitoring can identify the most important actions for health promotion and disease prevention and can in addition serve as a tool for policy implementation. One of the major concerns for example in the EU Commission's public health programme[5] is to reduce health inequalities. Providing reliable data on disparities in employees' health status across countries and in individual counties are one step towards achieving this aim. The Commission would like to see an intersectional health strategy that can be implemented by linking the information relevant to the workplace to other areas of life such as income, social status, and housing conditions. Quality of (working) life as well as the employees' health status will be important aspects. By establishing suitable indicators, an opportunity is provided for evaluating the impacts of policy on public health.
As well as defining the aims of work-related health monitoring from a public health perspective, it is necessary to integrate this concept into other already existing monitoring systems. Questions about the scope of work-related health monitoring are particularly interesting with regard to the other sets of indicators already existing in the field of occupational health and safety monitoring. It is proposed to pursue an approach for integrating work-related health monitoring

from a public health perspective into other monitoring schemes as illustrated in Figure 1.

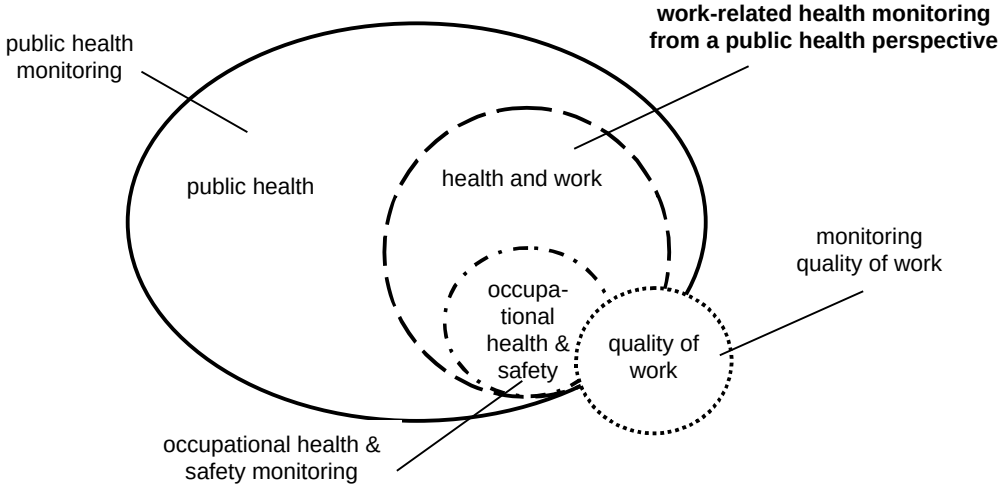

Figure 1: Scope of work-related health monitoring from a public health perspective.

As illustrated, OSH monitoring would be seen as one aspect of work-related health monitoring from a public health perspective, dealing with a specific section of the population (those in employment) and with the prevention of specific (occupational) diseases and work accidents. This however would also be within the scope of work-related health monitoring as understood in the WORKHEALTH project. There is also some overlap with indicators that are suggested for monitoring the quality of work-concept[6]: This applies for example to the indicator for accidents at work, which is integrated in the quality of work-concept. Also the aspect of job satisfaction, which is part of the quality of work-concept, might be relevant to address from a public health perspective.
The demand for an inter-sectoral health strategy, which has been expressed in the Commission's new public health programme[5], is again met by addressing the issue of work-related health by linking public health to other policy areas (especially OSH policy)
The WORKHEALTH project responds to the need for work-related health monitoring with emphasis on the public health perspective and aims to establish relevant indicators.

Addressing work-relatedness

Whereas the Member States have legal definitions for occupational diseases, the term "work-related diseases" has several very different meanings. On the one hand it refers exclusively to morbidity other than in work accidents and oc-

cupational diseases. This meaning is used by a WHO group of experts: “Work related diseases may be an appropriate term to describe disorders other than and in addition to recognised occupational diseases that occur among working people when the work environment and performance contribute significantly, but in varying magnitude to disease causation.”[7] On the other hand, comprehensive definitions of “work-related diseases” are used for example in German work safety law: “Work related diseases are health problems totally or partly caused by working conditions (including work accidents and occupational diseases).”[8] From this aspect, which is also inherent in the European Health Report[9], work-related diseases also comprise all non-occupational diseases to whose aetiology work contributes.

The varying definitions result in different concepts of health monitoring systems.

The most restrictive concept is operated in health reports on occupational diseases and work accidents. Indicators have been developed in various different projects. These reports deal only with diseases that are defined by the social insurance and workers compensation funds as having a causal connection to work. The indicators are fairly standardised and already used in the Member States.

A method frequently used in addressing the relation to work is to analyse and visualise health outcomes by occupation (e.g. ISCO codes) or economic branches (e.g. NACE codes). Where the prevalence or frequency of disease is higher in specific jobs or branches it may point to an association between working conditions in these jobs and the health outcome[10].

Finally, the approach taken for analysing job-specific health outcomes can also be transferred to working conditions. Statistics on sickness absence or prevalence of muscular pain among employees exposed to heavy work could be compared to those who are not exposed. The relative risk then indicates the strength of the relation of that specific aspect of work and that specific aspect of morbidity[11].

As the broadest concept in analyses, employees’ judgement on the work-relatedness of diseases might be considered. This view is taken to calculate the cost of work-related diseases[12]. However, it is a well known fact that ill people are more likely to scrutinise their working conditions, so that false positive associations may be inferred. Furthermore, since employees usually cannot relate working conditions to specific diseases, this approach allows only overall health outcomes to be studied.

About the WORKHEALTH project

WORKHEALTH was carried out under a programme on health monitoring in the European Union that was in place between 1997 and 2002[13]. The aim of the programme was to produce a health monitoring system for monitoring the health status in the community, to facilitate the planning, monitoring and evaluation of Community programmes and to provide Member States with information to enable comparisons to be made and to support their national policies. Over the last years, the ECHI project[14] ("European Community Health Indicators") has become the "umbrella" for all health monitoring projects, providing a structure and definitions for major concepts.

The aim of the WORKHEALTH project launched in 2002, was to contribute to the European health monitoring system by establishing indicators that adequately reflect how work affects public health. It is co-ordinated by the Federal Association of Company Health Insurance Funds (BKK Bundesverband). The co-operating partners are social security institutions, ministries, research institutions and occupational health and safety institutions from 13 EU Member States and Iceland.

The project consisted of three work packages. First, a synopsis was required of the existing international indicators that are related to health and the work setting, as it was considered important to use these schemes when establishing indicators from a public health perspective. Based on the synopsis, the second step was aimed at identifying areas where new indicators are still necessary and supplementing them accordingly. This work package included an identification process to establish the need for data and was accompanied at the same time with a description of what is regularly used at European level. Following this step it was possible to identify data sources and data needs for improving the implementation. The last work packages focused on compiling a short list of indicators which respond to the political request for a practical, quickly available and easy to handle basic health monitoring system at European level.

Special efforts were made in the project to include the demands and needs of all professional fields that share an interest in work-related health monitoring: occupational health and safety, public health, social insurance institutions and labour inspectorates. To achieve this, a so-called "satellite approach" was applied. In the second phase of the project, which aimed to identify those areas where indicators are still needed, separate "satellite workshops" were held in the different professional fields. The project partners from the respective fields were joined by external experts to examine the existing indicators and identify the omissions from their professional perspective. The results were then

pooled at the plenary meetings and served as a basis for the further proceeding of the project.

Products of the project

During the course of the WORKHEALTH project, several products were developed which are presented in this report.

Synopsis of work-related sets of indicators: As previously mentioned, it was considered sensible to start the project by gaining an overview on existing sets of indicators related to work and to use this as a starting point for developing indicators for work-related health monitoring from a public health perspective. The synopsis serves this purpose and introduces all European and international work-related sets of indicators by describing both the context in which they were developed as well as outlining their structure and methodological issues.

Comprehensive list of indicators: The synopsis was used as a basis for developing a comprehensive compilation of indicators that were available in the reviewed sets of indicators. This list of indicators was complemented with supplements provided by experts in the fields of occupational safety and health, social insurance, work inspectorate and public health science on indicators that in their view needed to be included. This list therefore now offers a unique overview on virtually all indicators that are in use or are considered as relevant in the area of work-related health.

Policy model: A model was developed as a theoretical framework concerning the way work-related health monitoring works from a public health perspective, and characterises work-related health monitoring as a policy cycle with different policy domains. These policy domains (e.g. optimising sickness absence management, improving working conditions) have an impact on activities at the workplace and can be monitored for their effect on public health.

Domain windows: So called “domain windows” were compiled for each policy domain. Each domain window contains those indicators that are suitable for monitoring the relevant policy domain.

Short list of indicators: The short list of indicators comprises those 11 indicators which are judged as most relevant for work-related health monitoring in Europe from a public health perspective. Operational definitions and data sources (if available) are provided. These indicators are already integrated into the ECHI-list of indicators for a European health set of indicators.

Report structure

The report is structured according to the results of the project outlined above. Chapter 2 provides an overview of existing indicators schemes, chapter 3 describes the comprehensive list of indicators (the list itself is provided as annex 6). In chapter 4, the policy cycle model is outlined and chapter 5 describes the domain windows. The actual domain windows with relevant indicators are attached as annex 6. Chapter 6 contains the short list of indicators. Chapter 7 provides detailed information regarding international health data sources and chapter 8, information on the suitability of data for work-related health monitoring at European level, whereas in chapter 9, issues are discussed concerning the comparability of European data. The report closes with an outlook to the future. Specific aspects concerning the methodology are outlined in the respective chapters.
Further details on the project management (project partners, project meetings) can be found in the annexes.

2 Synopsis of work-related sets of indicators

As already mentioned, the WORKHEALTH project aimed to take the results of other projects on work-related indicators into account. The first step was therefore to compile and evaluate already published or otherwise disseminated work-related sets of indicators to gain an overview about what is already available in this field and to use it as the starting point for the activities in the WORKHEALTH project group[15].

This chapter therefore gives an overview on the existing work-related monitoring schemes that were identified by the authors. There are two types of publications: In the first six, indicators schemes are presented. They contain suggestions or definitions of indicators for which data may or may not already be available. The last three publications are monitoring reports, i.e. reports that present the results of monitoring activities that have already been carried out. Each publication is presented from a number of different aspects which were considered as most relevant in the context of the project:

- Political Background: To gain a comprehensive understanding of the publications it was thought necessary to acquire information on their respective political background.
- Aim: In this paragraph, the aim of the publication is outlined if a description is available.
- Structure: The structure of each publication is described to give a sound idea of the document and also to detect the differences and similarities in their respective approaches.
- Level of detail: Where applicable, a short outline is given concerning the operational level of the proposed indicators, because the publications differ vastly in this respect. Obviously, this aspect does not apply to monitoring reports and is therefore omitted in those sections.
- Methodological aspects: As the task of WORKHEALTH was to establish indicators, it was considered relevant to investigate how the term “indicator” is interpreted or defined within other projects. We were also interested to find out how other projects deal with the issue and possible problems of data quality and international comparability of data, as this was considered one of the major challenges for WORKHEALTH.
- Data sources: Under the heading “data sources” the data sources are reproduced with respect to the indicators proposed, or the results presented in the monitoring reports are indicated in the respective publications.

- Further comments: Additional information that is considered relevant about some of the publications is given in this section.

ECHI project: Design for a set of European Community Health Indicators[14]

Political background: The following extracts are from the ECHI final report:
"The European Commission's Health Monitoring Programme was established in 1997 to take forward the enhanced public health responsibilities of the EU in the public health field. It has as its objective 'to contribute to the establishment of a Community health monitoring system', in order to

1. Measure health status, its determinants and the trends therein throughout the Community;
2. Facilitate the planning, monitoring and evaluation of Community Programmes and actions; and
3. Provide Member States with appropriate health information to make comparisons and support their national health policies.

The activities under the HMP have been set out under three "Pillars":

- Pillar A: Establishment of Community health indicators;
- Pillar B: Development of a Community-wide network for sharing health data;
- Pillar C: Analysis and reporting." (p. 8)

The ECHI project was designed to address the core exercise of Pillar A which is to ask the question on which data and indicators should be included in a Community health data exchange system.
Meanwhile it serves as a type of "umbrella project" for all the European Commission health monitoring programmes, and because of its importance to the WORKHEALTH project as well, it is described here as the first in all the sets of indicators. The structure (see below) now applies to the Commission's short list of indicators – an excerpt from all health monitoring projects – which is planned to be put into practice in the near future.

Aim: The objective of the ECHI project was formulated as: "To propose a coherent set of European Community health indicators, meant to serve the three purposes formulated for the HMP, selected on the basis of explicit criteria, and supported by all Member States." (p. 8)
The scope of the project is defined as follows:

- First, to define the areas of data and indicators to be included in the system, following a set of explicit criteria;
- Next, to define generic indicators in these areas, again following these criteria;
- Where appropriate, to come close to the actual definition of the indicators.
- As a novel element, to imply a high degree of flexibility in the indicator set, by defining subsets of indicators, or “user-windows”, tuned to specific users.

Moreover, it was envisaged to provide a guiding structure for international agencies, Member States as well as sub-national authorities for producing public health reports and to identify data gaps thereby helping to indicate priorities for data collection and harmonisation. It can also be used for guidance in other projects under the HMP and to serve as a guiding framework for follow-up.

Structure: The final set of health indicators was meant to constitute a balanced collection, covering all major areas within the field of public health. The main categories of indicators are as follows:

1 Demographic and socio-economic factors
- 1.1 Population
- 1.2 Socio-economic factors

2 Health status
- 2.1 Mortality
- 2.2 Morbidity, disease-specific
- 2.3 Generic health status
- 2.4 Composite health status measures

3 Determinants of health
- 3.1 Personal and biological factors
- 3.2 Health behaviours
- 3.3 Living and working conditions
  - 3.3.2 Working conditions: physical workplace exposure, mental workplace exposure, accidents related to work, occupational diseases

4 Health systems
- 4.1 Prevention, health protection and health promotion
- 4.2 Health care resources
- 4.3 Health care utilisation
- 4.4 Health expenditures and financing
- 4.5 Health care quality/performance

Level of detail: Most of the indicators proposed are defined as generic indicators, i.e., there has been no attempt yet to specify how they are to operate. The project envisages that this work will to a large degree, be carried out in other projects financed under the European Commission's HMP, which cover specific areas of public health or areas of data collection.

Methodological aspects:

a) Defining the term „Indicator"

In the ECHI final report, the question "What is an indicator?" is explicitly addressed (p. 23) and the discussion is reproduced below:

"One answer is: 'A concise definition of a concept, meant to provide maximal information on an area of interest'. In the German health information system (GBE, Gesundheitsberichterstattung) the purpose of an indicator is described as providing quantitative information about an 'indicandum', which is the topic that is to be addressed by the indicator (Federal Statistical Office, 2000). An indicator can be defined at the generic level, e.g. 'smoking behaviour', or in an operational manner, e.g. '% of women in age group y smoking between y and z cigarettes per day'. Operational indicators are always in terms of a number, calculated from primary data in a more or less complex manner. An example of a complex calculation is 'life expectancy at birth', which is calculated from a large set of age-specific mortality data.

Indicators are often linked to a purpose. (...) In this context, indicators are formulated for following the progress towards targets. Targets are concrete policy objectives, often stated in quantitative terms."

b) Discussion about quality of data

The following prerequisites are formulated with regard to the subsequent selection of indicators (p. 9):

- "The actual selection and definition of indicators within a specific public health area should be guided by scientific principles.
- Indicators (and underlying data) should meet a number of methodological and quality criteria concerning e.g. validity, sensitivity, timeliness etc. (quality, validity, sensitivity and comparability).
- The probability of changing policy interests calls for a high degree of flexibility, made possible by current electronic database systems.
- Selection of indicators should be based, to start with, on existing and comparable data sets for which regular monitoring is feasible, but should also indicate data needs and development areas."

It should be pointed out that in the actual operational definitions of the indicators, certain quality criteria should be met (p. 29). As the three most important aspects, an indicator should measure what we think it measures (validity), be

sensitive to changes over time or in place, be comparable between countries or regions.
c) Data comparability at international level
Together with the indicators listed, a qualitative indication of the degree to which data/indicators are regularly available is given. Indicators are based on data a) regularly available from international (e.g. European Community Household Panel) or b) national sources (e.g. national health interview surveys) or c) they rely on incidental national or regional sources (e.g. surveys on specific topics) or d) no data are generally available at this point. This of course has consequences for the comparability. For a) indicators are usually conceptually clear, valid and reliable; improving comparability may still be needed, whereas for b) improving comparability between countries is usually a major issue. With regard to c), efforts have to be made to make these regularly available within Member States' information systems; clarifying definitions and establishing comparability between countries is a major issue.

Data sources: For each indicator, a rough indication is made of the type of primary source from which the data is normally or preferentially derived (registers of any kind or surveys). Moreover, it is specified whether the indicator is mentioned in the listings of WHO/HFA, OECD or the Commission (usually Eurostat). There are differences among the three, whereby the list from the Commission shows what is being collected by Eurostat as statistics while the other two show what the organisations ask the Member States to submit to them.

Commission of the European Communities: Employment and social policies – A framework for investing in quality[6]

Political background: In March 2000 the Lisbon summit was held with the aim of strengthening employment, economic reform and social cohesion. The European Council declared the strategic goal of becoming "the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion". Later on that year, the Social Policy Agenda[16] was published which "forms part of the integrated European approach towards achieving the economic and social renewal outlined in Lisbon" (p. 2). The aim of "more and better jobs" is picked up again under the label "Quality of work" which includes "better jobs and more balanced ways of combining working life with personal life" (p. 13).

One year later, in March 2001 the European Council in Stockholm confirmed its commitment to achieving this goal. It was decided that efforts over the next 12 months should focus on action related to more and better jobs. In relation to this, the European Council agreed to focus on the importance of quality of work (gender equality, work organisation, life long learning, health and safety, employee involvement and diversity with working life) and asked these elements to be included in the Employment Guidelines for 2002. It called for indicators to be developed by the Laeken European Council – among others – on quality of work. In this context, the Commissioner Anna Diamantopoulou presented the Communication in June 2001. Based on this Communication, the Employment Committee proposed a list of 8 key indicators and 23 context indicators for monitoring quality of work[17] which was approved at the summit in Laeken in December 2001.
In February 2002 the Employment Guidelines 2002[18] were published which integrate the proposed concept of quality of work: One objective among others is "to ensure that policies across the four pillars contribute to maintaining and improving quality in work. Areas for consideration could include, inter alia, both job characteristics (such as intrinsic job quality, skills, lifelong learning and career development) and the wider labour market context encompassing gender equality, health and safety at work, flexibility and security, inclusion and access to the labour market, work organisation and work-life balance, social dialogue and worker involvement, diversity and non-discrimination and overall work performance and productivity" (p. 4).

Aim: The Communication "provides a broad framework for addressing quality within the context of the Social Policy Agenda, focusing here on the goal of promoting quality in work" (p. 4). It "aims to take forward the Social Policy Agenda commitment to promote quality in employment and social policy. In particular, it aims

- to define a clear approach to the policy goal of improving quality of work (and to policy implementation)
- to establish a coherent, broad set of indicators on quality in work to reinforce the effectiveness and efficiency of policy in moving towards the goal of increasing quality in work.
- to ensure that the goal of improving quality is fully and coherently integrated in employment and social policy through a progressive series of quality reviews" (p. 4).

Structure: There are two dimensions to the framework which covers 10 main elements.

Dimension I – Characteristics of the Job Itself (objective and intrinsic characteristics, including):

- Intrinsic job quality
- Skills, life-long learning and career development

Dimension II – The Work and Wider Labour Market Context:

- Gender equality
- Health and safety at Work
- Flexibility and security
- Inclusion and access to the labour market
- Work organisation and work-life balance
- Social dialogue and worker involvement
- Diversity and non-discrimination
- Overall economic performance and productivity

For each of the ten elements, 3 possible indicators are given. For example, indicators proposed for the issue of “Health and Safety at Work” are “Composite indicators of accidents at work – fatal and serious – including costs”, “Rates of occupational disease, including new risks e.g. repetitive strain” and “Stress levels and other difficulties concerning working relationships”.

The Commission points out that gender breakdowns should be a standard feature of indicators as well as regional breakdowns where appropriate.

Level of detail: For the indicators listed, the Commission names specific series of statistics as well as data sources and the respective periodicity.

Example: For “Composite indicators of accidents at work – fatal and serious – including costs” (see above) they propose to apply a) the incidence rate from ESAW which is produced yearly, b) the total and mean number of days lost due to accidents at work by sex based upon the Labour Force Survey and c) occupational diseases by sex, also based upon the Labour Force Survey. It is pointed out that some of the proposed indicators already exist while others still need to be developed.

Methodological aspects:

a) Defining the term „Indicator“

The role of the indicators is defined as allowing “an assessment of how successful Member States and EU policies are at reaching quality in work goals across these 10 areas” (p. 10).

b) Discussion about quality of data

The issue of quality of data used for the indicators is hardly discussed in the document. However, the importance of avoiding a simplistic interpretation of indicators is underlined.
c) Data comparability at international level
As indicated in the document, the Commission is considering setting benchmarks in this field. There is no explicit discussion on how comparisons of data could be undertaken or what kind of problems could arise in this regard.

Data sources: Data sources outlined are the European Labour Force Survey, the European Community Household Panel and "other ad hoc surveys on health and safety, working conditions etc. including Eurobarometer surveys" (p. 14).

Further comments: In 2003, the first data for "Quality of work" were analysed for all EU 15-States[19].

European Foundation for the Improvement of Living and Working Conditions: Internal Report to the Belgian Ministry of Employment and Social Affairs – Quality of Work & Employment Indicators[20]

Political background: As mentioned in the introduction, following the EU summits in Lisbon, Nice and Stockholm, the focus was laid on the quality of work and employment. Europe should not only create new but better jobs (see 2.1.1) – "good quality" jobs that are sustainable throughout the working life. In preparation for the Belgian EU Presidency beginning on 1st July until 31st December 2001, the Belgian Ministry of Employment and Social Affairs asked the European Foundation to propose a list of indicators for quality of work & employment to support the political objectives set out at the summits mentioned above. The European Foundation and the Belgian Ministry of Employment and Labour co-organised the conference named "For a better quality of work" under the auspices of Belgium's EU Presidency. The aim was to review the criteria necessary for defining the quality of work, as well as defining potential indicators for evaluating the implementation of such criteria.
Members of the expert group set up by the Foundation came from the Commission (DG Employment and Eurostat), the ILO, OECD, TNO-Arbeid and the Finnish Institute of Occupational Health and Safety.

Aim: In June 2001 the first draft of the paper was presented to the Belgian Ministry and was “intended to facilitate further discussions”. It was considered a starting point for the development of a set of quality of work & employment indicators. The report is described as “only the first step in a learning and long term process” (p. 2).

Structure: They point to the possibility of distinguishing between the intrinsic characteristics of work and employment (examples are job content, intensity, health and safety) and the extrinsic (earnings, job security, balance between working and non working life,...). Some sources (see below) provide data of either intrinsic nature (e.g. the ESWC) or of extrinsic nature (e.g. the LFS).
The overall structure is divided into the following ten domains:

1) Conditions of work and employment,
2) Balance between working and non working life,
3) Modernising work organisation,
4) Health and safety,
5) Workers’ rights,
6) Education and life long learning,
7) Earnings,
8) Ensure a high level of social protection,
9) Ensure equal opportunities for women and men,
10) Suppress discrimination.

Each of these domains are broken down into between two to seven more concrete objectives for which indicators are listed. E.g., in the field of “Health and safety” three objectives are outlined: 1. Work should be sustainable throughout life. 2. Work should not put safety and both mental and physical health at risk and 3. Equity in health. To meet the first objective, four indicators are proposed (e.g., existence of national monitoring systems on working conditions). For the second objective there are eleven (e.g. fatal accident rate per 100 000 in employment) and one for equity in health (mortality rates by occupation and gender). In this regard, domain 1 (Conditions of work and employment) is an exception. The authors indicate that, as the objectives subsumed under this domain “somehow cover what Quality of Work and Employment should be, see the indicators in the domains 2-10” (p. 7) – which amount to more than 100.
It is also mentioned that three types of indicators have been identified: indicators reporting structures (e.g., number of labour inspectors), indicators reporting work and employment situations (e.g., exposure to chemicals) and indicators reporting outputs (e.g., health problems such as stress, occupational accidents).

The authors mention that the final list should probably be limited to between 10 to 14 indicators and therefore suggest constructing aggregates or indexes. As an example, an index of time quality could aggregate the indicators “duration of working hours”, “predictability of working hours”, “control over working time schedules”, and “intensity of work”.

Level of detail: The amount of detail given for the indicators differs. Some are already very concrete and refer to statistics already gathered (e.g., to the Labour Force Survey for indicators for accidents), others still have to be elaborated (for example the proposed indicator “Exposure to chemical, bacterial, carcinogens,... risks”).

Methodological aspects:
a) Defining the term „Indicator“
Three types of indicators are described which serve different purposes (p. 3):
- Indicators aiming at benchmarking are designed to measure progress and should be quite precise (e.g. working time, accidents...).
- Indicators aimed at comparing (countries, sectors, sexes...) should be used with caution as a thorough knowledge of the context is necessary to interpret the possible differences, especially between countries.
- Indicators aiming at supporting debate and discussion do not have to be perfect but can still reflect well trends and provide good time series.

b) Discussion about quality of data
The issue of data quality is not explicitly addressed in the document. However, comments on the nature of indicators (administrative reporting, self-reporting,...) and their reliability are to be added at a later stage.
c) Data comparability at international level
They point out that appropriate indicators could be used for benchmarking between countries, regions and organisations. However, the difficulties related with comparisons are stressed. For example, misinterpretations might occur if the workforce of the countries compared is not the same. Caution is also requested regarding cultural, political, legal and social differences.

Data sources: “The present list of indicators has been drawn from diverse sources, mainly from data collection systems at EU level, and in particular:
- The Labour Force Survey
- The Community Household Panel
- The European Survey on Working Conditions
- The European Statistics on Accidents at Work

- The European Occupational Diseases Statistics.

Furthermore, national sources of information, which at this stage have been ignored, should be considered in the process." (p. 4)

Further comments: The further political relevance of this set of indicators from the European Foundation is not quite clear at the moment as the indicators for quality in work as they are used in the Employment Guidelines are based on the indicator set proposed by the Commission.

WHO Europe: Workplace Health in the Public Health Perspective – Criteria and indicators for policy and performance of good practice in health, environment and safety management in the enterprises[21]

Political background: At the third WHO/EURO Ministerial Conference on Environment and Health in London in 1999, a document was presented titled "Towards good practice in health, environment and safety management (GP HESME) in industrial and other enterprises". It introduced a holistic concept of health environment and safety management in enterprises and was appreciated by the Ministers, who in their London Declaration, stressed the importance of instituting workplace measures to meet public health needs and goals. They invited WHO and ILO to work together and in co-operation with the European Commission for implementation of environmental practice which also promotes public health.

At the first two meetings of the HESME focal points (March 2000 and May 2001) it was concluded that the concept of good practice in HESME was needed in all countries to strengthen and facilitate the enforcement of occupational health and safety law and environmental law in the enterprises and that the development of common criteria and indicators on GP HESME was a first priority of the programme. WHO/EURO was asked to prepare a set of criteria and indicators which would be adapted to national or local needs and monitoring possibilities. Stress was also made on the importance of workplace health promotion in public health in order to secure peoples' health and productivity.

At the meeting of the European WHO Collaborating Centres in Occupational Health in September 2000 it was pointed out that the HESME concept complements the traditional occupational health and safety with health promotion and health environment.

During the Fourth meeting of the European Environment and Health Committee in June 2001, Dr. Boguslaw Baranski reported that basic criteria and indicators for policy and performance of GP HESME ("comprehensive workplace health management") had been agreed by representatives of ministries of health from 20 countries, the EC and NGOs. It was also pointed out in the minutes that joint activities had been organised with the EC's public health programme and that HESME was at that point in time actively promoted by four WHO networks (government focal points, WHO collaborating centres in occupational health, the European Insurance Network for Work and Health, and associations of health professionals).

Aim: The document which was published in July 2001, was drawn up to define indicators on GP HESME, which was identified as a priority at the meeting of the focal points in May 2000. The document states that enterprises or communities should use the same criteria and indicators in order to compare quality of their health, environment and safety management: "Criteria define characteristics of the enterprise management system or a specific feature of the local or national policy, which has to be met if the management system or policy is to achieve good practice in HESME." Moreover, a set of indicators would enable enterprises which practice HESME to set benchmarks in order to evaluate their performance and assess their own situation. The document is therefore intended for use by those preparing the national, local or branch HESME guidelines in their countries or networks of companies to assist the enterprises of different branches in the development of their own criteria and indicators for HESME. The objectives and indicators outlined (see below) should be prioritised by the actual user.
The aim of HESME (which is defined as a multidisciplinary approach for industrial and other enterprises) is to promote health and safety in the workplace and to minimise its harmful impacts on the environment. Additionally, HESME approaches the impact of the workplace on neighbourhood health, on the health and environmental impact of its products, and on preservation of the general environment.

Structure: The indicators presented are structured on three different levels.
a) Stakeholders and policy criteria at the national level
Criteria (for an explanation of this term see below) listed and explained for use at national level include commitment on intersectoral and interagency collaboration, national socio-economic incentives for enterprises, availability of good education and training systems and research and development projects. HESME indicators (for an explanation of this term see below) at this level

should therefore allow for assessment of intersectoral collaboration (public health, environment, labour) to achieve common goals in sustainable development, of efficiency in legislation, of policy effectiveness, of education on HESME issues, of HESME impact on public health and sustainable development and for setting public health targets for enterprises and allow for monitoring whether they are obtained (e.g. increase of disability retirement age). In addition a list of examples of indicators applicable at national level is given, including the number of ratified ILO conventions, the percentage of active labour force covered by efficient enforcement of occupational health and safety legislation, costs of accidents and diseases at work as a percentage of GDP.
Criteria, targets and indicators shall be tailor-made for each country, organisation and chosen purpose.
b) Policy criteria at provincial (municipal) level
A number of criteria are set out which in a way describe how the necessary actions should be taken in stages to develop and maintain local HESME programmes, for example: analysis of the current situation in HESME, declaration of local authority and other major stakeholders, evaluation of the health, environment and safety (HES) service, support to networking and benchmarking, and collection and dissemination of good examples. A long list is given with five to eleven indicators under each of these headings: Basic information on the socio-economic situation of the local community or province, health indicators in the local working community, work environment, ambient environment (this includes e.g. emission to air and discharges to water according to economic sectors and size of enterprise), technical support provided (e.g. percentage of employees in the municipality covered by OH Services and other HES services), and health and environment promotion process indicators.
c) GP HESME criteria at enterprise level
These are the criteria which should guide employers or top executive managers to act in stages at enterprise level: commitment, effective management, participation of employees, competence, deciding the scope and objectives, process elements (such as for example, risk assessment and communication), and reporting requirements. Performance indicators refer to aspects of input (e.g. financial investment in HESME as percentage of the enterprise total budget), process (e.g. percentage of employees participating in vaccinations programmes) and output (e.g. estimated rate of work related diseases/incidence prevalence/mortality, emission to air).

Level of detail: Rather than constituting a coherent set the proposed indicators should be seen as an extended compilation covering all aspects which might be useful to consider. The amount of detail varies considerably and ranges

from generic indicators (e.g. “emission to air”) to the more operational (e.g. “percentage of employed population regularly undergoing prophylactic medical examinations by industrial sector, age, gender, occupation”).

Methodological aspects:
a) Defining the term „Indicator“
Criteria and indicators of GP HESME are proposed in detail. A criterion is defined as a principle or standard used for creating policy at national or local level or in the management system of the individual enterprise. Within this document, criteria are used as specific characteristics of the enterprise management system or a specific feature of the local or national policy, which has to be met if the management system or policy is to achieve good practice in HESME. It is pointed out that the purpose of criteria isto guide the development of effective management systems in the enterprise.
The aim of indicators is to provide different stakeholders with information on the effectiveness and efficiency of HESME – therefore different sets of indicators are proposed for assessing performance in HESME depending on the level (enterprise, local community or province, national level). A comprehensive set of HESME indicators should cover input, process and outcome indicators.
b) Discussion about quality of data
A section about quality of data from the “Work and Health Country Profiles”[22] (2001) is adapted.
c) Data comparability at international level
Although the indicators proposed are aimed at allowing enterprises and communities to benchmark their HESME-performance, the issue of comparability of data is not being elaborated.

Data sources: The issue of data sources is not discussed explicitly.

European Network for Workplace Health Promotion: Quality Criteria for Workplace Health Promotion[23]

Political background: The European Network for Workplace Health Promotion was founded in 1996. The Network’s activities are based on the Community Action Programme on Health Promotion, Information, Education and Training. Organisations taking part in this initiative which is sponsored by the European Commission come from the 15 old Member States and three EEA countries

and are mainly state organisations involved in occupational health and safety and the public health sector.

Aim: In the “Luxembourg Declaration”, the members of the Network agreed on a common definition of workplace health promotion and developed guidelines for effective workplace health promotion activities. The quality criteria were developed on this basis. They are intended to provide assistance in the planning and implementation of successful, high-quality promotion measures for all whose who are responsible for health at the workplace and are based on the model of the European Foundation for Quality Management. These criteria can be used for guidance in establishing comprehensive workplace health promotion. A Questionnaire for Self Assessment is available which highlights both the strengths and the areas in need of improvement, and helps to establish the quality of the measures already undertaken by the organisation and enables them to compare their performance against other organisations.

Structure: The criteria are divided into six sectors which, taken together, should produce a comprehensive picture of the quality of workplace health promotion activities:
1. Workplace health promotion (WHP) & corporate policy
2. Human resources & work organisation
3. Planning of workplace health promotion
4. Social responsibility
5. Implementation of workplace health promotion
6. Results of workplace health promotion.

Level of detail: The indicators are themselves quite specific but do not specify how they should be measured – e.g. “The superiors support their staff and promote a good working atmosphere”.

Methodological aspects:
a) Defining the term „Indicator“
In this publication, the term “indicator” is not defined. The term used here is “criterion”. The purpose of the criteria is to outline how to set about establishing a healthy organisation with healthy employees.
b) Discussion about quality of data
Caution is recommended when making comparisons across organisations or across countries as the criteria can to some extent be interpreted in a different ways.

c) Data comparability at international level
See above.

Data sources: To assess the quality of workplace health promotion in a public or private enterprise, an online-questionnaire is provided on the ENWHP (www.enwhp.org) homepage and the German Network for Workplace Health Promotion homepage (www.dnbgf.org). Up until August 2004, approx. 400 assessments were collected in this way.

WHO Europe: Work and Health Country Profiles[22]

Political background: At the Third Ministerial Conference in London (1999), emphasis was placed on the need for strengthening the information systems on safety and health at work and support was given to the implementation of the comprehensive concept of good practice in health, environment and safety management in enterprises (HESME). As a result, WHO/EURO suggested preparing two parallel working documents on preferable indicators on occupational health and safety at the enterprise level and at the national/regional level. While the document "GP HESME" elaborates on HESME at enterprise level, the Country Profiles, prepared by the Finnish Institute of Occupational Health based on the initiative of Dr. Baranski of WHO/EURO, presents a variety of indicators used to describe the status and trend of OH&S at national/regional level. These documents are intended to complement each other and may in future be completed with indicators at a global level (in collaboration with the ILO plans have been made to apply a similar approach at global level).

Aim: The aim of the Country Profiles-approach is to define a set of OH&S indicators applicable in countries with different economic structures, cultures, levels of statistics etc. The document aims to "provide suggestions for national profiles that describe the most important parameters in occupational health and safety, starting from a limited number of selected and relevant key parameters, and providing the possibility for more complex profiles with a growing degree of sophistication, according to the needs and possibilities of the countries" (p. 9).

Structure: A model is outlined which describes the domains of the indicators. These are "working conditions", "health outcomes" and "OH&S policy and in-

frastructure". For each of these domains, indicators are discussed and core indicators presented together with a definition and reasons for their inclusion. With regard to the heterogeneity of countries and the consequence that only very few parameters can be compared, the principle of parsimony (i.e., avoiding too many parameters) was applied. Suggested core indicators are listed below.

a) Indicators of prerequisites of OH&S
- Ratification rate of relevant ILO key conventions on OH&S (% ratified)
- Human resources in labour safety inspection (inspectors / 1000 employed)
- Human resources in labour safety at workplaces (safety representatives and managers / 1000 employed)
- Human resources in occupational health services (physicians and nurses / 1000 employed)

b) Indicators of working conditions
- High level of noise (% of employed)
- Handling dangerous substances (% of employed)
- Asbestos consumption (kg / capita / y)
- Pesticide consumption (kg / agricultural worker / y)
- Heavy loads (% of employed)
- Working at very high speed (% of employed)
- Working at least 50h / week (% of employed)

c) Indicators of occupational health and safety outcomes
- Fatal work accidents
- Work accidents
- Occupational diseases (incomparable across countries)
- Perceived work ability (0-10 scale)

The authors considered that work-related diseases and occupational morbidity (such as musculoskeletal diseases, mental disorders, cardiovascular diseases, cancer etc.) are issues still undergoing research and cannot be measured against established methods to enable indicators to be developed.

Although socio-economic indictors were not included, they stress the importance of socio-economic factors, such as the proportion of agriculture in the economy and the degree of automation in industrial processes.

Level of detail: As can be seen in above, the indicators are not generic but already operationally defined.

Methodological aspects:

a) Defining the term “Indicator”

An indicator is defined as a device which indicates some quality, change, etc. of a situation or system, and draws attention or gives warning. The four categories of indicators by WHO are cited: health policy indicators, social and economic indicators, indicators of health care delivery, and indicators of health status. It is stressed that, while indicators help to measure the attainment of targets, they are not in themselves targets. Criteria mentioned for the selection of indicators are validity, objectivity, sensitivity, specificity and availability.

b) Discussion about quality of data

Emphasis is made on the necessity for good quality data which should be available from international or national sources for drawing up OHS indicators. A number of projects are quoted which provide data on working conditions, exposure, work accidents and occupational diseases. The comparability of data from countries outside the European Union (e.g. data on work accidents collected by ILO) with the European sources is questioned.

c) Data comparability at international level

The general problem of data comparability (one aspect of validity) is discussed – especially with respect to comparisons between countries. In conclusion, international surveys are considered preferable to administrative data and national surveys when data are compared across countries.

Data sources: Major types of data sources are discussed from the point of view of validity and comparability: administrative registers and statistics (e.g., Pilot project on European Occupational Disease Statistics – EODS), questionnaire-based surveys (e.g., Second European Survey of Working Conditions), expert assessment systems (e.g., International information system on occupational exposure to carcinogens – CAREX), and observational surveys (e.g., National Occupational Exposure Survey – NOES)

Further comments: In 2002, the Finnish Institute of Occupational Health published a report compiling data on work and health country profiles of 22 European countries[24]. These data were collected by sending questionnaires to the European contact persons of WHO Collaborating Centres in occupational health and safety. It is commented that the selection of relevant occupational health and safety indicators still needs to be considered further and that the comparability of the data also needs to be considerably improved.

European Foundation for the Improvement of Living and Working Conditions: Indicators of Working Conditions in the European Union[25]

Political background:
When the report on “Indicators of Working Conditions in the European Union” was published in 1997, the European Survey on Working Conditions (at that time called European Survey on Working Environment – ESWE) had been carried out twice by the European Foundation (in 1990/91 and 1995/96).
The reason for the publication was an assessment by the Foundation that in spite of the abundance of data on social issues, policy makers often lack practical and simple data to support their action in the area of working conditions

Aim: Against this background, the publication aims to examine how synthetic indicators can be built in the field of working conditions and on the basis of existing harmonised data. The report is not intended to provide an ultimate set of indicators on this topic but to show what can be achieved with respect to social indicators on the basis of existing data. The Foundation’s ultimate aim is to provide a discussion basis on how to develop user-friendly indicators.

Structure: Two sets of indicators based on existing information are proposed, a) “Problem-oriented and informative indicators from ESWE” and b) “Issue oriented indicators”.

a) “Problem-oriented and informative indicators from ESWE”
The first is a list which is “complete” from a scientific point of view – i.e. all areas which need to be covered by such indicators are included in the list. For thosedimensions for which the ESWC does not provide any information, other data sources are used (e.g. Eurostat).
The indicators are divided into the following domains:
- Employment
- Information
- Physical exposure
- Musculoskeletal job demands
- Psychological job demands
- Emotional job demands
- Satisfaction and health

To reduce the number of indicators to a minimum, different questions from the survey have been combined for the indicators, for example in the domain “Psychological job demands” the indicator “PSYDE 2a - % socially paced jobs”

is composed of the questions “work dependent on colleagues”, “work dependent on people”, and “direct control”.
b) “Issue oriented indicators”
The latter set of indicators contains a selection of those indicators which are more telling from a policy oriented point of view. This list is limited to eleven indicators which give a good overview of the working conditions in the European Union:
Precarious work, irregular working hours, learning organisations, participative organisations, strenuous work, repetitive and monotonous work, intensive work, control over working time, control over working tasks, discrimination at work, and violence at work.

Methodological aspects:
a) Defining the term „Indicator“
The concept of “social indicators” is explained (p. 1). According to this definition, social indicators contain information about the social situation in a country. Unlike social statistics, which are systematically collected data, presented in a way that no political implications or interpretations are given, social indicators give information about policy (indicators about means) and about policy effects (indicators about effects). They are linked to results and therefore offer possibilities for evaluation, prediction and planning, as well as for systematical comparison between groups and in time. Social indicators allow evaluation of social policies.
Four types of social indicators are distinguished according to their policy use:
- informative indicators: such indicators describe the social system and the changes which take place in it
- predictive indicators: these are informative indicators fitting into an explicit formal model of subsystems of the social system
- problem-oriented indicators: these point towards policy situations and actions on specific social problems
- and programme evaluation indicators: these are operationalised policy goals to monitor the progress and effectiveness of particular policies.

The indicators developed in the report are of an informative and problem-oriented nature and give information on the current working environmental situation in the member states of the European Union. They show which working environmental characteristics are problematic or which group (country, branch of industry, professional group,...) is more at risk than other groups.
b) Discussion about quality of data
There is a short discussion on whether objective or subjective data should be used as the preferred source of information. Surveys are emphasised as valid

means for collecting information on social developments or variables. It is also pointed out that in comparison to other data collection methods, one can control most of the conditions in which the data collection is done and guard the quality of data. The data quality is assessed to be better than for indicators constructed on company reports (e.g. social reports, accident reports), data from insurance companies, labour inspection reports or from other official sources.
In the supplement, an overview is given of the construction of the indicators which includes comments on possible problems concerning the data quality.
c) Data comparability at international level
The issue of data comparability of survey data at an international level is addressed and it is pointed out that a number of surveys on the working environment in different countries of the European Union show important differences in methodology (sample population, non response, sampling period and possible responses). Due to these differences, the ESWE is seen to be better source of data in terms of data comparability.

Level of detail: All indicators are defined in detail. The definitions refer to the relevant questions from the ESWE, as for example in the indicators for muskuloskeletal job demands which are “MUSDE 0c - % of 2 musculoskeletal demands or more”, “MUSDE 1 - % painful or tiring positions”, “MUSDE 2 - % heavy loads” and “MUSDE 3 - % repetitive movements”. Note that to achieve data reduction, in indicators which are based on only one question, answering categories are reduced to bivariates: e.g. the cut-off point for questions with 7-point-scale is between “all the time + almost all the time + around ¾ of the time + around half of the time” on the one hand, and “around ¼ of the time + almost never + never” on the other hand.

Data sources: Most of the information for the indicators on the working environment was taken from the survey which at the time was called the European Survey on Working Environment (ESWE) from 1991 and 1996. The reasons for using this source of data rather than other surveys are a) the very different methodologies used by the surveys on the working environment in the different European countries and b) the fact that the ESWE is the result of long discussions in a working group from the EFILWC. This survey therefore contains those questions which, according to this group, are best suited (valid and reliable) for investigating the working environment (p. 12).

European Agency for Safety and Health at Work: The State of Occupational Safety and Health in the European Union[26]

Political background: The European Agency for Safety and Health at Work was established in 1994 by the European Union in order to provide the information needed by people interested in occupational safety and health issues. The aim of the European Agency, as defined in the founding regulation, is: "To provide the Community bodies, the Member States and those involved in the field with the technical, scientific and economic information of use in the field of safety and health at work, in order to encourage improvements, especially in the working environment, as regards the protection of the safety and health of workers as provided for in the Treaty and successive action programmes concerning health and safety at the workplace."
In order to co-ordinate the work of the European Agency throughout the Member States, each Member State was asked to nominate a competent authority to become a focal point in the European Agency's network. These focal points were asked to set up national networks to support the European Agency's work and co-ordinate national information at Member State level.

Aim: The European Agency decided to undertake a comprehensive assessment of the state of occupational safety and health (OSH) throughout the EU-Member States with the aim of contributing towards the development of a monitoring system for safety and health at work in the EU. The pilot study is presented as a first step towards this aim. It served to provide decision-makers in the Member States and on European level with an overview of the current safety and health situation in the European Union and support them in identifying common challenges and priority areas for preventive actions. Also, as a pilot study, the requirements for conducting future and more regular updates of OSH information across the European Union could be identified. Meanwhile the Agency has built upon this work and is currently developing a European Risk Observatory.

Structure: The report begins with an introduction and general information about data sources and the methodology applied.
The second chapter outlines the major findings for all exposure indicators and OSH outcomes in the European Union. In this context, information is given, e.g., about potential health effects of exposure indicators, a European picture for the exposition to this indicator, sector and occupation categories most at risk, as well as the most important information about OSH outcomes.

The third, very extended chapter, deals with the working environment and gives very detailed information about all exposure indicators examined (noise, vibration, temperature, repetitive movements, chemical/biological risks, workplace violence, monotonous work etc.), the use of personal protective equipment. Information is also given about risks and training provided by employers. For each variable information is given for the EU as a whole, for individual risk categories (sector, occupation, company size, gender, age, employment status) and for each of the Member States separately. Data based on the European Survey on Working Conditions (ESWC) are compared with nationally collected data and possible differences are commented by the respective Member State.
In the fourth chapter more extensive information is given about occupational safety and health outcomes (accidents at work, work-induced musculoskeletal disorders, stress, occupational sickness absence and occupational diseases), also broken down into risk categories and Member States. The last chapter is about changes in working life (emerging risks, tele-work, employment status).

Methodological aspects:
a) Defining the term “Indicator“
No explicit definition of the term “indicator” could be found.
b) Discussion about quality of data
The authors point out the limitations concerning the accuracy and interpretation of quantitative data. As they mention, the Member States and the national focal points used different methods for collecting and collating national data and as a consequence the consolidation cannot be interpreted as accurate quantitative data: “Any quantitative data can only be interpreted as providing a qualitative overview of expert opinion.” (p. 25)
Other problems were for example, the unavailability of information, lack of response or data about sectors and occupations that was categorised in a different way than in the agreed list distributed along with the manual.
c) Data comparability at international level
Regarding the consolidation process (i.e. the process of compiling data gathered from various national focal points), the report draws attention to the fact that the expressions used in the manual could be understood and interpreted differently in each Member State. As an example, reference is made to the question “indicate the five occupations with the highest risk” to a particular hazard. Was the highest risk interpreted as “high” because of reported fatalities, because a large number of people were exposed, or because a large number of people had suffered minor injuries? (p. 25) During the course of this process, the disparities in the OSH systems across the Member States, the

problems in comparing the collected information and using it to draw up a general picture became apparent. Emphasis was made on the importance of preparing well structured, unambiguous and clearly presented questions for collecting information.
To produce a consolidated report which is statistically sound they emphasise the necessity for each Member State to use an almost identical data collection scheme with similar question sets at the national level and for there to be a common understanding of these questions (p. 26). The authors of the "Work and health country profiles" mention the problems in making comparisons in the OSH State report: In 58% of cases, national data on 21 different OH&S exposures and outcomes were available. In 20% of cases, national data were in accordance with ESWC data. A substantial amount of the national data could not be compared with ESWC data (24%), or were different (14%). They conclude that comparable data from national surveys are available only in a minority of cases. There are a number of possible reasons. For example, the contents and the answering alternatives may differ between two surveys, the sample size and structure and the methods used in the survey can influence the results. Language differences can also cause problems[22].

Data sources: A manual was sent to the national focal points to assist them in gathering the data for most of the indicators. Information was provided in this manual about data from the 2nd European Survey of Working Conditions according to risk factor or exposure indicator. The focal points were asked for national data from e.g. national surveys. Where this was available, the focal points were requested to compare these data with the data from the ESWC. The focal points were asked for their opinion in determining which 5 sectors and 5 occupations are at highest risk to the exposure indicator, about the trends on the numbers of workers exposed over the last 3-5 years and they indicated if there were any particular risk categories in sectors, occupations, company size, gender, age, employment status. Data on accidents were provided by Eurostat.
The availability of data depended on the area: For traditional health and safety topics such as noise and asbestos there was an abundance of information available. In other exposure categories however much less data were available, e.g. stress, pace of work dictated by social factors and pace of work dictated by machinery.

European Commission: The European Health Report[27]

Political background: The following is an excerpt from the introduction (p. 1):
"The 1956 Treaty of Rome, reinforced by successive treaties, provides the Commission with a legal framework for its actions in the health field. The 1997 Treaty of Amsterdam focuses on health protection and disease prevention and identifies the need for further actions to 'achieve improvements in public health', as well as activities to 'prevent diseases and health problems' and the 'reduction of risks to human health'. The November 1993 Framework for Action in the field of public health required the Commission to publish regular reports on the state of health in the European Union (EU). In 1996, the first report was based on work carried out by the World Health Organization (WHO). This report is an update and extension of the previous report. It is published as the output of a technical expert group composed of representatives of the Member States and financed by the Community Health Monitoring Programme."

Aim: As stated in the preamble, the Community Health Status Reports aim to improve public knowledge and understanding of major health problems in the Community in order to support the appropriate measures at Community, Member State or on an individual level.
The overall aim of this report is to identify the common problems and challenges associated with the health status in the Member States.

Structure: The report is divided into three chapters: The first chapter deals with the current health status, focusing particularly on the patterns and morbidity trends, disablement and premature mortality. Chapter 2 addresses a number of determinants of the observed health status. This includes socio-economic determinants (GDP per capita; education; household, family and other social networks; employment; unemployment), health behaviours (smoking; alcohol abuse; drug abuse; diet and nutrition; physical activity; sexual behaviour), physical environment, health promotion (health protection interventions; disease prevention; risk approach; health promotion in key settings), health care services (expenditure on and resources available for the provision of health care; health care facilities; technological resources). In the third chapter, attention is drawn to a number of opportunities available to the Member States for joint action in reducing the problems identified and to narrow the health inequalities that have been observed.

Methodological aspects:
a) Defining the term “Indicator”
No explicit definition of the term “indicator” could be found.
b) Discussion about quality of data
The quality of data is not discussed as an explicit topic. Instead, limitations of data quality and comparability are mentioned in the text when relevant.
c) Data comparability at international level
See above.

Data sources: The information used in this report comes from a wide range of sources, mainly from international health data collection organisations: Eurostat (main source for data on population and demographics), WHO/EURO (source for morbidity and mortality) and OECD (for socio-economic and health care provision data).

Policy context of work-related health monitoring in Europe

After having described the systems that seemed most relevant for the WORK-HEALTH project, it might be helpful to integrate them in their respective policy context.
Some of the documents referred to come from the Directorate-General Employment and Social Affairs (DG V). Based on the Lisbon summit where the aim of creating “more and better jobs” was declared, the issue of quality of work has been one of the major topics within the field of employment in the European Union. It was explicitly outlined in the Social Policy Agenda[28] (June 2000) and taken as a key theme for the Belgian Presidency (July-December 2001). Shortly before this presidency, in June 2001, two documents had been prepared with the aim of developing indicators for quality of work: The Communication from the Commission “Employment and social policies: a framework for investing in quality”[6] which was prepared on behalf of Anna Diamantopoulou, the Commissioner of the DG Employment and Social Affairs. At the same time, the European Foundation for the Improvement of Living and Working Conditions (EFILWC) submitted an internal report “Quality of Work and Employment Indicators”[20] which had been requested by the Belgian Ministry of Employment and Social Affairs in view of its forthcoming presidency.
The quality of work aspect was incorporated in the guidelines for Member States’ employment policies for the year 2002 (“Employment Guidelines”)[18] as

a general objective which should be followed through all actions and across all pillars[1]. The definition of quality of work and the indicators agreed upon, are based on the Communication from the Commission. However, the indicators proposed by EFILWC do not seem to be reflected in these official documents. In 2003, the first data for "Quality of work" were analysed for all EU 15-States[19]. In general, the issue of health is indeed considered very important by DG V: Employment or unemployment and health are regarded to be so closely related that they can not be treated separately, and this approach is reflected in the European Employment Strategy.

Within DG V, "health and safety at work" is also a continuous issue in the unit "Health, safety and hygiene at work". Community action on health and safety at work revolves around the former Article 118 of the European Treaty, which provides both the legal basis and sets out a general principle: "Member States shall pay particular attention to encouraging improvements, especially in the working environment, as regards the health and safety of workers, and shall set as their objective the harmonisation of conditions in this area, while maintaining the improvements made." The establishment of European wide comparable data by Eurostat is a major element of the Commission's strategy in evaluating the efficiency of Community legislation on Health and Safety at work. The European statistics on accidents at work and occupational diseases (ESAW[29] and EODS[30]) serve this purpose (see chapter 7). Data from these two sources as well as from the European Survey on Working Conditions[31] published by EFILWC (see chapter 7) are summarised and compared to each Member State's national data in the report "The State of Occupational Safety and Health in the European Union"[26] by the European Agency for Occupational Health and Safety in Bilbao. Eurostat has also recently (in 2004) compiled and analysed data related to work and health at European level in their publication "Work and health in the EU"[10]. These four documents are less comprehensive in their approach, in contrast to the documents on quality of work described earlier, but focus more instead on translating the Community legislation on Health and Safety at work into action.

Within the framework of the European OSH strategy, the European Agency is in the process of establishing a European Risk Observatory. It has functions in terms of monitoring (identifying trends, changes and risk factors, based on data collecting and analysis), early warning (identifying new issues through

[1] Pillars outlined in the Employment guidelines are I) Improving employability, II) Developing entrepreneurship and job creation, III) Encouraging adaptability of businesses and their employees and IV) Strengthening equal opportunities of women and men.

networks such as expert groups, labour inspection...) and clearing house (provide tools, based on good practice, for preventive action). Some areas of the activities currently carried out by the Foundation which are closely related to WORKHEALTH issues are, for example, a) the ageing workforce, their health status and the impact of work organisation and the working environment on their health, b) company and organisational policies and their impact on work, c) special groups (e.g. immigrants and care workers), d) working time, e) new technology and new forms of work and their impacts on health.

Two documents are available from another Directorate-General, namely at DG Health and Consumer Protection: ECHI[14] and the European Health Report[9].

The legal basis for public health activities within the European Union is Article 152 of the European Treaty on European Union which stipulates that “a high level of health protection shall be ensured in the definition and implementation of all Community policies and activities”, that actions shall not only aim at “improving health and prevent diseases”, but shall likewise aim at “obviating sources of danger to human health”. Among the indicators proposed by ECHI, the issue of health and safety at work is also addressed by defining indicators for accidents at work and occupational diseases. However, ECHI is still in the process of development and cannot yet be used for collecting data concerning the status of public health. The European Health Report gives only very limited information about employment as one socio-economic health determinant.

Two further documents which should be mentioned here are the European Union Labour Force Survey (LFS)[32] and the European Community Household Panel (ECHP)[33]. These can best be described as providing the statistical framework for most of the indicator schemes within this context. They are prepared by Eurostat, the Statistical Office of the European Communities. The LFS is a modern procedure for the statistical inquiry of the labour market as the name implies. The scope of the ECHP is even wider and addresses statistics on income including social transfers, labour, poverty and social exclusion, housing, health and medical care, family and household types, as well as various other social indicators concerning living conditions of private households and persons (see chapter 7).

There are other documents that do not originate from the European Commission. Both the “Work and health country profiles”[22] and the document on “Good practice in HESME”[21] were published on behalf of WHO Regional Office Europe. The Third Ministerial Conference on Environment and Health (1999) had established a need to strengthen the information systems on safety and health at work. The country profiles were thought to be “valuable source of information for different stakeholders inside and outside the country”. The indicators proposed by the HESME-document are supposed to complement the

information at the enterprise level. In 2002, a report was published by the Finnish Institute of Occupational Health that contains descriptions and data on the state of occupational health and safety in 22 European countries[24]. Further current activities of the Regional Office of WHO relevant for work-related health monitoring include research on the occupational burden of disease as well as work on the European environment and health information system and the Health for All (HFA) database.

The OECD aims with the database OECD Health Data[34] (see chapter 7) to further the knowledge of health services inputs and throughputs, highlighting differences in common medical practices, helping quantify key non-medical health-related factors and describing key features of each system's financing and delivery mechanisms. They refer to research data, data from questionnaires and from the OECD Secretariat, but also on data exchange with other international collections such as the WHO mortality database.

Also the workings of ILO on Decent Work should be mentioned here[35].

It is apparent that most data systems of international organisations are interconnected to a certain extent. An attempt is made in the following illustration (figure 2) to place all the documents in their relevant policy context (with an emphasis on the European policies).

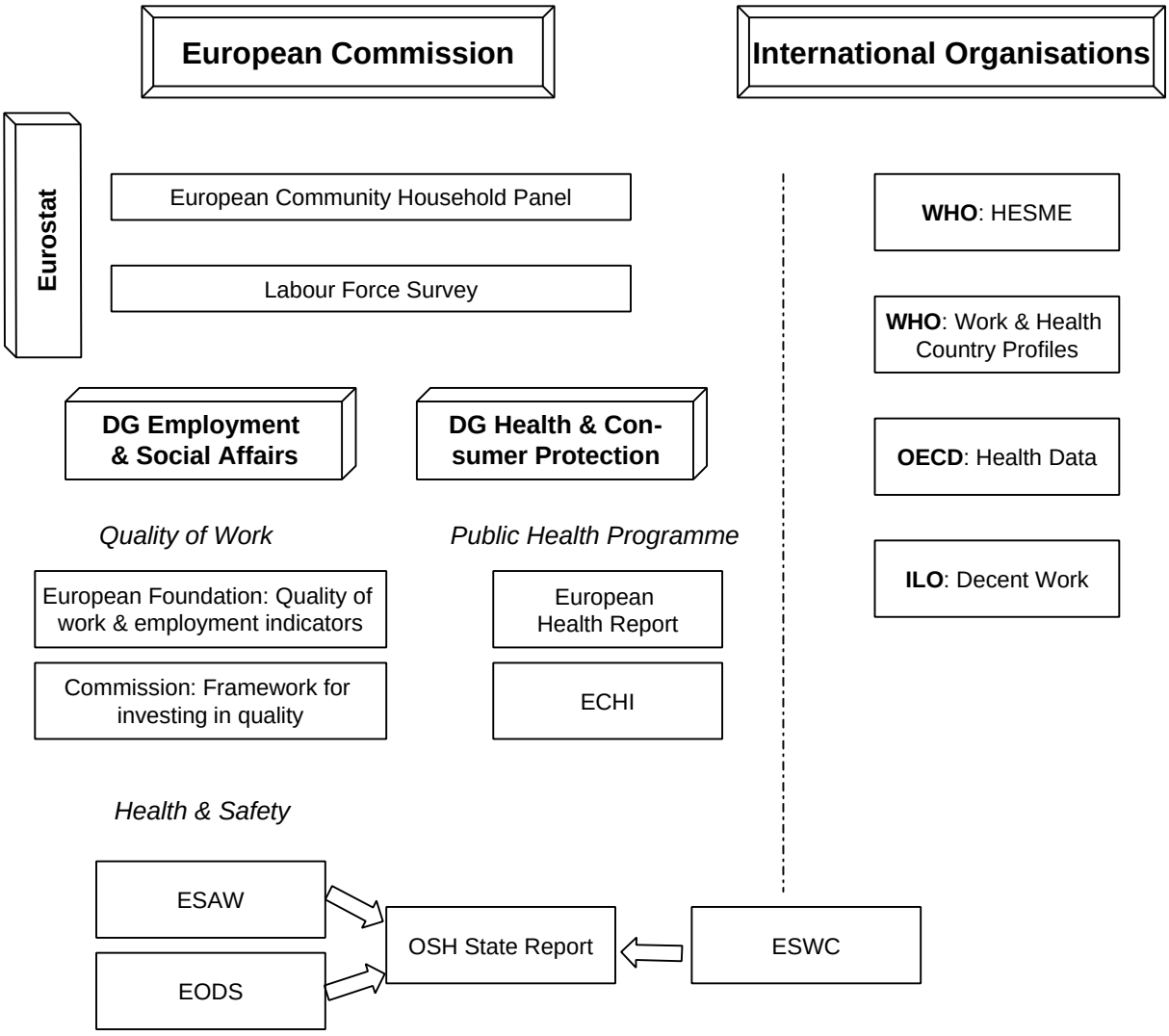

Figure 2: Work-related sets of indicators and their policy context.

3 Comprehensive list of indicators

The synopsis in chapter 2 served to provide an overview on all available international and European work-related sets of indicators currently in use.
The next step was to make the actual indicators used in these sets, accessible for future work-related health monitoring activities. To achieve this, a comprehensive list of indicators was compiled (also called “masterlist”). This included

- the indicators of ECHI[14] (all indicators which are related to work)
- all indicators from the European Survey on Working Conditions (version 2000)[31]
- the core indicators of the Work & Health Country Profiles[22]
- the Quality of Work-concept[6] (all indicators related to health – reference here was to the indicators proposed by the European Commission as these have been put into practice)
- the indicators of the HESME-concept[21] (excluding indicators that solely refer to the environment and not to health)
- indicators derived from the Quality Criteria[23] for workplace health promotion published by the European Network for Workplace Health Promotion.

This compilation was supplemented by indicators that had been proposed at the satellite workshops. Professional from all fields represented in the project (occupational health and safety, public health, social insurance and labour inspectorates), identified gaps relevant to their field and defined additional indicators accordingly.
This list is now a unique pool of practically all indicators that are used for work-related health monitoring and shows which areas are regarded as relevant when compiling a work-related health report.
This comprehensive list was used as a basis for proceeding with the project and especially in the process of selecting specific indicators for user-windows (see next chapter) and identifying the short list of indicators.

Structure of the list

To systematise the indicators, the ECHI structure was applied as this facilitates the integration of WORKHEALTH indicators into the ECHI monitoring system. The indicators are therefore classified in categories, 1. Demographic and socio-economic situation, 2. Health status, 3. Health determinants and 4. Health systems.

A shortened excerpt from the masterlist is presented below.

Table 1: Shortened excerpt from the masterlist in annex 6

Generic indicator	operational indicator	Origin
2.3 Morbidity, disease-specific		
disease occurrence	incidence/prevalence of morbidity in the working population (e.g. ischemic heart diseases I20-I25, musculoskeletal disorders M00-M99, mental and behavioural disorders F00-F99), also sports and leisure accidents	HESME
	sickness absence at work due to total work-related diseases expressed in lost working years per 100.000 employees	HESME
non-fatal accidents at work	number and rates of accidents at work leading to an absence of more than 3 calendar days (for operational definitions see ESAW)	ECHI, Country Profiles, HESME
	number of days absence in main paid job due to accident at work over the past 12 months	ESWC
	rate of accidents with stationary treatments	LI
	evaluation of the incidence rate, defined as the number of accidents at work per 100.000 persons in employment	Quality Work
	sickness absence at work due to occupational accidents expressed in lost working years per 100.000 employees	HESME
workplace accidental injuries	number and rates of all non-fatal accidents, including those without absence from work	OSH, PH, LI
occupational diseases	(for operational definitions see EODS)	ECHI, Country Profiles
	number of compensated occupational diseases on official list (compared with best countries)	HESME
2.4 Perceived and functional health		
work-related health complaints	% of employees whose health is affected by work (hearing problems; vision problems; skin problems; backache; headaches; stomach ache; muscular pains in shoulders and neck; muscular pains in upper limbs; muscular pains in lower limbs; respiratory difficulties; heart disease; injury; stress; overall fatigue; sleeping problems; allergies; anxiety; irritability; trauma; work improves health; no impact of work on health)	ESWC
work-related health risks	% of employees who think that health is at risk because of work	ESWC

sickness absence (possibly differentiated by employed/ self-employed and long-term/short-term)	percentage of persons not working the whole reference week (though having a job) due to sickness, injury or temporary disability (as defined in LFS; absence due to ill health, injuries and work injuries combined)	SI
	average number of sickness absence spells/person/year	SI
	average number of sickness absence days/person/year	SI
	average number of sickness absence days/spell/year (duration)	SI
	number of days absence during previous 12 months due to health problems caused by work	ESWC
early retirement / pre-retirement (due to health status)		PH, LI
	rate of early retirement as a result of occupational accidents or disease per 100.000 employees or per 1000 occupational accidents	HESME
	rate of early retirement due to ischemic heart disease (ICD 10: I20.I25) per 100.000 population	HESME
disability	new invalidity/disability cases per 100.000 population	OSH, HESME

The first column contains the generic indicators, the second column the relevant operational indicators. The term “indicator” applied here is based on the definition proposed in the ECHI report, where an “indicator” is “a concise definition of a concept, meant to provide maximal information on a specific area of interest”. According to ECHI[14], indicators can be defined generically, e.g. “smoking behaviour”, or in an operational manner, e.g. “% of women in age group x smoking between y and z cigarettes per day”. Operational indicators are always defined in terms of a number, calculated from primary data in a more or less complex manner (see ECHI Final report, p. 23). However, there are some inconsistencies still inherent in the list which were not entirely resolved in the course of the project. In particular, this can be seen in the column “operational indicator”: It was not possible to operationalise each single indicator during the course of the project in the way outlined above, due to the complexity of the concepts that were to be measured, e.g. “conflicts” (at work) or “meaningful work”. For some of these indicators therefore a separate step needs to be taken to find an appropriate operational definition based if possible on relevant available data. In some instances, reference is made in the list to other European Commission projects, which deal specifically with establishing indicators on specific aspects, such as physical activity, mental health

etc. All in all, the list should be seen as a flexible compilation that can be adapted to new developments in the course of future usage.
The last column titled “origin” indicates, from which set of indicators the indicator stems. The following abbreviations are used:

ECHI = ECHI 2-list
ESWC = European Survey on Working Conditions (2000)
Quality Work = set of indicators used to monitor “Quality of Work” in Europe
HESME = indicators proposed for Good Practice in Health, Environment and Safety Management (WHO)
Country Prof. = Work and Health Country Profiles (WHO)

The indicators provided in the reviewed sets of indicators were combined with those that had been suggested by the project partners at the satellite workshops and during a subsequent plenary meeting. These are the abbreviations for the workshops where the relevant indicators were proposed:

OSH = satellite workshop “Occupational Health and Safety”
PH = satellite workshop “Public Health”
LI = satellite workshop “Labour Inspectorate”
SI = satellite workshop “Social Insurance”
Berlin = plenary meeting in Berlin (February 2004)

Either one or more satellite workshops suggested a generic definition for some indicators. The generic definition sometimes matched several operational definitions of the set of indicators reviewed. For example, the generic indicator “early retirement / pre-retirement (due to health status)” matches the operational indicators of the HESME-concept “rate of early retirement as a result of occupational accidents or disease per 100.000 employees or per 1000 occupational accidents” and “rate of early retirement due to ischemic heart disease (ICD 10: I20.I25) per 100.000 population”, but also other operational definitions are conceivable.
The complete list is provided as annex 6.

Stratification requirements

The data should be stratified by branch and occupation to relate them to the world of work while capturing important aspects of the working situation. Stratification by occupation and branch is therefore suggested as the standard analysis for the data. The systems most commonly used are described shortly below.

ISCO – International Standard Classification of Occupations

The aim of the classification system ISCO is to facilitate international communication on the subject of occupations and occupational groups. In this system, an occupation is defined as a set of jobs whose main tasks and duties are very similar.
There are different versions in use: ISCO-88 is the version published by the International Labour Organization in 1988; it was first issued in 1958 and revised in 1968 (ISCO-68). The version ISCO-88(COM) was published by the European Commission (Eurostat) and is the European Union variant of the ISCO-88. It should not be regarded as a different classification than ISCO-88, but is the result of a co-ordinated effort to implement ISCO-88 for census and surveying purposes.
ISCO-88(COM) is hierarchically structured with 4 levels and 10 major groups at level 1 (legislators, senior officials and managers, professionals, technicians and associate professionals, clerks, service workers and shop and market sales workers, skilled agricultural and fishery workers, craft and related trades workers, plant and machine operators and assemblers, elementary occupations, armed forces), 28 sub-major groups at level 2, 116 minor groups at level 3 and 390 unit groups at level 4. Usually, level 2 is considered as an appropriate level of analysis. The following figure illustrates the break down for the main group “Elementary occupations” (source: http://europa.eu.int/comm/eurostat/ramon).

Table 2: Excerpt from hierarchical classification system ISCO-88(COM)

Levels	Occupations
Level 1: 10 major groups	9 Elementary occupations
Level 2: 28 sub-major groups	91 Sales and services elementary occupations
	913 Domestic & related helpers, cleaners & launderers
Level 3: 116 minor groups	9131 Domestic helpers and cleaners
Level 4: 390 unit groups	9132 Helpers and cleaners in offices, hotels and other establishments
	9133 Hand-launderers and pressers
	914 Building caretakers, window and related cleaners
	9141 Building caretakers
	9142 Vehicle, window and related cleaners
	92 Agricultural, fishery and related labourers
	93 Labourers in mining, construction, manufacturing and transport

NACE – Statistical Classification of Economic Activities in the European Community

The NACE classification system originated from the Commission of the European Communities (Eurostat). The latest version of this classification system – NACE Rev. 1.1 – came into practice on 1.1.2003. It was preceded with NACE 70 and later NACE Rev. 1 which were implemented in 1990. NACE Rev. 1.1 is the classification of economic activities and corresponds to ISIC Rev. 3 (originated from the United Nations Statistics Division) at European level. Though more disaggregated than ISIC Rev.3, it is totally in line with it and can thus be regarded as the European counterpart. The main statistical application of NACE is business registers, national and regional accounts, structural business statistics, industrial short-term indicators, the Labour Force Survey and other labour statistics. As ISIC, the NACE classification has a hierarchical structure on four levels: 17 sections identified by alphabetical letters on level 1 (intermediate level: 31 subsections identified by two-character alphabetical codes), 62 divisions identified by two-digit numerical codes on level 2, 224 groups on level 3 and 514 classes on level 4.
The figure below lists all sections on level 1.

Table 3: Sections of the classification system NACE Rev. 1.1

Level 1 – Sections	
A	Agriculture, hunting and forestry
B	Fishing
C	Mining and quarrying
D	Manufacturing
E	Electricity, gas and water supply
F	Construction
G	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
H	Hotels and restaurants
I	Transport, storage and communication
J	Financial intermediation
K	Real estate, renting and business activities
L	Public administration and defence; compulsory social security
M	Education
N	Health and social work
O	Other community, social and personal service activities
P	Activities of households
Q	Extra-territorial organisations and bodies

Since the national economic structures vary considerably within the European Community, there are branches of industry in NACE Rev. 1.1 which are not important or are do not occur in all Member States (e.g. mining and quarrying, manufacture of spacecraft etc.). The NACE Rev. 1.1 Regulation allows the Member States to use a national version derived from NACE Rev. 1.1 for national purposes. Such national versions must however fit into the structural and hierarchical framework laid down by NACE Rev. 1.1 (source: http://europa.eu.int/comm/eurostat/ramon).

Further stratification

Further standard stratification is suggested, particularly by age and gender. In many cases it might also be useful to stratify by regions. For regional analysis, the Nomenclature of Territorial Units for Statistics (NUTS) was established by Eurostat in order to provide a single uniform breakdown of territorial units and is now the common classification system for regions. It is a three-level hierarchical classification and subdivides each Member State into a whole number of NUTS 1 regions, each of which is in turn subdivided into a whole number of NUTS 2 regions and so on (source: http://europa.eu.int/comm/eurostat/ramon). It is further suggested to stratify data by nationality/migration, by employment status (employed, unemployed, inactive) and where appropriate, by disability and early retirement.
For each indicator, there are further specific aspects that may be interesting and relevant for stratification. Obviously stratification according to the main ICD groups is advisable for most indicators in class 2 which is “health status”. For example, additional variables for stratification that are considered relevant to the indicators “sickness absence”, “rehabilitation” and “disability benefits/pensions”, are size of the local unit of establishment (number of employees), type of contract (limited or permanent), working hours in paid job, salary, commuting, family responsibility and educational attainment.
It has to be noted however that the actual possibilities of stratifying depend on the structure of the analysed data and not only on what is relevant or desirable from a conceptual point of view. A further report in future will be necessary to find out whether these recommendations for stratification have proved feasible with these data.

4 Policy cycle in (work-related) health monitoring

Work-related health monitoring from a public health perspective: A policy cycle model

In the WORKHEALTH project, a model was developed to be used as the theoretical basis for a monitoring system. In the opinion of the WORKHEALTH expert group the most important requirement for such a model, is that it implies a strong policy orientation of the health monitoring system: Health monitoring is envisaged as a tool that can and should be used by politicians to set specific targets and control the implementation of these targets. The monitoring system should be relevant to current policy if it is actually going to be used by policy-makers.

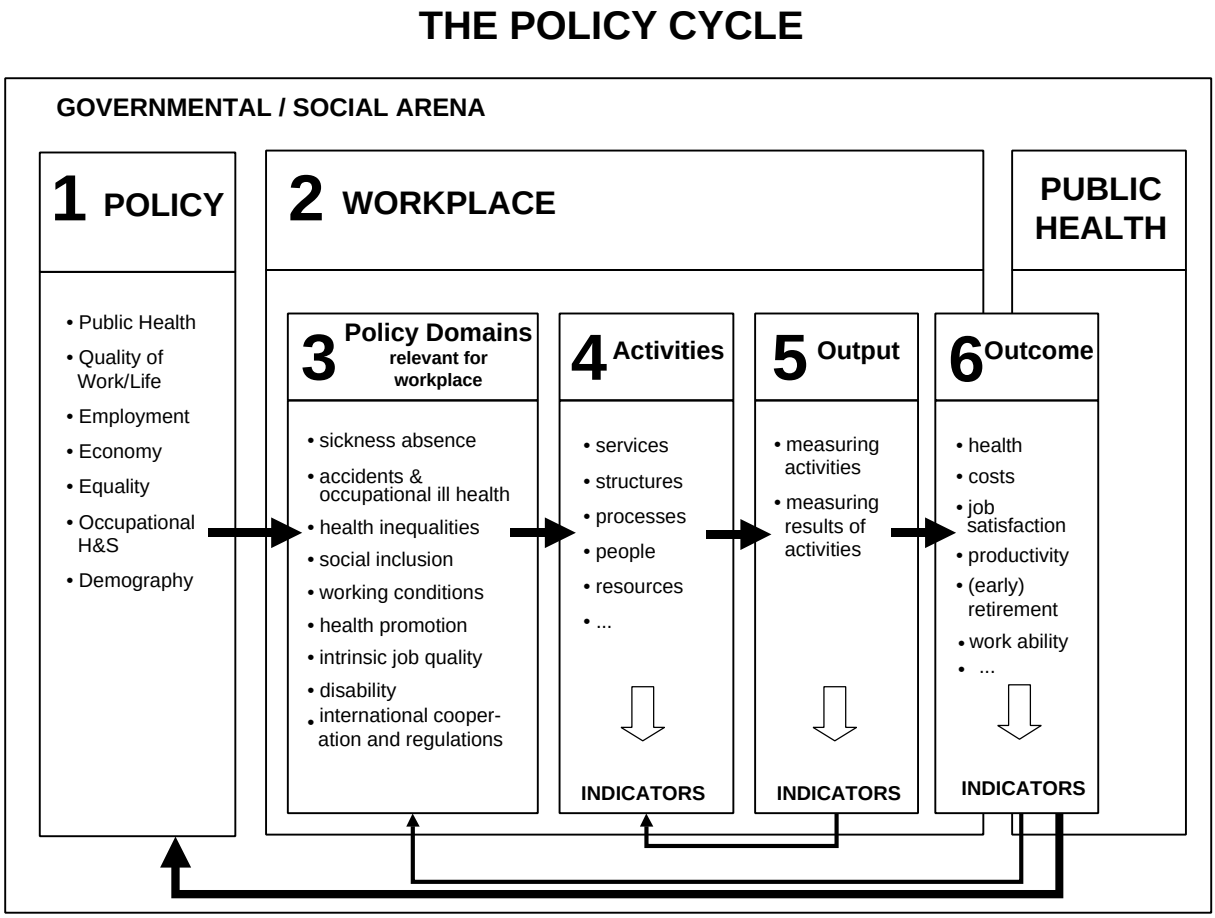

Figure 3: The policy cycle model of work-related health monitoring from a public health perspective.

In the following, the concept of “work-related health monitoring from a public health perspective” is outlined as it will be defined in the WORKHEALTH project. It is best described as a policy cycle model, which means that health monitoring is thought to evaluate the health impact of policies and includes indicators on output and outcome (see Figure 3).
This model, which is similar to the Balanced Scorecard concept[36], shows the field of work and health in the context of the wider political environment: The governmental/social arena sets out policies (①) covering a wide range of fields, including public health, quality of work & life, employment, economy etc. This list is, of course, not exhaustive. The structure for the implementation of policies outside the workplace also includes labour inspectorate and social insurance institutions.
However, only those policies which subsequently have a substantial impact on the setting “workplace” (②) and the outcome “health” are relevant for WORKHEALTH. There are several distinct stages within the workplace setting in which generic policies are transferred into action and culminate in the effect they have on public health. This process can be similarly envisaged in other settings such as school, communities etc. (see figure 4).

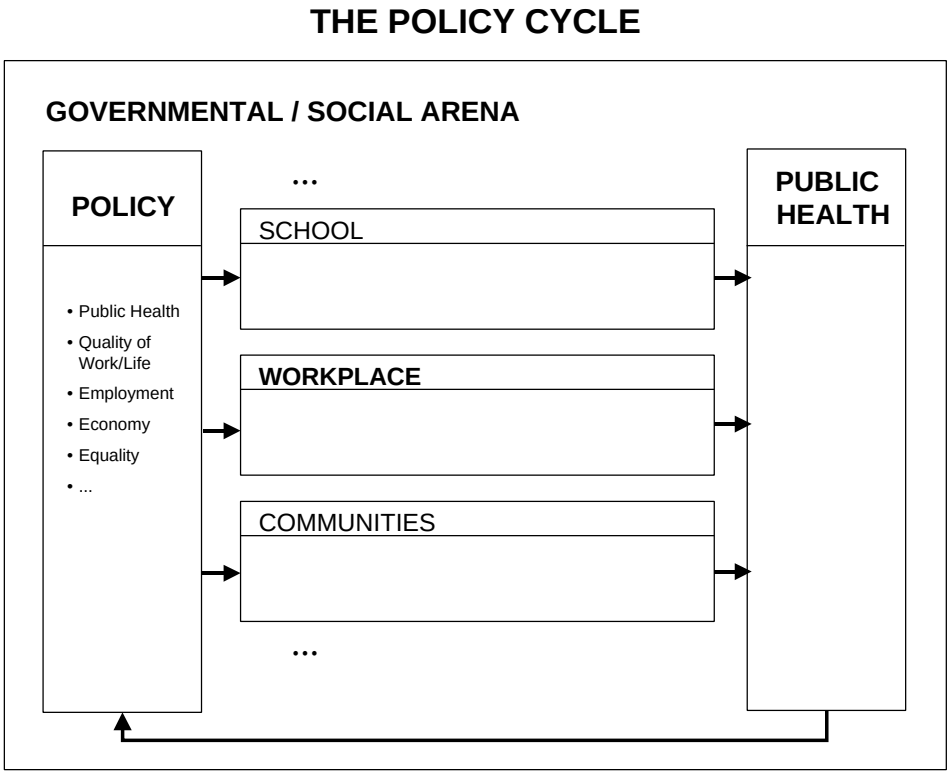

Figure 4: The policy cycle as applied to different settings.

As indicated earlier, some (aspects) of the general policy domains (③) in Figure 3 apply to the work setting, such as sickness absence. A list of policies identified as relevant for the workplace are listed below. These policies create a wide range of activities (④) at workplaces. Depending on the policy domain, these activities relate to changing structures and processes at the worksite or provide new services and resources such as training people etc. Output indicators (⑤) evaluate these activities (i.e. processes). They may for example report the number of people trained. As well as just describing the activities carried out, the output indicators also assess the direct effect of the activities (e.g. the knowledge gained by the employees through training or the noise levels at the workplace) which ultimately have an impact on (public) health as the outcome (⑥) of the policies.

There are feedback loops inherent in this model which establish the policy cycle: The knowledge about effects on the health outcome provides feed-back on workplace policies as well as on the superordinate policies. Additionally, within the workplace, the information provided by output indicators may have an impact on the activities carried out.

The following two examples could illustrate the model further.

As a policy domain, “preventing accidents” creates activities at workplaces which for example educate employees about how to reduce risks or provide improved personal protective equipment. The output indicators, which by definition assess the processes (here: the activities), then record the number of people who participated in the information sessions or the amount of protective equipment acquired in the company. The outcome to be measured is the reduction in the number of accidents which occur in the enterprise.

The policy domain “improving working conditions” could deal with noise reduction aspects. Several activities are possible here, for example replacing machines with low noise models and installing sound insulation. The percentage of employees exposed to noise above 85 dB could serve as an output indicator. A relevant outcome parameter would be the reduction in noise-induced hearing loss.

Policies to be addressed by the indicators

Of all policies in the "social arena", certain aspects have an important impact on the workplace setting. Policies to be addressed by WORKHEALTH are:

- optimising sickness absence management
- prevention of accidents at work & occupational ill health
- combating health inequalities[2]
- promoting social inclusion
- improving working conditions
- advocating health promotion
- increasing effectiveness of disability management
- enhancing intrinsic job quality (job satisfaction)
- enhancing agreement on international co-operation and regulations

To illustrate what is meant by the suggested policies, there is a more detailed description in the following paragraphs of our understanding of the respective terms.

- **Optimising sickness absence management**

Sickness absence causes considerable costs to the social insurance systems and enterprises. Management of sickness absence therefore is a policy field of growing importance. Outcome indicators like sickness absence rates are routinely available in some Member States. Sickness absence has also been proposed as a morbidity indicator in general.

- **Prevention of accidents at work & occupational ill health**

Accidents at work and occupational ill health are relevant from a public health perspective. Apparently, this field has already extensively been worked on by researchers from the field of OSH. Therefore, a number of appropriate indicators already exist such as the number of accidents or occupational diseases which can be used for work-related health monitoring from a public health perspective.

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[2] In public health, often the term "inequity" is used to refer to differences in health which are unnecessary and avoidable and are also considered unfair and unjust. In this project, following the wording of the European Commission in the public health programme[5], the term "health inequalities" is used (see also Glossary).

- **Combating health inequalities**

One major concern of the EU Commission's public health programme[5] is to reduce health inequalities. This general policy goal is meanwhile transferred to work-related activities on national and company level. Reliable data about differences in the employees' health status and health access between countries as well as within a country are a suitable tool. Health inequalities shall also be assessed by breaking down and analysing all relevant health statistics by gender and social status.

- **Promoting social inclusion**

The social policy agenda sets out the objective to "prevent and eradicate poverty and exclusion and promote the integration and participation of all into economic and social life". As stated there, this requires an integrated and comprehensive approach, which draws upon all relevant policies and includes a gender perspective. Obviously, workplace activities, for example for handicapped people, less skilled employees and employees in precarious working situations (teleworker etc.), will also contribute to that goal.

- **Improving working conditions**

Improving working conditions is a traditional Occupational Health and Safety and Public Health goal. A wide range of working conditions are already being monitored from an occupational health and safety perspective (see, e.g., the State of OSH-report[26]). The main emphasis here is on physicochemical conditions. At present, less data seem to be available regarding psychosocial factors and the need for work on this was expressed by the project partners. In the same vein, the OSH State report pointed out that much less information is available for exposure categories such as stress etc. compared to more traditional health and safety topics. However, as the scope of occupational health and safety has recently broadened, social aspects could be increasingly covered by OSH monitoring in the near future. The European Survey on Working Conditions (2000)[31] already gives substantial information about some of these aspects, e.g. about repetitive work, job control, pace of work, and job content. Also work organisation and especially aspects of working time arrangements like shift-work, part-time employment etc. are important to monitor.

The importance of the policy domain "working conditions" is reflected in the policies already set out by some Member States which include explicit targets in this area: For example in the Netherlands, covenant agreements are made between social partners on sector level concerning improvements in the working conditions (referring e.g. to the reduction of employees who regularly lift heavy weights or who are confronted with high work pressure) in order to

reduce sickness absence and the number of people claiming disability benefits (Ministry of Social Affairs and Employment, 2000)[37].

- **Advocating health promotion**

This policy covers instruments for advocating the implementation of health promotion. Examples are seen in the establishment of networks like the "European Network for Workplace Health Promotion", information campaigns, and bonus systems for the implementation of workplace health promotion programmes.

The emphasis here is on regulations or guidelines for implementing health promotion programmes. In contrast, the actual carrying out of such programmes is seen as an output for other policies, such as "Improving working conditions".

The project EUHPID ("European Union health promotion indicators development project")[38] aims at establishing a European Health Promotion Monitoring System, including a set of common health promotion indicators. By establishing indicators to assess health promotion programmes the opportunity to evaluate the policy impact as well as the (cost) effectiveness of these programmes is provided.

- **Enhancing intrinsic job quality**

As defined by the European Commission intrinsic job quality is an important aspect of quality of work. The key policy objective is to ensure that jobs are intrinsically satisfying, compatible with persons' skills and objectives, and provide appropriate levels of income. Job satisfaction is regarded as one possible indicator (others are proportion of workers advancing to higher paid employment over time and low wage earners, working poor and the distribution of income).

Job satisfaction is already approached by the European Survey[31] (the question was changed, however, from "Are you satisfied with your job?" in 1995 to "Are you satisfied with the working conditions in your job?" in 2000).

- **Increasing effectiveness of disability management**

To increase the effectiveness of disability management it appears necessary to strengthen the links between enterprises, social insurance and occupational health and safety as well as enhancing transparency and offering better consultancy to reduce barriers.

Indicators for disability management could refer for example to work places which place less demand on workers who are not yet fully recovered from illness which makes it easier for them to reintegrate. Also the percentage of

those taking early retirement gives an indication about the success of rehabilitation.

- **Agreement on international co-operation and regulations**

This policy field covers the existence of and compliance with appropriate legislation and regulations in the field of health at work. A possible indicator for this field is, e.g., the ratification of ILO OH&S conventions (% of conventions) which is also part of the Work and Health Country Profiles (2001)[22].

A description follows in the next chapter of how these policy domains are integrated into the WORKHEALTH indicator system and how indicators for each policy domain are defined.

5 Domain windows

For representing and monitoring the policy domains in the WORKHEALTH indicator system, the ECHI user-windows approach was adopted and adjusted accordingly. In the ECHI project[14], this concept was proposed to take into consideration the many different positions from which a question may be asked in a monitoring system and to consider the different specific needs which can be served by looking at specific subsets in the overall selection of indicators (see ECHI final report, p. 30). While various possible criteria for selecting user-windows were envisaged by ECHI, the WORKHEALTH group defined the policy domains listed above as their windows, which are therefore called “domain windows”.

Selection process

The indicators for the domain windows were selected as the result of an experts’ assessment. For two windows (“reducing health inequalities” and “improving working conditions”), this was carried out at a plenary meeting in Berlin in February 2004. The indicators for the remaining windows were selected after the workshop: The attendants of the workshop were divided into groups each dealing with two to three policy domains.

Table 4: Allocation of partners to groups and policy domains

OSH/ Labour Inspectorate	Public Health	Social Insurance
- enhancing agreement on international co-operation and regulations (I) - enhancing intrinsic job quality (job satisfaction) (II)	- promoting social inclusion (III) - advocating health promotion (IV)	- optimising sickness absence management (V) - prevention of accidents at work & occupational ill health (VI) - increasing effectiveness of disability management (VII)
- Kari Kurppa - Eleftheria Lehmann - Elsa Bach - Veronique de Broeck - Hansjürgen Gebhardt	- Dimitra Tryantafyllou - Karine Chevreul - Montserrat Garcia Gomez - Karl Kuhn - Julia Kreis	- Sisko Bergendorff - Oskar Meggeneder - Carlo Ottaviani - Sigurdur Thorlacius - Bart de Zwart - Wolfgang Bödeker

Each of the experts assessed which indicators were relevant for monitoring the respective policy domains and selected these indicators from the comprehensive list of indicators. Following the procedure established at the workshop, each indicator for which at least one of the experts gave his/her vote was included in the window.

Final domain windows

The first domain windows compiled at the plenary meeting ("combating health inequalities" and "improving working conditions") include about 50 indicators. The windows compiled afterwards, range between 100 and 160 indicators, the largest being the window for the policy "preventing accidents and occupational ill-health", followed by "optimising sickness absence management".
As an additional analysis, each window was examined on how many of the indicators come from the respective ECHI classes (1-Demographic and socio-economic situation, 2-Health status, 3-Health determinants, 4-Health systems). This shows that for six of nine windows, the majority of indicators come from the class "Health and safety systems", followed by indicators from the class "Health determinants". For the three domain windows ("combating health inequalities", "improving working conditions", "enhancing intrinsic job quality"), most indicators belong to the ECHI class "Health determinants".

Table 5: Number of indicators per domain window

	Policies									
ECHI Classes	combating health inequalities	improving working conditions	enhancing co-operation & regulations (I)	enhancing intrinsic job quality (II)	promoting social inclusion (III)	advocating health promotion (IV)	optimising sickness absence management (V)	prevention of accidents & occup. ill health (VI)	increasing effectiveness of disability management (VII)	
1 -Demo-graph. & socio-ec. Situation	7	4	18	10	18	9	15	17	19	117
2 - Health status	13	11	18	15	19	18	29	31	27	181
3 - Health determinants	18	20	31	59	25	33	48	45	39	318
4 - Health and safety systems	14	14	43	36	32	64	49	63	52	367
5 - Emerging issues	0	0	4	4	2	0	5	5	3	23
?	52	49	114	124	96	124	146	161	140	

Comparing the windows resulting from the selection process, it became apparent that a number of indicators appear in nearly all domain windows. The following 27 indicators were chosen in at least 8 of 9 windows.

Table 6: Indicators selected for at least 8 of 9 domain windows

generic indicator	**operational indicator**
working population	
uemployment	
income level	
fatal accidents at work	number and rates of accidents at work leading to the death of the victim within a year of the accident (operational definitions have been proposed by ESAW)
fatal occupational diseases	(operational definitions have been proposed by EODS)
non-fatal accidents at work	number and rates of accidents at work leading to an absence of more than 3 calendar days (operational definitions have been proposed by ESAW)
work-related health complaints	% of employees whose health is affected by work
sickness absence	
early retirement / pre-retirement (due to health status)	
dsability	new invalidity/disability cases per 100.000 population
work ability	WAI-index
working time	
worksites (flexible, fixed, mobile, telework)	
information and communication	
OSH services	
employment	
life-expectancy	(disability free) life expectancy of working population at age 20, 45 and 65 years
disease occurence	incidence/prevalence of morbidity in the working population (e.g. ischaemic heart diseases I20-I25, musculoskeletal disorders M00-M99, mental and behavioural disorders F00-F99), also sports and leisure accidents
workplace accidental injuries	number and rates of all non-fatal accidents, including those without absence from work
occupational diseases	(operational definitions have been proposed by EODS)
exposure compared with exposure limits	% of employees exposed to harmful factors (physical, chemical, biological, affecting mental health) at concentration or intensity higher than national occupational exposure limit for that factor
existence of workplace health promotion	
regulations on occupational safety & health	% of health risk areas sufficiently covered by OSH regulations
compliance with OSH regulations	% of enterprises complying with a given legal provision
OSH management in enterprises	
accident insurance	
ependitures on OSH measures	% of total health expenditure, % of GNP/GDP

For each domain window, those indicators that were selected by the experts are compiled (in addition to those listed in Table 3). These “domain windows” are provided as tables in annex 7. In these tables, the last column indicates the number of nominations each indicator received by the project partners.

Envisaged usage of the compiled domain windows

These comprehensive domain windows can be used by anyone compiling work-related health reports in the specific domains: They can be used as a guideline on which indicators are most appropriate for monitoring the policy cycle of each of the policy domains.

The Swedish experience on sickness absence can be followed as an example of how such a policy cycle can work and how it can be monitored by using indicators.
In Sweden the government was seriously concerned by the fact that sickness absence had been rising for several years in the late 1990’s, with a total increase of more than 50% during the same time in the number of people qualifying for sickness benefit. Reacting to the rising sick-leave figures a strategy was introduced in 2001 in two main areas[39]: The first was the introduction of measures to prevent ill health at work and the others were to facilitate a rapid return to work for people taking sick leave. A further goal was set to cut sickness absence by half between 2002 and 2008. This strategy is based on the recognition that measures in several different areas are necessary to get to grips with the complex set of problems behind ill health in working life. Some of the reasons for the sharp rise can be attributed to the ageing labour force and limited incentive for employers and other actors to take action in reducing sickness absence, a more demanding working life, a worse psychosocial environment, deficiencies in the work oriented rehabilitation programmes, long waiting times for health and medical care and changes in attitudes towards sick leave. On this basis, it was concluded that a wide range of measures were needed to achieve the goal of halving sickness absence by 2008.
Some of the measures planned and already partly in place to combat ill health include, for example, developing templates for training in systematic work environment management, strengthening the role of occupational health services and emphasising and disseminating good examples of work that promotes health. As an economic incentive it is, inter alia, proposed that employers should co-finance their employees’ sickness allowance costs, which need not to be paid if the employee participates in rehabilitation or returns to work on a

part time basis. Other activities for vocational rehabilitation are the development of a method for early in-depth assessment of working capacity and the need for rehabilitation or the implementation of a pilot scheme with a co-ordinated organisation between the social insurance office and the employment service for sick listed unemployed people[39]. In May 2004, the Minister of employment already reported that the trend of rising sick-leave figures is apparently in reverse and figures are now falling[40]: In January of this year, 298,600 people were receiving sickness benefit, which is a fall of 25,300 people since January 2003. An important achievement is that the number of people on long-term sick leave (i.e. more than one year) has fallen. Some reasons for this positive trend are the preventive measures and rehabilitation programmes implemented at an early stage. As the Minister pointed out, the goal of halving the number of days of sick leave taken, by 2008 still remains a challenge. Activities foreseen to reach the goal include further improvements in the special efforts to speed up the rehabilitation process.
Following the Swedish example, the figure below visualises how ideally the causal chain of a policy cycle in the field of sickness absence management could work and be monitored with the relevant activities and outputs/outcomes.

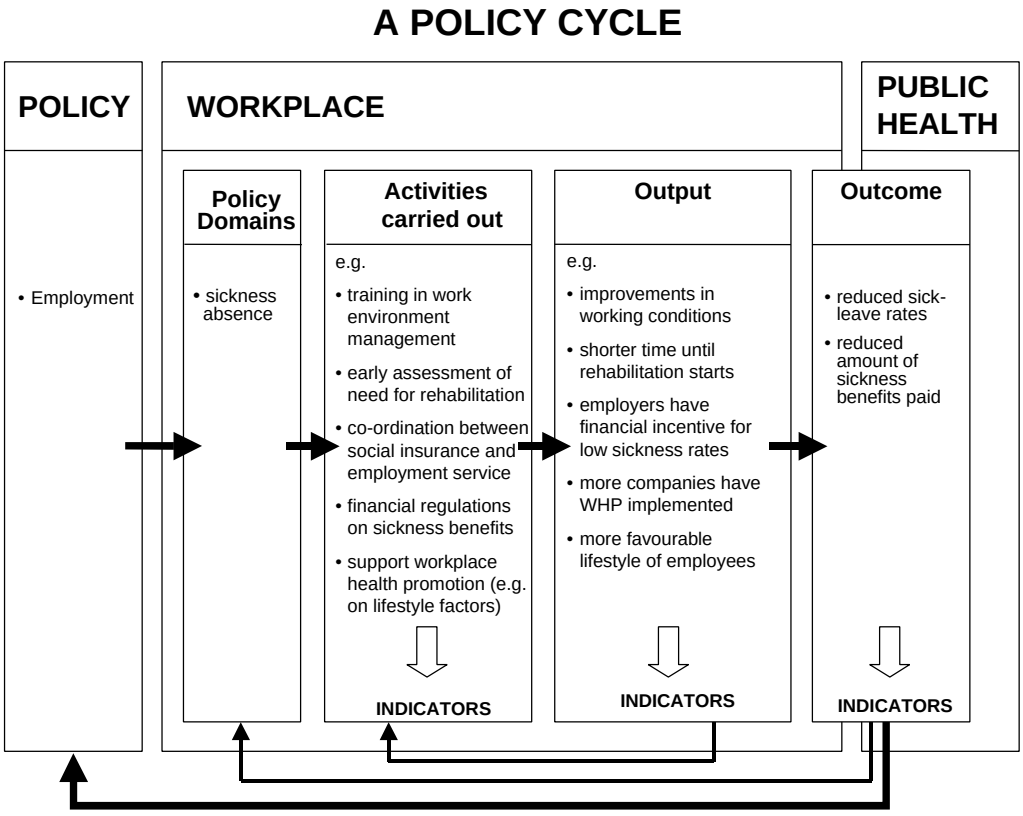

Figure 5: Example for a policy cycle for the policy domain “sickness absence”.

Indicators may reflect activities carried out as well as the resulting outputs and outcomes. Suitable indicators for monitoring the policy cycle with regard to sickness absence can be found in the domain window “optimising sickness absence management”.

6 Short list of indicators by WORKHEALTH

Outline of short list of indicators proposed by WORKHEALTH

Responding to the political request for a practical, quick and easy to handle basic health monitoring system on European level, a short list of indicators for work-related health monitoring in Europe from a public health perspective was agreed upon in the WORKHEALTH project.
These indicators are a selection from the comprehensive list (in annex 6) and have been selected to produce a concise picture on how work contributes to public health. They were selected according to the professional opinion of all the project partners reflecting the public health, occupational health and safety, work inspectorate, and social insurance perspectives. However, as there are no scientific regulations for deriving short lists from comprehensive compilations, the indicators chosen were health and health system outcome indicators – reflecting the effects of working conditions. To some extent the indicators therefore need to be stratified by economic sectors and occupations to show how diseases are related to work. Work-related health monitoring according to the proposed short list can give a rough indication of national and European problems regarding health at work. A more detailed analysis can then take place from which action plans can be derived.

Table 7: WORKHEALTH short list of indicators

Indicators	data availability*
Accidents at work	X
Occupational diseases	X
Work-related health risks	X
Sickness absence (by diagnosis)	X
Disability	X
Disease occurrence**	--
Job quality	(X)
Health promotion activities at the workplace	--
Reintegration/rehabilitation	(X)
Compliance with OSH regulations	--
Expenditures on occupational health & safety measures	--

* X = data available, (X) = only fragmented data available, -- = data not available. For detailed information on data availability for these indicators see chapter 8.

** The indicator gives morbidity by WHO (ICD) main groups. This is partly already included in the ECHI short list. From the WORKHEALTH point of view it is essential that morbidity is stratified by occupations and economic sectors. To our knowledge, such information are not available at the time being.

The short list covers the different areas of work-related health monitoring and provides indicators on the health status, health determinants and health systems. In terms of the ECHI systematics, 6 indicators belong to class 2 (health status), one indicator to class 3 (health determinants) and the remaining 4 to class 4 (health systems). Indicators on demographic and socio-economic factors are not listed as they are already included in the ECHI list (see below for "contextual indicators").

Table 8: WORKHEALTH short list of indicators by ECHI classes

ECHI	Indicators
Class 2	sickness absence (by diagnosis)
	accidents at work
	occupational diseases
	disability
	work-related health risks
	disease occurrence
Class 3	job quality
Class 4	health promotion activities at the workplace
	reintegration/rehabilitation
	compliance with OSH regulations
	expenditures on occupational health & safety measures

As mentioned above, these indicators should be seen against the background of contextual indicators listed in the table below. These indicators provide relevant information on the structure of the labour force and are therefore essential for interpreting the information in the above listed indicators. They should all be stratified by gender and age classes. Some of them should also be stratified by sectors and occupations such as "working population" or "working time".

Table 9: Context indicators relevant for the WORKHEALTH project

population
working population
% employed
% unemployed
% permanent contracts
% disability pension
disability pension expenditures
% working full-time/part-time
working time

Data availability was a major concern when selecting these indicators and an assessment of this is given in table 7. Nonetheless, the list is not restricted to indicators for which comparable data would be immediately available at European level as this would have meant omitting aspects essential from the perspective of the project. Rather, it is hoped that this will stimulate the creation of appropriate data in the remaining areas.

When comparing the available data, a serious note of caution should be made. Routinely gathered data such as occupational diseases, accidents at work or sickness absence, depend largely on the organisation of the relevant area in each country and on other local parameters. Taking the issue of occupational diseases for example, the different methods used for recognising occupational diseases in the Member States make it difficult to compare figures between countries. To a lesser extent, this also applies to data on workplace accidents. These problems of comparability are already being addressed in the EODS[30] and ESAW[29] projects which work on standardised European statistics for these issues. Another very complex topic is sickness absence. Even when data are based on surveys conducted in all Member States (e.g. the European Labour Force Survey[32]), contextual factors such as the (un-) employment rate and job security or aspects of the social insurance system such as waiting periods, amount of sickness benefits etc. are likely to have an influence on the sickness rates – over and above the actual health status of the working population.

Data based on surveys such as the European Survey on Working Conditions[31] are generally less likely to be biased when making comparisons between countries, although cultural differences may also influence the response patterns here as well. These problems should be borne in mind when making comparisons between countries on the indicators listed in Table 4. It might be more advisable instead to monitor changes in trends over a period of time in each country. This has the advantage especially regarding administrative data, that such time trends are less dependent on differences in routine practices between countries, which mainly influence the absolute numbers. Apart from the total levels, the results of successful preventive activities in term of changes to health-relevant outcomes (such as sickness absence or accidents) can then be compared.

More detailed information on data availability is provided in the next chapters.

Detailed description of indicators proposed

Accidents at work

In the Eurostat ESAW project, an accident at work is defined as “a discrete occurrence in the course of work that leads to physical or mental harm“29. This definition includes accidents occurring in the course of work but outside the business premises, also those caused by a third party, and cases of acute poisoning. It excludes accidents on the way to or from work, occurrences of a medical origin, and occupational diseases. A “serious accident” is one that causes more than three days’ absence (excluding the day the accident occurred), a “fatal accident” leading to the death of the victim within a year (after the day) of the accident.
Serious accidents at work (total/male/female) and fatal accidents, belong to the Structural Indicators used to underpin the Commission’s analysis in the Spring Report to the European Council. The development of work accidents was also used for monitoring of the Quality of Work-Strategy [17].
Data can be calculated as an annual index (with base year 1998=100) of the incidence rate. The incidence rate of serious accidents at work is the number of accidents at work resulting in more than 3 days’ absence per 100 000 persons in employment. The incidence rate of fatal accidents at work is the number of fatal accidents at work per 100 000 persons in employment.
The incidence rate is calculated for the total of the so-called 9 common branches. Because the frequency of work accidents is higher in some branches (high-risk sectors), an adjustment is performed to acquire more standardised incidence rates. The data collection started in 1994 (pilot collection in 1993). The data collection in the Candidate Countries started in 2002, retrospectively from at least 1998 as a year of reference. For some of the new Member States and Candidate Countries gender specific data have been available only since 2001.

Occupational diseases

Occupational diseases, in a strict sense, are those diseases for which the occupational origin has been approved by the national compensation authorities[10]. Obviously, this is dependent on the national legislation and compensation practice. Compensation is usually restricted to those cases for which the occupational factor is the only or the most important cause.

Eurostat has collected data on recognised occupational diseases in Europe since 2001[30] although problems of comparability between countries are inherent to this concept, as legislation and compensation practice differs between the Member States.
Data are given as an incidence rate of occupational diseases per 100.000 workers covered by the recognition systems. One of the major problems in interpreting these data[10] are the unsatisfactory comparability and underreporting aspects especially for occupational diseases that take decades to develop, such as some respiratory diseases.

Work-related health risks

The indicator “work-related health risks” reflects the subjective assessment of risks at the workplace. Data are provided by the European Survey on Working Conditions[31], which in 1990, 1995 and 2000 included the question “Do you think your health or safety is at risk because of your work, or not?”. In the last survey, 27% of the workers considered that their health and safety to be at risk, with the highest prevalence in the construction sector, followed by agricultural and fishing workers and those in the transport industry.

Sickness absence

Sickness absence is an major indicator which provides information on the health status of the employees. Sickness absence figures are often used for example to reveal the need for preventive activities if absence rates are high. At a national level, absence rates are usually examined according to economic sectors to determine what action is necessary. It is also common to consult absence rates at company level in order to determine which departments should be targeted by health promotion activities. The effectiveness of health promotion activities is then often evaluated by the changes in sickness absence rates.
On European level, data should be used from the European Labour Force Survey[32] for monitoring of sickness as social insurance data are hardly comparable across the Member States. It assesses, with regard to a reference week, if employees were absent from a job or business due to “own illness, injury or temporary disability”. The illness is not further specified, i.e. no diagnosis etc. is given.
It has to be noted, however, that sickness absence rates not only reflect the actual health status of employees. To some degree, they also depend on national sickness absence and disability regulations, e.g. the length of sickness

absence before disability allowance is paid or could be influenced by social security system incentives (e.g. amount of the sickness benefits). They reflect macroeconomic changes as well, as sickness absence rates for example usually drop with high unemployment rates. This can be attributed to the fact that older and less healthy workers are no longer in employment and that people choose to go to work feeling ill rather than risk losing their job.

Disability

Disability is one of the most complex entities in all health related outcomes[41]. According to the WHO definition, this term refers to impairments, activity limitations and participation restrictions. At the same time the term describes a status defined in social legislation which is often associated with a premature termination of professional life and subsequent costs to society. Due to the complexity of definitions and differences in practices in the Member States, the comparability of this very important issue is limited at the moment and further standardisation is required. The data provided by the Labour Force Survey[42] and the European Community Household Panel[33] may serve as a preliminary assessment of this issue. For example, figures on the relative probability of being in work for those with moderate or no disability compared to those with severe disability may reflect the degree of social integration of those with a disability in the labour force in the different Member States[43]. The Labour Force Survey ad hoc module 2002[42] also allow an analysis of the percentage of disabled persons by occupational class or economic sector.

Disease occurrence

This indicator gives morbidity by WHO (ICD-10) main groups stratified by occupations and economic sectors. By stratifying morbidity, the most prevalent diseases suffered by people working in specific occupations and economic sectors become visible, and show the need for preventive action. The stratification also shows how the diseases are related to work: Where a high frequency of disease is prevalent in specific jobs or sectors, it could be seen as an indication of the association between the working conditions in these jobs and morbidity.
Morbidity as such – without the suggested stratification – is already included in the ECHI indicator system[14]. To our knowledge, however, no data on morbidity are available at the time being which provide the information necessary for the stratification by occupations and sectors.

Job quality

"Having a good job" is ranked as the main factor for a good quality of life throughout Europe[44]. And although the employed enjoy a better quality of social life than the unemployed, the quality of job also plays a role: People who work overtime, in high intensity jobs, or in jobs that are physically or psychologically demanding, tend to rate the quality of their family life and social relations negatively. These factors and the degree of autonomy people experience at work also affect general life satisfaction[45].
However, measuring job quality is a complex issue. The European Commission's concept of quality of work defines intrinsic job quality as one of ten dimensions, defined according to characteristics of a specific job which make it satisfying to the worker and compatible with career prospects in terms of wages and status, and measured by 1) transitions between non-employment and employment and within employment by pay level, 2) transitions between non-employment and employment and within employment by type of contract and 3) satisfaction with type of work in present job[19].
Other methods for addressing the issue of job quality include assessment of working conditions, e.g. such as creating several indices for different aspects of working conditions as conducted by the European Foundation, where indices were established taking into consideration physical working conditions, psychological working conditions, work autonomy, work intensity and working time exceeding 48 hours[45].

Health promotion activities at the workplace

In the European Union workplace health promotion which aims to maintain and improve the health of employees is considered as an important public health issue. Therefore, the level of implementation of health promotion activities at the workplace should be monitored at a European level. Distinction should be made between comprehensive programmes, which according to recent literature reviews[46] are considered as most effective, and single programmes e.g. on smoking, physical activity, nutrition, stress management etc. By monitoring the existence of such programmes, it is possible to evaluate their impact and to identify where the implementation is still unsatisfactory and where relevant programmes are still needed.

Rehabilitation/reintegration

Activities for rehabilitation and reintegration at work after an accident or illness are important not only to the individual but also because of the economic burden placed on many countries in paying benefits to people off sick. It is important to obtain an overview of rehabilitation measures in the sense of best practice models (medical and also vocational rehabilitation) and models on reintegration measures (e.g. adapting workplaces). Legislation in the different countries should also be evaluated on its success for reintegration. In the Netherlands for example employers are responsible for reintegrating a sick employee in their own or another company.

Compliance with OSH regulations

Occupational health and safety regulations are an important measure for protecting the workforce against occupational health risks. However, it is crucial that they are complied with. This can apply to enterprises which violate the legal provisions or on another level can apply to the way in which Member States implement European regulations on occupational safety and health issues. The extent to which non-binding conventions such as those by ILO are ratified in different countries is another aspect.

Expenditures on occupational health & safety measures

An indicator showing expenditure on occupational health & safety measures (as % of total health expenditure or % of GNP/GDP), can include a variety of different measures and their costs: It could include expenditure by the national work inspectorate, expenditure for the accident insurance in the Member States or expenses carried by enterprises to implement OSH measures, or even expenses covered by employees themselves on their personal protective equipment. Comparability of such figures is obviously very limited due to the divers organisation of European OSH systems. Trends should therefore be examined instead on expenditure developments in the Member States.

7 International health data sources

In this chapter, the most important international and European sources on health data are described.

WHO Europe: Health For All Database[47]

The European "health for all" database (HFA-DB)[47] was developed in the mid-1980s by the WHO Regional Office for Europe to support the monitoring of health trends in the WHO European Region. It provides access to a wide range of basic health statistics for the 51 (52 from 2004) Member States of the WHO European Region. The indicators broadly cover various aspects of population health and its determinants. To adapt the database to the changing priorities and availability of data in European countries, the list of indicators is periodically revised. The data are subdivided in 8 indicator groups: demographic and socio-economic statistics, mortality based indicators, morbidity, disability and hospital discharges, lifestyles, environment, health care resources, health care utilisation and costs and maternal and child health.
The database covers the period from 1970 to the present, or the latest year for which data are available. The data contained in the database are collected by the Regional Office from various sources. The majority of data come from WHO technical units that collect appropriate statistical information within their own field (e.g. infectious diseases, immunisation and mortality data). Secondary information sources, such as other international organisations and agencies, are also an important source of data for a number of indicators (e.g. OECD health database, FAO statistical database). Data for only a relatively small number of indicators are collected directly from countries. The data are collected continuously by the Regional Office which publishes updated versions of the database twice a year (January and June). The WHO Regional Office points out that comparisons between countries and their interpretations should be made with caution, as the comparability is limited owing to differences in definitions and recording practices. Probably most comparable and complete are the data for mortality-related indicators.

European Union: Eurostat Online Database

Eurostat provides harmonised statistical data on the European Union, the EU Member States, the Euro-zone and other countries (http://europa.eu.int/comm/eurostat/). These data cover a whole range of different units: The database (formerly called NewCronos) has a hierarchical structure and is subdivided into nine themes (General statistics; Economy and finance; Population and social conditions; Industry, trade and services; Agriculture and fisheries; External trade; Transport; Environment and energy; Science and technology). These themes comprise several domains, each covering a specific sector.

The most relevant theme for the WORKHEALTH project is "Population and social conditions" which includes the domains "Health" and "Labour Market".

The domain "Health" comprises statistics which are directly relevant to Community actions in the field of health. It is divided in the two collections "Public Health" and "Health and Safety at Work".

The "Public Health" collection includes data on causes of death, health care (ambulatory care, health facilities, in-patient care, health staff, medical treatments and prevention) and health status. Under this heading, data are provided on anthropometric characteristics (height, weight, BMI), disabilities, life styles, morbidity (AIDS, cancer, infectious diseases) and self-perceived health. These data are provided mainly by the National Statistical Institutes and the Ministries of Health, by other international organisations (OECD, WHO, International Agency of Cancer, Euro HIV and others). In addition, the data result also a from various epidemiological or concerted actions. This section also includes data collected with the Eurobarometer.

In 2003, the so-called "Special Eurobarometer" reports covered various issues concerning health status and lifestyles: "Health, food, and alcohol and safety" (wave EB59.0)[48], "Smoking & Health/Environment & Health" (EB58.2)[49], "Physical activity" (EB58.2)[50], and "Health of adults" (EB58.2)[51]. Specific Eurobarometer reports are based on in-depth thematical studies that are carried out for various services of the European Commission and other EU institutions and integrated in the Standard Eurobarometer's polling waves.

The data collection "Health and Safety at Work" includes data on accidents at work and commuting accidents (collected in the context of the project European Statistics on Accidents at Work – ESAW[29]), on occupational diseases (collected by the project European Occupational Diseases Statistics – EODS[30]) and on work-related health problems and accidental injuries from an ad hoc module of the Labour Force Survey[52]. The data for the first two groups are based on national administrative sources, from declarations to the insur-

ance (public insurance or private insurance scheme) or to another competent authority (usually the Labour Inspectorate). The data for work-related health problems and accidentals injuries were provided by an ad hoc module in the 1999 Labour Force Survey.

The domain “Labour Market” mainly contains data collected by the Labour Force Survey that aims to provide comparable statistical information on employment and unemployment levels, patterns and trends in the Member States[32].
The survey is intended to cover the whole of the resident population, i.e. all persons whose usual place of residence is in the territory of the Member States of the European Union. For technical and methodological reasons, however, it is not possible in all countries to include the population living in collective households, i.e. homes, boarding schools, hospitals, religious institutions etc. The results are therefore compiled only for the population in private households. This comprises all persons living in the households surveyed during the reference week, and those people absent from the household for short periods due to studies, holidays, illness, business trips etc.
The population of working age covered in the survey (15 years and above) is divided into three mutually exclusive and exhaustive groups (persons in employment, unemployed persons and inactive persons). Respondents are classified into one of these groups based on their activity in a particular reference week. The definitions of employment and unemployment are based on those adopted by the International Conference of Labour Statisticians.
The interview from which the data is gathered covers the following themes: demographic background, labour status, employment characteristics of the main job, hours worked, second job, previous work experience of those not currently employed, search for employment, methods used during previous four weeks to find work, main labour status, education and training, situation one year before the survey, income, technical items relating to the interview and atypical work. A further set of variables may be added in so called “ad hoc modules” in an agreed quarter. For example: 1999, work-related health problems and accidental injuries; 2000, educational and vocational training; 2001, length and patterns of working time.
Data are collected by the national institutes which are responsible for selecting the sample, preparing the questionnaires, conducting the actual interviews among households, and forwarding the results to Eurostat in accordance with the common coding scheme. The survey has been carried out quarterly since 1998, while some countries (Germany, France, Ireland and Luxembourg) have continued to provide just annual data up to 2002.

OECD: Health Data 2003[34]

As national administrations seek to evaluate their health care systems against those of other countries, the OECD Health Data database[34] was designed to assess health services inputs, highlight differences in common medical practice and to describe key features of each system's financing mechanisms.
Key aspects covered are: health status (includes mortality and morbidity), health care resources, health care utilisation, health care expenditure, financing and remuneration, social protection, pharmaceutical market, non-medical determinants of health, demographic references and economic references. Data are presented on the 30 OECD Member countries.
A new version of the database is published yearly and updates provided during the year; however, not all data are yearly collected and provided for each year – this depends on the variable. Key items span the period 1970 to 2003, with some time series going back to 1960. However, breaks in time series are frequent and mostly due to changes in reporting systems.
The data provided come from various national statistics (statistics by ministries, social insurance institutions and other sources in the OECD Member countries) as well as from databases run by OECD itself. In order to improve comparability of data, the OECD published the manual "A System of Health Accounts" (SHA) in May 2000. It contains guidelines for reporting health expenditure according to an international standard. It proposes a common boundary of health care as well as a comprehensive and detailed structure for classifying the components of total expenditure on health. OECD Member countries are at varying stages of reporting total expenditure on health according to the boundary of health care proposed in the SHA manual. This means that data reported in OECD Health Data are at varying levels of comparability.
Data are fairly comparable in the group of countries which closely follow the SHA-guidelines (e.g. Denmark, France, Germany, Netherlands, UK) and less comparable in other countries which do not fully follow these guidelines (e.g. Finland, Spain) or where they rely on national accounts for estimating health expenditure (Austria, Iceland, Ireland, Italy, Sweden etc.).

European Foundation for the Improvement of Living and Working Conditions: European Survey on Working Conditions[31]

Since the early nineties, the European Foundation for the Improvement of Living and Working Conditions has carried out three surveys on working conditions with the aim of providing an overview of the state of working conditions in the European Union, as well as indicating the nature and content of changes affecting the workforce and the quality of work.

The presentation of results[31] is divided into 10 chapters in which the information gathered during the interviews is subsumed: context and structural variables, nature of work, physical work factors, work organisation, time, information and consultation, psychosocial factors, outcomes, income and payment system, and work and family life.

Face-to-face interviews were conducted with a total of 21,703 workers in their own homes – around 1,500 in each Member State except Luxembourg where the individuals interviewed totalled 527. A representative sample of the total active population, i.e. people from the age of 15 years upward who were at the time of interview either employees of self-employed workers or self-employed workers, was sought via a random walk procedure. Retired and unemployed persons, as well as housewives and students, were excluded. For the 15 old Member States and Norway, data are available for the years 1990, 1995 and 2000; for the new Member States, the candidate countries and Turkey, data are available for 2001-2002.

With regard to data comparability across countries it has to be taken into account that legal and cultural differences between countries may influence the way the questions are understood and hence determine the answers given. The level of knowledge or awareness about working environment problems and the attitudes and the concern about such problems may vary greatly from one country to another. Also differences between the industrial structure in the countries as well as the distribution of the workforce between sectors make direct comparisons more difficult.

8 Data availability and suitability for work-related health monitoring

The following sections describe the suitability of data for work-related health monitoring with regards to the indicators established in the WORKHEALTH project. It shows that not all data available in the previously described databases are suitable for the project, given the requirements that were outlined above and especially with respect to work-related health.
The WORKHEALTH indicators are divided into four classes of a public health indicator system proposed by ECHI (demography and socio-economic situation, health status, health determinants, health and safety system). This structure has therefore been applied to the following.
The assessments of data availability focus mainly on the old Member States, which belonged to the European Union when the project started. In some of the following surveys data collection has also been undertaken in some of the new Member States, for example in the European Survey on Working Conditions. In many respects, however, the data availability for the new Member States is much more difficult and deserves further attention.

Demography and Socio-economic Situation

Data on the demographic and socio-economic situation are an integral part of a work-related health monitoring system for obvious reasons. These data are necessary to firstly describe the population with regards to basic characteristics such as age, gender, region, nationality/migration. Specifically interesting are of course characteristics of the working situation such as employment status (employed, unemployed, inactive; also early retired), occupation, branches, sector, part-time working or nature of contract. These data are collected as part of the European Labour Force Survey and therefore available regularly. Data on income distribution and education are also available in the Eurostat database.
As part of a work-related health monitoring system, the information serves to describe the population and to highlight important issues. This includes, for example, the rise in the number of people working with a temporary contract, shifts between the different sectors or differences between the Member States in the percentage of early retirees.

Apart from that, this socio-economic information also serves as stratification criteria for the indicators in the following categories: “health status”, “health determinants” and “health and safety systems” illustrating for example, the exposure in specific occupations or the extent of risk management across sectors and to address how diseases are related to work.

Health Status

Mortality

With respect to the international data sources described, mortality data are available in the Health For All database by WHO, in OECD’s Health Data and in the Eurostat Online database by the European Commission:
The WHO HFA database[47] contains basic health indicators without going into too much depth in each specific topic, as this would not be feasible in one database. Neither is it possible to classify the date on mortality or morbidity into occupations and branches (personal communication Remigijus Prochorskas, 26.08.2003).
Also the OECD Health Data[34] contain little information on work-related subjects in general. For the mortality data, the raw data is accessed directly from the WHO server on mortality (personal communication Manfred Huber, 05.10.2003). This implies that there is no linkage to occupations and branches in OECD mortality data either.
In the Eurostat Online Database, mortality data also show no relation to information on occupations and branches. For data on fatal work accidents and fatal occupational diseases, see the following section.

Morbidity

For morbidity, the databases HFA (WHO)[47] and OECD Health Data[34] contain no information which allow stratification by occupations and branches and thus enable an analysis of the work-relatedness of diseases.
Eurostat, however, holds information collected by Special Eurobarometer surveys on the health status, carried out on request of the DG Health and Consumer Protection and published at the end of 2003. The reports “Health, food, and alcohol and safety” (wave EB59.0)[48] and “Health of adults” (EB58.2)[51] contain information on e.g. the following aspects morbidity:

- chronic illness (rheumatism & arthritis, allergies, hypertension, asthma, diabetes, cancer), long-term treatment, visits to doctors, dental health;

- perceived health, chronic morbidity, activity restriction, sensory functional limitations, and physical functional limitations.

They are integrated in the Standard Eurobarometer's polling waves which record demographic information on the interviewees with regard to marital status, occupation and household income. The categories for occupation are:

- "non-active" which includes a) responsible for ordinary shopping and looking after home, or without any current occupation, not working, b) student, c) unemployed or temporarily not working, d) retired or unable to work through illness;
- "self employed" which includes a) farmer, b) fisherman, c) professional (lawyer, medical practitioner, accountant, architect, etc.), d) owner of a shop, craftsmen, other self-employed person, e) business proprietors, owner (full or partner) of a company;
- "employed" which includes a) employed professional (employed doctor, lawyer, accountant, architect), b) general management, director or top management (managing directors, director general, other director), c) middle management, other management (department head, junior manager, teacher, technician), d) employed position, working mainly at a desk, e) employed position, not at a desk but travelling (salesmen, driver, etc.), f) employed position, not at a desk, but in a service job (hospital, restaurant, police, fireman etc.), g) supervisor, h) skilled manual worker) other (unskilled) manual worker, servant;
- "never did any paid job".

The information concerning the occupation of the interviewee should also be applicable to information asked for in the Special Eurobarometers. Breakdowns were made accordingly for example in the report on "Health, food, and alcohol and safety" where differences in chronic illness are reported for occupational groups and income status. An investigation should be made into whether there are plans to carry out these surveys again in order to get information on trends over a period of time.

The EURO-MED-DATA project [53] ("European situation of the routine medical data collection and their utilisation for health monitoring"), which was carried out under the European Community Health Monitoring Programme (finalised 2001), described the available administrative data in detail: Aim of the project was to make an inventory of the medico-administrative data, routinely collected in 18 European countries at the primary, secondary health care and occupational medicine ("Health at work") level and to examine the possibilities of creating a European database with this data. For the area of "Health at work" two types of routine data were identified – data that were collected on a regular basis (anthropological, related to a particular exposure, and subject to

regulations) and those data related to isolated events (morbidity, traumas, occupational illnesses, mortality). The project group concludes that a large amount of data is available locally (at company level), but currently impossible to use at regional or (inter)national level due to harmonisation problems. It appears therefore impossible to fulfil the ultimate aim of creating a European database on routine morbidity or exposure data (with the exception of occupational diseases and accidents at work). At present it is only possible to create a database for routine data by collecting partial data in a survey-type format (EFILW, OSHA).
At the same time it should be noted that national activities to standardise routine occupational health care data have taken place[54].
The European Survey on Working Conditions[31] carried out by the European Foundation for the Improvement of Living and Working Conditions provides data on work-related morbidity. The relationship between morbidity and work is established here by asking people "Do you think your health or safety is at risk because of your work, or not?" and "Does your work affect your health, or not? If Yes, how does it affect your health?". The question about the impact of work on one's health (several answers possible) refer to: Hearing problems, problems with vision, skin problems, backache, headaches, stomach ache, muscular pains in shoulders and neck, muscular pains in upper limbs, muscular pains in lower limbs, respiratory difficulties, heart disease, injury, stress, overall fatigue, sleeping problems, allergies, anxiety, irritability, trauma, other or "work improves health".
The survey provides an abundance of work-related information from which various stratifications of morbidity are possible. Information is available on:

- main paid job (ISCO-(COM))
- job duration (years in same organisation; years in same job)
- job status (employed/self-employed; if employed: nature of contract)
- sector: main activity of company or organisation (NACE)
- company status: public/private
- company size: total number of workers in the local unit
- number of workers under respondent's supervision
- second job besides main job (yes/no)

Accidents at work

Accidents at work and occupational diseases are specific aspects of morbidity. Although fatal work accidents and occupational diseases belong to the area of mortality, the relevant data are described here too as they are collected together with those on non-fatal incidents.

The Eurostat Online Database contains data on accidents at work, collected in the context of the project “European Statistics on Accidents at Work – ESAW”29. This data collection covers all accidents at work which involve absence of more than 3 calendar days (including Saturdays or Sundays) and fatal accidents occurring at work. An accident at works is defined as “a discrete occurrence in the course of work which leads to physical or mental harm”. This includes road traffic accidents occurring during the course of work (lorry drivers, managers on way to external meetings) but excludes accidents on the way to and from work (commuting accidents), which are collected separately.
Eurostat receives the ESAW data from the Member States’ national registers or other national bodies responsible for the collection of data on accidents at work. These data are based on the declaration of the accidents according to the different systems in the Member States. Mainly two types of reporting procedures take place in the Member States: On the one hand there are insurance based systems where the supply or the refunding of care benefits and the payment of benefits in cash depends on the accident being notified to the (public or private) insurer. In these systems the level of accident reporting is very high, probably about 100%. However, the data supplied on accidents depends here on which groups are covered in the insurance scheme, e.g. some groups such as self-employed are often not covered. 10 Member States have such an insurance based system. On the other hand, in 5 of the Member States there is a legal obligation for the employer to report accidents to the relevant national authorities (often National Labour Inspection Service), but the payment of benefits does not depend on them reporting the accident. For these systems, the reporting levels are lower, usually ranging between 30 to 50 percent. On the basis of the reporting levels, Eurostat estimates the actual number of accidents occurring in these countries.
The project took place in 3 different phases with a steady growth in the number of variables collected annually since the beginning in 1993. The following variables are now covered in the project:

- Information to identify where the accident occurred, who was injured and when:
  - case number;
  - date and time of the accident
  - the economic activity of the employer;
  - the victim’s occupation, occupational status, sex, age and nationality;
  - the geographic location and size of the enterprise’s local unit;
  - the workstation, working environment and working process

- Information to show how the accident occurred, in what circumstances and how the injuries came about – the event broken down into three sequences:
  - the specific physical activity;
  - the deviation;
  - the contact-mode of injury and their respective associated material agents
- Information on the nature and seriousness of the injuries and the consequences of the accident:
  - body part injured;
  - the type of the injury;
  - the number of days lost.

Data on accidents at work can obviously be classified according to occupations, branches and other work-related information. The following standard indicators that are derived by Eurostat from the information collected.

- Incidence rates: This is the number of accidents at work per 100.000 persons in employment. These rates are calculated separately for fatal accidents and accidents leading to more than 3 days absence. These indicators can be calculated for Europe, a Member State or any sub-population breakdown according to one or more of the variables characterising the victim of the accident (as economic activity or occupation, but also age, sex etc.).
- Standardised incidence rates: This “standardised” number of accidents at work per 100.000 persons in employment is calculated per Member State by giving each branch the same weight at national level as in the European Union total. The reason for this is the fact that the industrial structure of a country will influence its total frequency of work accidents depending on the share of high-risk sectors.
- Standardised incidence rate for fatalities which excludes road traffic accidents and accidents on board of an means of transport: This is to provide comparable incidence rates as road traffic accidents in the course of work are not recorded as an accident in a few Member States and fatalities caused by road accidents represent an important share of the number of fatal accidents.

These incidence rates are fully comparable within but not between each of the two groups of Member States (insurance based system vs. systems with legal obligation to notify). Trends on the other hand can easily be compared between all Member States. This is reflected in the fact that the incidence rates

for accidents at work and for fatal accidents at work, which belong to the EU set of Structural Indicators[3], are relative rather than absolute in comparison to the incidence rate in 1998 in each country. The figures for fatal accidents in Germany for example, are accordingly: 1998 = 100 (baseline), 1999 = 80, 2001 = 65.

The ad hoc module of the Labour Force Survey[52] mentioned before, dealt in 1999 with work-related health problems (see below) and accidental injuries, to provide a broader view on health and safety at work as an additional source of data to ESAW and EODS.
With respect to accidental injuries, the ad hoc module covered all non-fatal accidents at work suffered by the survey respondents over the last 12 months, whatever their severity and including those that did not lead to absence from work or resulted in less than 4 days' absence from work. All Member States were covered except Belgium, France, Austria; Germany provided data for a specific 4 week period.

Occupational Diseases
The Eurostat Online Database also includes data on occupational diseases collected by the project EODS[30] – European Statistics on Occupational Diseases. This aims to obtain gradually harmonised, comparable and reliable data and indicators on occupational diseases in Europe by collecting data gathered from administrative sources in the Member States. During a pilot project, data on recognised cases for 31 items of the European Schedule of Occupational Diseases were collected in 1998. This was the first attempt to collect these data on European level. After this pilot phase it was stated that "the data on recognised occupational diseases reflect not only the occurrence of such diseases but inevitably also the way in which the concept of an occupational disease has been integrated into the social security systems" – however, it also indicated that "such data can be used in prevention and in the evaluation of the problem". Although it was concluded that there were still problems of comparability, this statistic was considered as useful and Phase 1

[3] Every year the Commission prepares a Spring Report to the European Council to assess the progress made towards the Lisbon objectives; the Structural Indicators cover the five domains of Employment, Innovation and Research, Economic Reform, Social Cohesion, Environment as well as the General Economic Background and are used to underpin the Commission's analysis.

was implemented and is still continuing. All the Member States with the exception of Germany are participating; first reference year is 2001.
Phase 1 covers occupational diseases that were recognised in the reference year and cases that were recognised before that year as a temporary or permanent disease from which the person died during that year. As an option, Member States can choose in Phase 1 of the EODS, to include cases which have changed in status from a temporary to a permanent occupational disease during the reference period and cases of permanent disability where the degree of disability has changed the same period. Analysis of this data will be used in a potential Phase 2. All the occupational diseases should be in accordance with the list of specific entities and fulfil criteria specific to the disease. Each case is defined by 50 characters (numeric and alphanumeric) containing information on country of origin, age, sex, occupation (ISCO-88(COM)), economic activity of the employer (NACE, Rev. 1), European Schedule Reference N°, diagnosis, exposure, exposure-use categories, severity of disease, year of initial recognition, and severity of disease when first recognised.
Data for 2001 are available in 2004. In September 2003, the Commission published a new European Schedule on Occupational Diseases[55].

The ad hoc module of the Labour Force Survey[52] (see above) in 1999 covered all diseases, disabilities and other physical or psychological health problems, suffered by individuals over the past 12 months which irrespective of severity were caused or made worse by the work[56]. This was based on self-assessment by survey respondents and also included health problems considered by the victim as only partly due to their current or past work activities ("made worse by work"). Obviously, this broad concept covers much more than the occupational diseases recognised by the national insurance systems.

Sickness absence

For sickness absence as well, there are generally two sources of data: surveys and administrative data sources.
The European Survey on Working Conditions[31] provides the following data on sickness absence: Participants are asked about the number of days of absence during the previous 12 months due to a) accident at work, b) due to health problems caused by work, and c) due to other health problems. As described above, the ESWC provides comprehensive work-related information from which sickness absence can be stratified by occupations and branches and further aspects of work.
A more important source for sickness absence data is the Labour Force Survey[32]: Individuals reporting they were "not working but had a job or business

from which he/she was absent" during the reference week, were asked the reason for not worked although they had a job. The answers, "personal illness, injury or temporary disability" (or bad weather, labour dispute, holidays etc.) provide data on sickness absence in that week which can be stratified by occupations and branches as registered in the survey.

Regarding the availability of sickness absence data from administrative sources the situation is much more complicated. The experts taking part in the discussions during the WORKHEALTH project, agreed that it is difficult to compare data from social insurance institutions in Europe due to diverse national laws and regulations. However, for work-related health monitoring purposes it may be sufficient to include data from Member States that could provide comparable data. A short survey was carried out on availability and comparability of sickness absence data and disability data to find out whether there was a common data basis. The survey was confined to the WORKHEALTH partners from social insurance institutions and to those who were thought to be closely connected.

It became apparent that the availability of sickness absence data in the countries examined (AT, DE, IS, NL, SE) is very diverse. Whereas in Austria the social insurance system has access to sickness absence data for all the employees in the country (except for civil servants), in Germany, 90% of the population is included in social insurance data (with special regulations for certain professions or self-employed). In Sweden sickness absence data are available for the population aged between 16-64 for the period after where the employer continues to pay (individuals who have not been granted permanent full disability pension; special conditions for self-employed, students, unemployed etc.), yet in Iceland there are in general only limited data on sickness absence. In the Netherlands the social insurance system holds no sickness absence data. From 2005, sickness absence data will be collected here on 80% of all employees in the Netherlands by the Central Bureau of Statistics from the Occupational Health Services.

The most commonly indicators used (available in Germany, Austria, and Sweden) are "number of spells per 100.000 persons for the insured population" and "duration of spell per 100.000 persons for insured population".

These data can be stratified in Sweden and Germany by occupations and branches, and in Austria only according to branch. It should however, be taken into account that different classification systems are used: For example, in Austria, ÖNAS 95 is applied for classifying branches, in Germany NACE. Occupations are classified according to "Klassifizierung der Berufe" in Germany and ISCO-88(COM) in Sweden.

This short outline illustrates that the issue of utilising sickness absence data as part of a European health monitoring system is still very challenging and needs to be examined more thoroughly in future projects. The survey that was used in the project to assess the availability of sickness absence data by social insurance institutions is provided as annex 8.

Chronic illness and disability

Probably the most relevant source of information on disability is the 2002 ad hoc module[42] of the Labour Force Survey on employment of disabled people which was carried out in order to provide data for the European Year of People with Disabilities 2003.

Aspects assessed are

- the existence of a longstanding health problem or disability,
- type of health problem or disability (e.g. problems with arms or hands/back or neck; difficulties in seeing/hearing; chest or breathing problems; diabetes; mental, nervous or emotional problems etc.),
- time since onset of health problem or disability,
- cause of health problem or disability (born with it or birth injury; work-related accident or injury including traffic accidents at work; non-work-related traffic accident of injury; household, leisure and sports accident; work-related diseases; non-work-related diseases),
- whether working in sheltered or supported employment,
- whether health problem restricts kind of work/amount of work that can be done,
- whether health problem restricts mobility to and from work that can be done
- whether some form of assistance is provided to/needed to work,
- type of assistance provided/needed to work.

This data should be stratified by all information collected in the main part of the Labour Force Survey – socio-demographic information as well as information on the economic sector and occupation for the employed.

Data on disability were also provided by the European Community Household Panel (ECHP)[33]. The ECHP is a longitudinal, multi-subject survey which covers many aspects of daily life – particularly employment and income, but also demographic characteristics, the environment, education and health. It covers about 60.000 households comprising 130.000 adults aged 16 and over. The first wave took place in 1994, the last one in 2001. The health module comprised the questions “Do you have any chronic physical or mental health problem, illness or disability?” and, if yes, “Are you hampered in your daily activities by this chronic physical or mental health problem, illness or disability?”. This data can be stratified by information on occupational classes and sectors

of activities, as it was in the report “Disability and social participation in Europe” published by Eurostat in 2001 where data from the 1996 wave are analysed in great detail[43].
For various reasons, the ECHP project was halted after eight years in 2001 and replaced by a new instrument EU-SILC (Statistics on Income and Living Conditions) in 2003, which will be the EU reference source for comparative income distribution and for social exclusion statistics[56]. This includes both a cross-sectional and a longitudinal dimension. Cross-sectional data are collected annually starting from 2003 and covering income, labour, demography, housing, education and health at the same time. The longitudinal data will be restricted both in content (only covering housing, income and a limited set of non-monetary variables of deprivation) and in the time (a minimum of a four year period is requested). The variables of the health module now comprise “general health”, “suffering from any chronic (long-standing) illness or condition” and “limitations in activities people usually do, because of health problems and for at least the last six months”; these variable are part of the cross-sectional as well as the longitudinal data collection. Linked to these questions are information on the occupation (given in ISCO-88 (COM), two digits) and on the economic sector (NACE, two digits). It was planned to publish the first data from 2003 at the end of April 2005[56].
A detailed overview on the issue of disability and available data is provided in the publication “Illness, disability and social inclusion” by the European Foundation[57].

Health Determinants

Biological and personal factors

Biological factors of interest are, for example, blood pressure, cholesterol and diabetes. Here again differences between occupations and branches are of specific interest in order to highlight groups at risk. Regular data collections on these issues at a European level are not known to the authors. In some national health interview surveys, however, information about screening coverage, awareness and treatment for biological risk factors such as hypertension, blood cholesterol and diabetes is included, as pointed out in the final report of Phase 2 of the project “Health Surveys in the EU”[58]. The subject of hypertension is the most common, covered in most national surveys over the last 5 years. It has to be investigated to what extent these data are linked to information on occupations and branches.

Data on personal conditions such as coping ability, hardiness index or sense of coherence should be difficult to obtain as they are not part of routinely collected datasets.

Health behaviours

Data on health behaviours, for example smoking, are collected as part of OECD Health Data[34], but, as pointed out above, these cannot be stratified by occupations and branches.
In contrast, the Special Eurobarometer reports "Smoking & Health/Environment & Health" (EB58.2)[49] and "Physical activity" (EB58.2)[50] provide information on smoking habits and frequency of smoking as well as prevalence of physical activity, context of physical activity and perception of environmental opportunities for physical activity. These can be broken down into the interviewees' occupation and branches as they were in the Standard Eurobarometer's polling waves.

Working conditions

Comprehensive information on working conditions is provided by the European Survey on Working Conditions[31]. The following aspects are covered: physical work factors (e.g. exposure to vibrations, noise, high temperatures, mechanical hazards etc.), work organisation (e.g. working and commuting time, telework) and psychosocial aspects of work (e.g. work rhythms, deadline and efficiency pressure, job control, training, discrimination etc.). According to the detailed description of the working situation of the interviewee (occupation, branch, size of enterprise etc.), it is possible to obtain very revealing breakdowns of these data.

Health and Safety Systems

Whereas the ECHI-structure class 4 is comprised of general aspects of activities in prevention and health promotion as well as aspects of the general health care system, in WORKHEALTH the focus is placed mainly on aspects of prevention and health promotion at the workplace and occupational health and safety system aspects. It will become apparent in the following, that European statistics on health and safety are scarce (apart from work accidents, occupational diseases and working conditions), as Koukoulaki pointed out at the 13th CEIES seminar on "Health and safety at work: EU statistics" in May

2001[59], and that huge efforts will need to be made to provide sufficient information at a European level in this area.

Prevention, health protection and health promotion

To the authors' knowledge aspects such as the percentage of enterprises that integrated OSH in their corporate philosophy or the percentage of employees provided with safe/ergonomic designed workplaces have not been covered so far by statistics at European level, whereas ratification of ILO regulations on occupational safety and health is monitored centrally by the ILO itself.
The data situation is also very difficult with regard to the indicators for workplace health promotion, where there is rarely data available at a European level.
It is also difficult to get hold of relevant data on the issue of reintegration and rehabilitation. This is also due to diverse practices in this field in the Member States and the problems involved in communicating on the issue. To illustrate the different facets of rehabilitation, the German law may be shown as an example where distinction is made between:

- medical rehabilitation (treatment by doctors, etc.)
- vocational rehabilitation (help with acquiring or remaining in employment, vocational training, etc.)
- participation in social life (education, housing, autonomy, etc.)[57;57].

An ILO convention (No 159) and recommendation (No 168) deal with the vocational rehabilitation and employment of the disabled, the latter being adopted by the majority of the old Member States, although not by Austria, Belgium, and the United Kingdom (www.ilo.org, visited 02.08.2004). It deals with individuals whose "prospects of securing, retaining and advancing in suitable employment are substantially reduced as a result of a duly recognised physical or mental impairment" and for who vocational rehabilitation should enable them to "secure, retain and advance in suitable employment and thereby to further their integration or reintegration into society".
However, in many countries rehabilitation is considered only as a medical problem and is frequently organised in medico-pedagogical institutions as a process reduced to a functional rehabilitation programme[57].
In some of these areas data concerning the national expenditure are included in OECD Health Data[34]: They provide data on expenditure on rehabilitative care – defined as: health services where the emphasis lies on improving the functional levels of a person – combined with expenditure on curative care. Yet the expenditure for rehabilitative care cannot be extracted. Figures are also given on expenditure on active labour market programmes (ALMP) containing

all expenditure (other than education), which aims to improve a person's prospect of finding gainful employment or to otherwise increase their earnings capacity. They include special programmes for the disabled, which also cannot be separated from other expenditure.

Health and safety resources

In this section indicators are encompassed that apply especially to OSH services and human resources in occupational health. As these are also part of the Work & Health Country Profiles established by the Finnish Institute of Occupational Health, they reported the availability of relevant information in each country[24]. In a significant number of countries, information on the OSH services was not available. With respect to the number of persons working in this sector in different professional groups (occupational health physicians, occupational health nurses, labour safety inspectors or enterprise safety managers) figures had to be estimated in several countries, where precise figures were lacking. The Finnish authors conclude that the performance and resources of the OSH system are difficult to measure and the validity of comparisons across countries is generally poor.

Health care (service) utilisation

In this section indicators are included on the percentage of employees undergoing different kinds of rehabilitation. In the expert discussions during the WORKHEALTH project, the diverse approaches in the Members States to this topic were revealed. Before data can be gathered it is necessary first to agree on common definitions and concepts in this area. The same problems, but to a lesser degree, apply to the percentage of people receiving disability pension.

Health expenditure, financing

Data on expenditures on OHS measures and workplace health promotion measures are not available. In contrast, OECD provides data on costs of lost working days due to sickness and of occupational accidents and diseases[34].

Health (and safety) care quality/performance

An indicator in this section is, for example, "perception of the OSH system – by the employee and by the employer". Data on the quality and performance of

the OSH system are hard to gather, as indicated in the Country Profiles (see above).

Excursus: Gender aspects in health monitoring

Stratifying data according by age and gender is standard in epidemiological research and health monitoring. Beyond that, there are different ideas on how health monitoring can address the specific situation of gender and which instruments are necessary to follow the European strategy of gender mainstreaming[60]. Different workings on this issue have been published at a European level, for example by the European Foundation, where gender patterns of differences and similarities in working conditions are highlighted, based on extensive secondary analysis of the third European Survey on Working Conditions dataset[61]. Also the European Agency for Safety and Health at Work addressed gender issues in health and safety at work in a special report and concluded that gender differences may result in unequal patterns of health risk, use of health services and different health outcomes[62]. This underlines the importance of taking into account the gender issue in health monitoring. Some of the data sources described above, such as the European Survey, obviously allow for a gender-sensitive work-related health monitoring; for other data sources this remains to be examined when compiling a health report on the basis of the indicators established and data sources identified.
An example for a gender sensitive indicator can be found in a publication of the Commonwealth Secretariat[63].

Summary: Data availability for short list of indicators

For the proposed indicators in the short list, the availability of data at European level is summarised in table 7, together with the respective source and data holder. The examination of data availability focused primarily on the EU 15-States. Where no appropriate data could be identified at European level, this is indicated with "—", fragmented data are indicated with "(X)". Limitations concerning data comparability are discussed in chapter 9.

Table 10: Short list of indicators and available data*

	generic indicators	operational indicators	data source	data availability	data holder
1	accidents at work	see ESAW for operational definitions; e.g. incidence rate of serious accidents at work in comparison to 1998 (=100) with incidence rate = (no. of accidents at work with > 3 days' absence that occurred during the year/number of persons in employment in the reference population) x 100 000	ESAW	from 1994 onwards	Eurostat
2	occupational diseases	see EODS for operational definitions; e.g. no. of recognised occupational diseases by economic activity and disease per 100.000 workers covered by the recognition system	EODS	1995; from 2001 onwards (2001 data available in 2004)	Eurostat
3	work-related health risks	% of employees thinking that their health or safety is at risk because of work	European Survey on Working Conditions	1990, 1995, 2000, 2005 (?)	European Foundation
4	sickness absence	% of employed people absent from work in reference week due to own illness, injury or temporary disability	Labour Force Survey	EU10: from 1983 onwards EU15: from 1995 onwards	Eurostat
5	disability	e.g. relative probability of being in work for those with moderate or no disability compared to those with severe disability % of employees stating that they have a longstanding health problem or disability by occupational class	European Community Household Panel** Labour Force Survey: ad hoc module 2002	1996 2002	Eurostat Eurostat

6	disease occurrence	morbidity (prevalence or incidence) by ICD main groups stratified by occupations and economic sectors	--	--	--
7	job quality	e.g. indices on several aspects of working conditions (physical working conditions, psychological working conditions, work autonomy, work intensity)	Eurobarometer 56.1 European Survey on Working Conditions	2003 1990, 1995, 2000, 2005 (?)	Eurostat European Foundation
8	health promotion activities at the workplace	% of enterprises carrying out workplace health promotion activities	--	--	--
9	reintegration/ rehabilitation	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	--	only fragmented data available	--
10	compliance with OSH regulations	e.g. % of ILO OHS conventions ratified by the Member States % of enterprises complying with a legal provision	ILO (www. ilo.org/ ilolex/english/index.htm) --	regularly updated --	ILO --
11	expenditures on occupational health & safety measures	e.g. % of total health expenditure or % of GNP/GDP	--	--	--

-- = data not available

* Remark: For limitations concerning comparability please consult chapter 9 .

** The ECHP project was halted after eight years in 2001 and replaced by a new instrument EU-SILC (Statistics on Income and Living Conditions) in 2003 which will contain similar questions; it is planned to publish the first data from 2003 at the end of April 2005.

9 Data comparability

A central aspect of health monitoring is the analysis of data by regions. In Europe it is common practice to break down the figures by Member States. With the open method of co-ordination gaining ground also in the health sector, the practice of benchmarking between Member States can be expected to become more important in the coming years. Against this background, it is all the more crucial to be aware of the possible pitfalls in comparing the data suggested for work-related health monitoring[64;65].

With regard to problems in comparability, differentiation should be made between routine/administrative data and survey data.

As mentioned earlier, underlying policy and administrative regulations determine occurring data to a considerable effect. An example for the field of work-related data is the issue of occupational diseases. The number and distribution of occupational diseases highly depends on the regulations concerning their recognition as such. Which diseases and under which pre-requisites are recognised as occupational, however, differs considerably between the Member States. Therefore the number of occupational diseases in a country reflects to a large extent the national regulations in this field rather than the actual prevalence of diseases. Against this background it has to be seen that there are still serious reservations about the usage of European data on this issue. Nevertheless, the EODS project[30] tries to tackle these problems and hopefully it will succeed in increasing the explanatory power of this data.

The situation is similar, although less pronounced, regarding accidents at work. Here, a major difference between the Member States is the reporting procedure, i.e. in some countries payment of benefits depend on reports submitted to the insurer whereas in other countries there is a legal obligation to notify accidents, yet benefits do not depend on them being reported first. Consequently, while reporting levels in the former countries are thought to reach about 100%, they are much lower in the latter (usually 30 to 50%), with the consequence that Eurostat has to estimate the actual number of accidents occurring in these states[29]. However, the harmonisation of data is managed quite satisfactory so that this indicator is now used as a structural indicator for the Commission's annual spring report to the European Council.

Another very complex issue are routine data on sickness absence, often held by health insurers. They are attractive to use as they contain information not only on the precise number and length of the sickness periods for the insured individuals, but also on the cause of absence, usually coded in ICD terms. Yet

the amount of data available routinely at the social insurance institutions in the Member States is very different, with comprehensive data existent in, for example, Germany, Austria or Sweden and virtually none in the Netherlands. Also there are various internal factors relating to the respective social insurance system which – apart from the actual sickness – have an influence on whether and how many days people are absent from work and thereby raise the question of comparability of rates across countries: qualifying period, income-related vs. flat rate benefits, necessity to provide a doctor's certificate or refusals just to mention a few aspects. This situation was the reason why routine data are regarded critically as a data source for sickness absence in the WORKHEALTH project. It is planned, however, to further investigate the possibilities to make use of these databases in the future.

One way of enhancing the comparability of administrative data that should be mentioned is to compare trends over time rather than cross-sectional figures. This is also being applied to the indicator for accidents at work, where the index presented shows the evolution of the incidence rate of serious accidents at work in comparison to 1998, with the rate from 1998 defined as 100.

Another option for health monitoring is to rely more on surveys rather than routine data. Data from surveys are usually regarded as less prone to external factors and more favourable for making comparisons between countries. The prerequisite here for cross-country comparisons is to pay the utmost attention to the wording and translation of the questions. Whether questions are really understood in the same way in the different cultures can still not always be guaranteed. An illustrative example of linguistic issues and responding culture influencing the comparability across countries refers to exposure to cold in the European Survey on Working Conditions: For the question "How often are you exposed at work to low temperatures either outdoors or indoors?" the highest prevalence was reported by the Greek (44%) and the Portuguese (33%), whereas, e.g., the Finnish (19%) and Swedish (22%) interviewees reported less exposure[22].

Also the Labour Force Survey ad hoc module on disabled people in 2002 shows such a wide variation of the percentage of the working-age population with a long-standing health problem or disability between the countries that this might also reflect how respondents understood the question: With only 5.8% of the respondents in Romania (6.6% in Italy) and 32.2% in Finland declaring an according health problem or disability, the replies might have been influenced by cultural traits[42].

Despite these cautions, surveys are in general a source for gathering data that can be compared as far as possible between countries and should therefore, if possible, be favoured over routine data.

10 Conclusions and Outlook

The project WORKHEALTH has brought together representatives from the professional fields of occupational health and safety, public health, labour inspectorates and social insurance institutions to establish indicators that should be used in future European activities on work-related health monitoring.
The project partners outlined – from their professional perspective – in which way the indicators developed by WORKHEALTH can help their own work or their respective institution. Clearly, a major issue is that the WORKHEALTH indicators could support the development of policies: They might be used as a reference in establishing national policies, framing the debate and setting priorities for policies. From the public health perspective, an important aspect related to this is lobby work – by demonstrating the true incidence and costs of ill health to workplaces and by demonstrating that workplace health issues have implications for public health policy and practice. Furthermore, by using an integrated set of data workplace health issues can be placed on the public health agenda, in a way in which they currently do not appear. Partners from occupational health and safety outline that novel indicators can link occupational health and safety to social and economic issues in a manner that is transparent to policy-makers – linking such indicators to OSH also helps mainstreaming OSH into topic areas and subject matters that might otherwise not note the potential role of OSH. The indicators might also enhance the planning and evaluation of programmes and actions e.g. in the fields of vocational rehabilitation programmes for prevention of disability, OSH management, employees' knowledge etc. The indicators might help to gain new understanding regarding work-related health, e.g. by getting a clear picture concerning the factors underlying workplace absence due to sickness or improving the understanding of national contexts where policies are implemented, and support research in further areas. Obviously, the indicators developed might give inspiration to improve the individual national sets of indicators. The short list of indicators provides a general overview of the current situation and could therefore be a starting point for a uniform European work-related health reporting system.
Concerning the extent to which the indicators may help in reacting to the future challenges of the changing world of work, the assessments are quite diverse. While one perspective on this question is that the indicators may not help in reacting to future challenges, because monitoring shows what happened in the past and the new problems and challenges need specific analyses. Other

views taken are that indicators might reflect changes and help to develop intervention strategies: Detailed data sets might be used for an analysis of the current situation and for periodic monitoring, which includes facts and proof concerning high risk areas. The results could indicate trends in the world of work and identify new areas that need specific attention in research or policy. They may also indicate a possible negative development in the individual country in relation to other comparable countries, against which action should be taken and possible solutions could be suggested. From a public health perspective, the project may take a significant step in relation to the integration of workplace health indicators with public health indicators – this will allow for a more integrated approach to be taken in the major public health issues, in particular it will legitimise the workplace as a setting for health action.

Discussions on (insufficient) data availability and the urgency of providing more data have been a major issue in the project. Some project partners point out that for specific issues (mental health, ageing workforce) and for core indicators, data should be provided as soon as possible – however, it is important that the data are of acceptable quality. It is seen by some of the project partners to be more relevant for the WORKHEALTH dialogue to provide a new and innovative direction rather than delivering relevant data: Some of the proposed indicators bring issues into the social dialogue that have hitherto not received much attention in the context of occupational health and safety. It is also considered urgent that the viewpoint of work-related health monitoring from a public health perspective is disseminated in Europe.

The work accomplished in the WORKHEALTH project has been disseminated by the project partners throughout the duration of the project already and further activities to promote the results are planned. Obviously, the results are intended to be spread internally in their own institutes, but also to other national experts in their own profession working in other institutes. At the final workshop, experts from all relevant European and international institutions in the field of work-related health monitoring (European Foundation, Agency for Safety and Health at Work, DG Employment and Social Affairs of the European Commission, Eurostat, ILO, WHO, OECD, ISSA) were invited to hear about the project results. Insights gained during the satellite workshops on OSH as part of a social dimension, were used when introducing a national occupational health and safety indicator system for Viet Nam, where the policy cycle model of WORKHEALTH was also presented to Vietnamese public health authorities. It is planned (and already partly in action) to write publications for relevant journals at national level and to present the results at international conferences.

Regarded by the European Commission as an important topic, further attention will be paid to work-related health monitoring in a follow-up project “WORKHEALTH II” which will be launched in 2005. The project aims to increase the knowledge on work-related health in Europe by collecting and analysing available data based on the indicators established in the WORKHEALTH project and improve the possibilities to include social insurance data into a European health monitoring system. Furthermore, emphasis shall be given to the appropriate understanding of the data presented, by interpreting them against the background of the contextual factors in the Member States. In order to integrate needs and knowledge of the new Member States and candidate countries, additional partners representing these countries will join the project group.

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Annexes

Annex 1 – Glossary of relevant terms

Annex 2 – Further documents on the project

Annex 3 – WORKHEALTH Consortium

Annex 4 – Project meetings

Annex 5 – Invited guests

Annex 6 – Comprehensive list of indicators („masterlist“)

Annex 7 – Domain windows

Annex 8 – Survey on sickness data by social insurance institutions

Annex 1: Glossary of relevant terms

Accident at work
An accident at work is defined as “a discrete occurrence in the course of work which leads to physical or mental harm”. This includes cases of acute poisoning and wilful acts of other persons, as well as accidents occurring during work but off the company’s premises, even those caused by third parties. It excludes deliberate self-inflicted injuries, accidents on the way to and from work (commuting accidents) and accidents having only a medical origin and occupational diseases. The phrase “in the course of work” means whilst engaged in an occupational activity or during the time spent at work. This includes cases of road traffic accidents in the course of work (see European Commission).

Branch/sector
A frequently used way of addressing work-relatedness is to analyse health outcomes by economic branches: When disease prevalence or frequency is higher in specific branches, this might point to an association between working conditions in these branches and the health outcome. Economic branches or sectors (both terms are used interchangeable in this publication) are usually classified in NACE codes, which is the classification of economic activities corresponding to ISIC Rev. 3 by the United Nations at European level. Since the national economic structures vary considerably, there are branches of industry in NACE Rev. 1.1 which are not of importance or do not occur in all Member States (e.g. branches of mining and quarrying, manufacture of spacecraft, etc.) (Eurostat, http://europa.eu.int/comm/eurostat/ramon/ visited on 25.10.2004).

Disability
Any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being. A disability may be temporary or permanent, reversible or irreversible, progressive or retrogressive. It may arise as a direct response to impairment, or as a response by the individual particularly psychologically, to a physical sensory or other impairment, and thus reflects disturbance at the level of the person (see European Commission).

Disease
Disease is an objectively observable and diagnosable deviation from a biomedical defined standard, which is codified by the WHO in the “International Classification of Diseases”. In this context human beings are regarded as biological and physiological functional units. In the field of health promotion and public health sciences, disease and health are not regarded as different and exclusive conditions. They are seen as the two ends of a continuum with fluid transitions which are created by pathogenic (disease creating) and salutogenic (health creating) processes (see European Commission).

Disease prevention
Strategies designed either to reduce risk-factors for specific disease, or to enhance host factors that reduce susceptibility to disease. Contrary to definitions of earlier years, it includes as well medical support (immunization etc.) also non-medical support (health education) (see European Commission).

Gender
The existing differences between men and women are of biological and sociological nature:
Sex refers to the biologically determined differences between men and women, that are universal.
Gender refers to the social differences between men and women that are learned, changeable over time and have wide variations both within and between cultures. (see European Commission)

Gender mainstreaming
In the European Commission Communication on mainstreaming (COM (96) 67), mainstreaming is defined as "not restricting efforts to promote equality to the implementation of specific measures, but mobilising all general policies and measures specifically for the purpose of achieving equality". The gender and equality dimension should be taken into account in all policies and activities, in the planning, implementation, monitoring and evaluation phases (see European Agency for Safety and Health at Work, 2003).

Gender-sensitive indicator
A gender sensitive indicator can be defined as an indicator that captures gender-related changes in society over time. Thus, whereas a gender statistic provides factual information about the status of women, a gender-sensitive indicator provides factual information about the status of women, a gender-sensitive indicator provides "direct evidence of the status of women, relative to some agreed normative standard or explicit reference group".
An example of a gender statistic would be: "60% of women in country X are literate, as opposed to 30% five years ago". An example of a gender-sensitive indicator would be: "60% of women in country X are literate, as compared to 82% of men, and compared to 30% and 52% five years ago". The norm or reference group in this example is men in the same country, but in other cases might be other groups of women (see Beck, 1999).

Health
State of complete physical, mental and social well-being and not merely the absence of disease and infirmity.
Absence of detectable disease or disorder.
Resource for everyday life, emphasizing personal, social and physical capabilities.
The first definition (Constitution of WHO) expresses an ideal, which should be the goal of all health development activities. It has not, until now, been subject to objective measurement. So for working purposes a narrower definition is often used. The second definition is usually used for this purpose (e.g. in health statistics, health reports etc).
In the context of health promotion, health is, in the sense of the third definition, considered less as an abstract state and more as a mean, as a resource which permits people to lead an individually, socially and economically productive life (see European Commission).

Health care
Those services provided to individuals or communities by agents of the health services or professions, for the purpose of promoting, maintaining, monitoring, or restoring health. Health care is broader than, and not limited to medical care, which implies therapeutic by or under the supervision of a physician. The term is sometimes extended to include self-care (see Rantanen et al., 2001).

Health indicator
A variable measuring the state of health of an individual or a population which can be quantitative or qualitative. A variety of indicators can be used, depending on the objective in mind.

A good indicator should be simple, reproducible, accurate and valid. The main indicators in use are mortality, morbidity, risk factors, incapacity and social and cultural characteristics (see European Commission).

Health monitoring
Health monitoring, in the view of the European Commission, encompasses the establishment of Community health indicators and the collection, dissemination and analysis of Community health data and indicators. Health monitoring at Community level is essential for the planning, monitoring and assessment of Community actions in the field of public health, and the monitoring and assessment of the health impact of other Community policies. On the basis in particular of knowledge of data relating to public health in Europe obtained by setting up a Community health monitoring system, it will be possible to monitor public health trends and define public health priorities and objectives (Decision No 1400/97/EC).

Health promotion
Process of enabling individuals and communities to increase control over the determinants of health and thereby improve their health. The concept includes the promotion of lifestyles as well as the improvement of living conditions, social, economical, and ecological factors, which determine health. The Ottawa Charter for Health Promotion (1986) identifies 3 basic strategies: Advocate, Enable and Mediate. These strategies are supported by five areas of action: build healthy/public policy, create supportive environments, strengthen community action, develop personal skills and re-orient health services (see European Commission).

Health service
The organised system for the provision of health care in a country. The range of services provided varies from country to country but in Europe this generally includes curative inpatient and outpatient care, preventive services and maternity care. The way in which services are provided also varies, being dependent on historical roots and social and cultural mores within that society. Individual elements may be provided by various people or organisations, where the co-operation between them and thus continuity may be incomplete. Funding is generally collective (through taxation or insurance), services are free or subsidised at the point of delivery and there are attempts to ensure that the population has wide, or universal access. In some countries services are limited to care provided by health professionals, in others an element of social care is included (see European Commission).

Health statistics
Aggregated data describing and enumerating attributes, events, behaviors, services, resources, outcomes, or costs related to health, disease, and health services. The data may be derived from survey instruments, medical records, and administrative documents. Vital statistics are a subset of health statistics (see Rantanen et al., 2001).

Illness
Illness is a subjective phenomenon, the personal experience of disease as well in the individual's social and cultural context. The concept of illness is influenced by the social and cultural setting, and might be different from the medical definitions of disease (see European Commission).

Incidence
The number of instances of illness commencing, or of persons falling ill, during a given period in a specified population. More generally, the number of new events, e.g. new cases of a disease in a defined population, within a specified period of time (see Last, 1995).

Indicator
A thing that serves to give an indication or suggestion of something else; A device which indicates the condition of a machine etc.; which draws attention or gives warning, Something used in a specific experiment to indicate some quality, change etc.
If the aim of the programme is to train a number of auxiliary workers annually, the number of workers trained each year is a direct – or output – indicator. If the aim is to improve child health, several indicators could be used, such as nutritional status, psychosocial development, the imunization rate, or the morbidity or mortality rates. While efforts are normally made to quantify indicators, this is not always possible. Moreover, evaluations cannot always be made by aggregating numerical values alone. Qualitative indicators are therefore often used, for example to assess people's involvement and their perception of their health status. WHO has proposed four categories of indicators: health policy indicators; social and economic indicators; indicators of health care delivery; and indicators of health care status, including quality of life. It should be emphasized that, while indicators help to measure the attainment of targets, they are not in themselves targets. Indicators have to be selected carefully to make sure that they are responsive to current trends of development and that they are useable for the analysis of ongoing activities. When selecting indicators, full account has to be taken of the extent to which they are valid, objective, sensitive and specific.
Validity implies that the indicator actually measures what it is supposed to measure. Objectivity implies that even if the indicator actually is used by different people at different times and under different circumstances, the results will be the same. Sensitivity means that the indicator should be sensitive to changes in the situation or phenomenon concerned. However, indicators should be sensitive to more than one situation or phenomenon. Specificity means that the indicator reflects changes only in the situation or phenomenon concerned. Another important attribute of an indicator is its availability, namely that it should be possible to obtain the data required without undue difficulty (see Rantanen et al. 2001).
An indicator can be defined at the generic level, e.g. 'smoking behaviour', or in an operational manner, e.g. '% of women in age group y smoking between y and z cigarettes per day'. Operational indicators are always in terms of a number, calculated from primary data in a more or less complex manner. An example of a complex calculation is 'life expectancy at birth', which is calculated from a large set of age-specific mortality data (ECHI working group, 2001).

Inequality
"Inequality in health" is used commonly in some countries to indicate systematic, avoidable and important differences in health. As there is some ambiguity about the term which some use to convey a sense of unfairness, whilst others use it to describe differences in a purely quantitative sense, WHO has decided to use the term "inequity" instead of "inequality" for the European Health for all-Strategy (see European Commission).
In the European Public Health Programme, "reducing health inequalities" is specified as a main goal of the programme (Decision No 1786/2002/EC).

Inequity
The term "Inequity" refers to differences in health which are unnecessary and avoidable but, in addition, are also considered unfair and unjust. The term thus has a moral and ethical dimension (see European Commission).

Morbidity
Any departure, subjective or objective, from a state of physiological or psychological well-being. In this sense sickness, illness and morbid condition are similarly defined and synonymous (see Last, 1995). For measures of morbidity see "Incidence" and "Prevalence".

Occupation
The work that somebody performs in order to earn their livelihood. Occupation has been used for decades as a simple and surrogate means of describing a person's social, educational and economic status, which in turn determines health experience. Certain occupations carry particular risks of ill-health and death, depending upon exposure to a variety of hazards, but most association between ill-health and work relates to underlying income, life-style etc. (see European Commission). In the European Union, usually the International Standard Classification of Occupations (ISCO-88(COM)) is used to facilitate communication on occupations.

Occupational Diseases
A recognised occupational disease is a disease which is administratively accepted as an occupational disease. A recognised case of OD is a case which is administratively accepted as an occupational disease (see EODS, 2000). Recognised occupational diseases reflect not only the occurrence of such diseases, but also the way in which the concept of an occupational disease has been integrated into the social security systems; recognition practices and social security arrangements for occupational diseases differ between the Member States (see Karjalainen & Niederlaender, 2004). Prerequisite for a recognition is usually the direct causal linkage between the occupation and the disease.

Occupational Health
The maintenance of the health of workers in the workplace. All workers, in whatever occupation, at whatever level, are subjects to risks to health from their employment. This may be a direct consequence of the dangerous nature of the trade, such as deep sea fishing, to the harmful substances exposed to, e.g. in nuclear power stations, to the risk of accidents, to the arduous nature of the work, or to the mental stresses that are imposed (see European Commission).

Occupational health and safety (synonym: occupational safety and health)
Is the discipline dealing with the prevention of work-related injuries and diseases as well as the protection and promotion of the health of the workers. It aims at the improvement of working conditions and environment. Members of many different professions (e.g. engineers, physicians, hygienists, nurses) contribute to occupational safety, occupational health, occupational hygiene and improvement of the working environment (see Rantanen et al., 2001).

Occupational health care
Refers to the care of the health of the worker. It includes preventive health care, health promotion, curative health care, first aid, rehabilitation and compensation, where appropriate, as well as strategies for prompt recovery and return to work (see Rantanen et al., 2001).

Occupational health data
Are those data collected for occupational health purposes; such data are collected by an occupational health professional. Minimum requirements should be established with regard to sensitive health data which should be covered by medical confidentiality (see Rantanen et al., 2001).

Occupational health services
Services entrusted with essentially preventive functions and responsible for advising the employer, the workers and their representatives in the undertaking on the requirements for establishing and maintaining a safe and healthy working environment which will facilitate optimal physical and mental health in relation to work and the adaptation of work to the capabili-

ties of workers in the light of their state of physical and mental health (see Rantanen et al., 2001).

Occupational health surveillance
Is the ongoing systematic collection, analysis, interpretation, and dissemination of data for the purpose of prevention. Surveillance is essential to the planning, implementation and evaluation of occupational health programmes and control of work-related ill health and injuries and the protection and promotion of workers' health. Occupational health surveillance includes workers' health surveillance and working environment surveillance (see Rantanen et al. 2001).

Outcome
The change, favourable or unfavourable, in the health status of individuals, or populations, as a result of medical intervention. This change has to be defined in relation to the perceived intention of intervention, though it is possible for there to be unintended outcomes. The end point of the measure will be dependant on that definition, but might for example be death, complete restoration of function, or the union of parts of a broken bone. Changes in health status do occur independently from health service activities, and care must be taken to ensure that these are correctly attributable (see European Commission).

Prevalence
The number of events, e.g., instances of a given disease or other condition, in a given population at a designated time. Prevalence, annual: The total number of persons with the disease or attribute at any time during a year. Prevalence, lifetime: The total number of persons known to have had the disease or attribute for at least part of their lives. Prevalence, period: The total number of persons known to have had the disease or attribute at any time during a specified period. Prevalence, point: The number of persons with a disease or attribute at a specified point of time (see Last, 1995).

Prevention
Sphere of activity which aims at avoiding the outbreak of diseases, diminishing their seriousness or limiting their consequences. Preventive measures can include medical intervention, health engineering, legislative, environmental or financial measures, or health education (see European Commission). Primary prevention: All measures to reduce the incidence of a disease in a population, and thus to reduce the risk of emergence of new cases. Therefore, it takes place before the outbreak of diseases (see European Commission). Secondary prevention: All measures to reduce the prevalence of a disease in a population, and thus to cut down the number of ill people by reducing the length of evolution. It has two objectives: to cure the ill and to alleviate the most serious effects of the disease thanks to early diagnosis and treatment (see European Commission). Tertiary prevention: Measures to check the evolution or to alleviate complications of a known disease. It is an important aspect of therapy and rehabilitation (see European Commission).

Public Health
"The science and art of preventing diseases, prolonging life and promoting health through the organized efforts of society". This so-called WHO-definition, is the short version of a more complete definition from the WHO 1952. More recently the scope of Public Health covers all analytical and organizational efforts, which are aimed at the improvement of the health of populations or defined parts of populations. This includes all organized approaches / systems of health promotion, disease prevention, combat against disease, rehabilitation or care which

are oriented at this aim. (The inclusion of rehabilitation and care into public health is not generally accepted.) (see European Commission).

Rehabilitation
A process aimed at enabling people with disabilities to regain and maintain their optimal physical, sensory, intellectual, psychiatric, and/or functional levels, by providing them with tools to change their lives towards a higher level of independence (Grammenos, 2003, p. 151).
Different facets of rehabilitation can be distinguished (Grammenos, 2003, p. 101), e.g.

- medical rehabilitation (treatment by doctors, etc.)
- vocational rehabilitation (help with acquiring or remaining in employment, vocational training, etc.)
- participation in social life (education, housing, autonomy, etc.).

Salutogenesis; Salutogenetic perspective
This concept, which was invented by A. Antonovsky, describes how people stay healthy even under burdensome circumstances. Health is a category by its own in a health-disease-continuum. The main aspects are generalized resources of resistance, which have biological, cognitive, emotional, social, cultural and ethical aspects. The main resource is the sense of coherence, the confidence in the comprehensibility, manageability and meaningfulness (see European Commission).

Sickness
Sickness is the social dimension of disease. Sickness is – from the perspective of medical sociology – a social phenomenon and corresponds with a change of the social roles (e.g. in the world of work, in the family) and the consequent patterns of interaction. The concept sickness on the one hand releases a person from normal roles but on the other hand he has to fulfil the sick role (see European Commission).

Surveillance of the working environment
A generic term which includes the identification and evaluation of environmental factors which may affect workers' health. It covers assessments of sanitary and occupational hygiene conditions, factors of the organization of work which may pose risks to the health of workers, collective personal protective equipment, exposure of workers to hazardous agents and control systems designed to eliminate and reduce them. From the standpoint of workers' health, the surveillance of the working environment may focus on, but not be limited to, ergonomics, accident and disease prevention, occupational hygiene in the workplace, work organization, and psycho-social factors in the workplace (see Rantanen et al., 2001).

Work (synonym: labour)
No common definition of the terms "work" or "labour" could be found.

Work-related diseases
The work-related diseases also comprise all non-occupational diseases to whose aetiology work contributes, such as musculoskeletal and mental disorder, cardiovascular and respiratory diseases and cancer (see WHO, 2002).

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Annex 2: Further documents on the project

All documents listed below are available on request at WORKHEALTH@bkk-bv.de.

Presentations and publications

Bergendorff S. Report on the Satellite Workshop “Social Insurance” (17th/18th September, 2003). Internal working paper of the project WORKHEALTH. 2003.

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Bödeker W & Kreis J. Arbeitsweltbezogene Gesundheitsberichterstattung in Europa – WORKHEALTH. Poster presentation at the annual conference of the German Society of Social Medicine and Prevention (24.-27.9.2003, Greifswald, Germany)

Kreis J. Work-related health monitoring in Europe from a public health perspective. Oral presentation at the First National Workplace Health Forum (12.-14.5.2004, Lodz, Poland).

Kreis J, Bödeker W. WORKHEALTH – Entwicklung einer arbeitsweltbezogenen europäischen Gesundheitsberichterstattung. Oral presentation at the annual conference of the German Society of Social Medicine and Prevention (22.-25.9.2004, Magdeburg, Germany)

Kuhn K, Berkels H. Report on the Satellite Workshop “Safety & Health at Work” (6th/7th October, 2003). Internal working paper of the project WORK-HEALTH. 2003.

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Lehmann E, Gebhardt H. Monitoring of Health and Work – Demands in view of the enforcement authorities: Results of a questionnaire-based survey among SLIC-Members. Internal working paper of the project WORKHEALTH. 2004.

Lehmann E, Römhild M. WORKHEALTH – Entwicklung von arbeitsweltbezogenen Indikatoren aus der Public Health-Perspektive in der Europäischen Union. Oral presentation at the GfA Spring Conference (24.-26.3.2004, Zürich, Switzerland)

Tountas Y, Triantafyllou D. Report on the Satellite Workshop “Public Health/ENWHP” (6th/7th October, 2003). Internal working paper of the project WORKHEALTH. 2003.

Annex 3: WORKHEALTH Consortium

The WORKHEALTH project was carried out by a working group under the co-ordination of the Federal Association of Company Health Insurance Funds (BKK Bundesverband), Essen, Germany, with financial support of the European Commission, under the Health Monitoring Programme.

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Annex 4: Project meetings

Table A1: WORKHEALTH project meetings

Meeting	Date	Place
Start up	13.-14.01.2003	Berlin
Synopsis	09.-10.04.2003	Berlin
Satellite 1: Public Health/ENWHP	06.-07.10.2003	Athens
Satellite 2: Safety & Health at Work		
Satellite 3: Social Insurance	17.-18.09.2003	Stockholm
Satellite 4: Labour Inspectorate	01.-02.12.2003	Essen
Indicators & Definition	02.-03.02.2004	Berlin
Short list	16.06.2004	Dublin
Final Workshop	13.-14.09.2004	Berlin

The minutes of the workshops can be looked up at the Public Health website of the European Commission (http://europa.eu.int/comm/health/index_en.htm).

Annex 5: Invited guests

We would like to thank further experts for their participation at the project meetings:

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Comprehensive list of indicators for work-related health monitoring

generic indicator	*operational indicator*	*Origin*
Class 1. Demography and Socio-economic Situation		
Stratification: All indicators of Class 1 should be stratified by the following aspects: age, gender, nationality/migration, region, occupation, branches, employment status (employed, unemployed, inactive), disabled, early retired		
1.1 Population		
total population	*)	ECHI
working population	**)	OSH, LI, PH
	no. working in national or local government services, state-owned company, another company/business, other	ESWC
	no. of self-employed without employees, self-employed with employees, employed, other	ESWC
	no. with unlimited permanent contract, fixed term contract (duration in years and months), temporary employment agency contract, apprenticeship or other training scheme, other	ESWC
	no. having a second job besides main job: regular (number of hours), occasional, seasonal	ESWC
	no. of people under one's supervision: none, 1-4, 5-9, 10 and over	ESWC
	% of employees working part-time	ESWC
1.2 Socio-economic factors		
1.2.3 Education		
educational attainment	no., % in 4 classes: elementary, lower secondary, upper secondary, tertiary (ISCED)	ECHI
	% of 18-24-years old not in education and with low qualifications	ECHI
	% of working age population participating in education and training	Quality Work
1.2.4 Employment		
employment	**)	ECHI
	employment rate for population	OSH/HESME
	absolute difference in employment rates without presence of any children and with presence of a child aged 0-6	Quality Work
	population of employable individuals	OSH, LI
	population of limited employable individuals (mental or physical disability)	OSH, LI
	no. of years in company or organisation	ESWC
	no. of years in present main job	ESWC
	employment rate gap of women compared with men	Quality Work

unemployment	% of population not in labour force; Eurostat: unemployed proportion in active population; longterm: >12 months (for 15-24: >6 months)	ECHI
	average duration of unemployment	PH
	unemployment due to impairment	OSH
	unemployment aged 15-24 as a percentage of the population aged 15-24	Quality Work
	unemployment rate gap of women compared with men	Quality Work
	unemployment rate gap of 55-64 year olds	Quality Work
	gap between the employment and unemployment rates for ethnic minorities and immigrants, taking into account the distinction between low and high level qualifications, as compared with the overall rates	Quality Work
	gap between the employment and unemployment rates for disabled people, taking into account the distinction between low and high level qualifications, as compared with the overall rates	Quality Work
	number of employees who left their last job for family or responsibilities or for education purposes no more than 12 months ago who return later to work but are currently not available for work (for the same reasons why they left their last job) as a % of all employees	Quality Work
enterprises	absolute number and % of enterprises (20 or less, 21-50, 51-250, >250 employees)	HESME
	total number of workers in the local unit of establishment: 1, 2-4, 5-9, 10-49, 50-99, 100-249, 250-499, 500 and over	ESWC
enterprise turnover	**)	LI
	business volume	Berlin
	number of bankruptcies	Berlin
	number of start-ups	Berlin
	changes in name	Berlin
	growth in numbers (positive and negative)	Berlin
turnover of labour	*)	OSH
labour relations	monitoring instrument EIRO from European Foundation; index or several operational indicators	OSH, LI
1.2.5 Income distribution		
income level	Gini coefficient	ECHI
	Eurostat: % of population with income below 60% of national median (equivalised; 'poverty line')	ECHI
	80/20 share ration of total income by quintile	ECHI
	average individual income per capita	HESME
	net montly income from main paid job	ESWC
	ratio of women's hourly earnings index to men's for paid employees at work 15+ hours	Quality Work

payment system	for employees: % whose remuneration includes - basic fixed salary/wage / - piece rate or productivity payments / - extra payments for additional hours of work/overtime / - extra payments compensating for bad or dangerous working conditions / - extra payments compensation for Sunday work / - other extra payments / - payments based on the overall performance of the company (profit-sharing scheme) / - payments based on the overall performance of a group / - income shares in the company / - other	ESWC
	for self-employed: % whose remuneration includes - income from self-employment such as own business, profession or farm / - payments based on the overall performance of the company (profit sharing scheme) / - payments based on the overall performance of a group / - incomes from shares in the company / - other	ESWC
Class 2. Health Status		
Stratification: All indicators of Class 2 should be stratified by the following spects: age, gender, nationality/migration, region, occupation, branches, employment status (employed, unemployed, inactive), early retired, ICD main group and cause of accident (where appropriate)		
2.1 Mortality, general		
life-expectancy	(disability free) life expectancy of working population at age 20, 45 and 65 years	HESME
death rates	*)	ECHI
2.2 Mortality, cause-specific		
death rates	mortality rate in the working population (18-65)	HESME
fatal accidents at work	number and rates of accidents at work leading to the death of the victim within a year of the accident (for operational definitions see ESAW)	ECHI, Country Profiles, HESME
fatal occupational diseases	(for operational definitions see EODS)	PH
2.3 Morbidity, disease-specific		
disease occurrence	incidence/prevalence of morbidity in the working population (e.g. ischemic heart diseases I20-I25, musculoskeletal disorders M00-M99, mental and behavioural disorders F00-F99), also sports and leisure accidents	HESME
	sickness absence at work due to total work-related diseases expressed in lost working years per 100.000 employees	HESME
non-fatal accidents at work	number and rates of accidents at work leading to an absence of more than 3 calendar days (operational definitions have been proposed by ESAW)	ECHI, Country Profiles, HESME
	number of days absence in main paid job due to accident at work over the past 12 months	ESWC
	rate of accidents with stationary treatments	LI
	evaluation of the incidence rate, defined as the number of accidents at work per 100.000 persons in employment	Quality Work
	sickness absence at work due to occupational accidents expressed in lost working years per 100.000 employees	HESME

workplace accidental injuries	number and rates of all non-fatal accidents, including those without absence from work	OSH, PH, LI
occupational diseases	(for operational definitions see EODS)	ECHI, Country Profiles
	number of compensated occupational diseases on official list (compared with best countries)	HESME
2.4 Perceived and functional health		
work-related health complaints	% of employees whose health is affected by work (hearing problems; vision problems; skin problems; backache; headaches; stomach ache; muscular pains in shoulders and neck; muscular pains in upper limbs; muscular pains in lower limbs; respiratory difficulties; heart disease; injury; stress; overall fatigue; sleeping problems; allergies; anxiety; irritability; trauma; work improves health; no impact of work on health)	ESWC
work-related health risks	% of employees who think that health is at risk because of work	ESWC
sickness absence (possibly differentiated by employed/ self-employed and long-term/short-term)	% of persons not working the whole reference week (though having a job) due to sickness, injury or temporary disability (as defined in LFS; absence due to ill health, injuries and work injuries combined)	SI
	average number of sickness absence spells/person/year	SI
	average number of sickness absence days/person/year	SI
	average number of sickness absence days/spell/year (duration)	SI
	percentage of working hours lost due to sickness and work injury of those contracted/person/year	SI
	percentage of persons absent due to sickness and work injury/year	SI
	number of days absence during previous 12 months due to accident at work	ESWC
	number of days absence during previous 12 months due to health problems caused by work	ESWC
early retirement / pre-retirement (due to health status)	**)	PH, LI
	rate of early retirement as a result of occupational accidents or disease per 100.000 employees or per 1000 occupational accidents	HESME
	rate of early retirement due to ischemic heart disease (ICD 10: I20.I25) per 100.000 population	HESME
	rate of early retirement due to musculoskeletal disorders (M00-M99) per 100.000 population	HESME
	rate of early retirement due to mental and behavioral disorders (F00-F99) per 100.000 population	HESME
disability	new invalidity/disability cases per 100.000 population	OSH, HESME
(general) mental health	psychological distress: % population below cutpoint score	ECHI
	psychological well-being: % population below cutpoint	ECHI
	happiness: % population in upper 2 out of 5 response categories	ECHI
	role limitations by emotional problems: % population below cutpoint	ECHI
	for further indicators see Mental Health Project (Final report 2000)	
change in the health status	*)	OSH, LI, PH
work ability	WAI-index	LI, Country Profiles

Class 3. Determinants of Health		
Stratification: All indicators of Class 3 should be stratified by the following aspects: age, gender, nationality/migration, region, occupation, branches, sector, employment status (employed, unemployed, inactive), disabled, early retired		
3.1 Personal and biological factors		
3.1.1 Biological (risk) factors		ECHI
blood pressure	mean/sd of systolic BP	ECHI
	mean/sd of diastolic BP	ECHI
	prevalence of actual and potential hypertensives: % with SBP over 140 mm Hg or DBP over 90, or taking antihypertensive drugs	ECHI
	prevalence of hypertension	ECHI
serum cholesterol	mean/sd of serum total cholesterol (mmol/l)	ECHI
	prevalence of serum total cholesterol over 5 mmol/l	ECHI
obesity	% of employees BMI >= 30	PH
blood sugar/diabetes	*see Project "Establishment of Indicators Monitoring Diabetes Mellitus and its morbidity"*	PH
3.1.2 Personal conditions		ECHI
coping ability	*)	ECHI
professional experience	e.g. number of years, number of professions, number of contracts	OSH, PH
emotional resilience	measured by the vitality index (4 questions of the Copenhagen Psychosocial Questionnaire)	PH
hardiness index	e.g. hardiness concept by S. Kobasa and S. Maddi (1984)	PH
sense of coherence	SOC-scale by A. Antonovsky (1997), short form	Coordinators
level of knowledge about safety and health at the workplace	knowledge concerning regulations	LI
	knowledge about measures/procedures	LI
3.2 Health Behaviours		
3.2.1 Substance use		ECHI
smoking	% of regular smokers	ECHI, OSH, HESME
	% former smokers	ECHI
	% never smokers	ECHI
	% of daily cigarette smokers	ECHI
	passive smoking	OSH
	smoking at work	PH

alcohol use	% non-drinkers in population	ECHI
	alcohol use patterns	ECHI
	total consumption, litre pure alcohol/person/year	PH
	problem drinking	ECHI
(il)licit drug use	lifetime prevalence for cannabis, cocaine, amphetamines, ecstasy, other illicit drugs	ECHI
3.2.2 Nutrition (at work)		ECHI (OSH)
drinking water availability	*)	OSH
nutrition for risk groups	e.g. shiftworkers *)	OSH
nutrition during workday / healthy diet	*)	PH/ LI
3.2.3 Other health-related behaviours		
physical activity / exercise	movement at the workplace	LI
	leisure time physical activity *(see Project EUPASS - European Physical Activity Surveillance System)*	OSH
3.3 Living and Working Conditions		
3.3.1 Physical environment		ECHI
outdoor air at work	*)	OSH
indoor air at work	*)	OSH
3.3.2 Working conditions		ECHI
3.3.2.1 work organisation		
working time	no. of weekly working hours (in main paid job)	ESWC
	% of employed working at least 50h/week	Country Profiles
	night work: number of times a month working at night, for at least 2 hrs. between 10pm and 5 am	ESWC
	evening work: number of times a month working in the evening, for at least 2 hrs. between 6pm and 10pm	ESWC
	Sunday work: number of times working on Sundays per month	ESWC
	Saturday work: number of times working on Saturdays per month	ESWC
	working shifts: % of employees working shifts	ESWC

	types of shiftwork: % of employees working split shifts (with a break of at least 4 hrs. in between), permanent night shifts, permanent afternoon shifts, permanent morning shifts, alternating morning and afternoon shifts, alternating day and night shifts, alternating morning/afternoon/night shifts, other	ESWC
	no. working same number of hours every day	ESWC
	% of employees working same number of hours every week	ESWC
	% of employees having fixed starting and finishing times	ESWC
	% of people having flexible working time	PH
	% of employees working in daytime	ESWC
	no. of times one's scheduled working times change per month	ESWC
	no. of days of advance notice	ESWC
	% of employees for who working hours fit very well/ fairly well/ not very well/ not at all well with family or social commitments outside work	ESWC
shortage of sleep	*)	OSH
commuting time	minutes per day normally spent travelling from home to work and back	ESWC
worksites (flexible, fixed, mobile, telework)	*)	OSH
	% of employees teleworking from home with a PC	ESWC
	% of employees working at home (home being normal workplace), excluding teleworking	ESWC
gender of boss	% of employees whose immediate boss is a man/ woman	ESWC
3.3.2.2 physical workplace exposures		ECHI (OSH)
exposure compared with exposure limits	% of employees exposed to harmful factors (physical, chemical, biological, affecting mental health) at concentration or intensity higher than national occupational exposure limit for that factor	HESME
electronic hazards	*)	OSH
mechanical hazards	% exposed to moving vehicles, moving parts of the production machinery	OSH, PH, LI
heights	*)	OSH
noise	% of employees exposed to noise so loud that you would have to raise your voice to talk to people	ESWC, Country Profiles
climate	% of employees exposed to high temperature which make you perspire even when not working	ESWC
	% of employees exposed to low temperatures whether indoors or outdoors	ESWC
vibration	% of employees exposed to vibrations from hand, tools, machinery, etc.	ESWC

bio-chemical exposure	% of employees exposed to breathing in vapours, fumes, dust, or dangerous substances such as: chemicals, infectious materials, etc.	ESWC
	% of employees exposed to handling or touching dangerous products or substances	ESWC, Country Profiles
	% of employees exposed to carcinogenic factors including environmental tobacco smoke	HESME
	asbestos consumption in kg/capita/year	Country Profiles
	pesticide consumption in kg/capita/year	Country Profiles
radiation	% of employees exposed to radiation such as X-rays, radioactive radiation, welding light, laser beams	ESWC
wearing personal protective equipment	% of employees whose job involves wearing personal protective equipment	ESWC
lighting	*)	LI
sedentary working	*)	OSH
carrying or moving heavy loads	% of employees whose job involves carrying or moving heavy loads	ESWC, Country Profiles
lifting loads manually	*)	LI
painful or tiring positions/postures	% of employees whose job involves painful or tiring positions	ESWC
repetitive movements	% of employees whose job involves repetitive hand or arm movements	ESWC
repetitive tasks	% of employees whose job involves short repetitive tasks of less than 5s / 30s / 1min / 5min / 10min	ESWC
work equipment	% of safe designed equipment on the market (or in the enterprise)	OSH, PH, LI
	% of ergonomic designed equipment on the market (or in the enterprise)	OSH, PH, LI
working with computers	% of employees working with PCs, network, mainframe	ESWC
3.3.2.3 psychosocial aspects of work		
work rhythms	% of employees whose pace of work is dependent on work done by colleagues	ESWC
	% of employees whose pace of work is dependent on direct demands from people such as customers, passengers, pupils, patiens etc.	ESWC
	% of employees whose pace of work is dependent on numerical production targets	ESWC
	% of employees whose pace of work is dependent on automatic speed of a machine or movement of a product	ESWC
	% of employees whose pace of work is dependent on direct control of the boss	ESWC
	frequency of task interruptions: % of employees having to interrupt a task they are doing in order to take on an unforeseen tasks several times a day, a few times a day, several times a week, a few times a week, never	ESWC
	reasons for task interruptions: % where reason for task interruption is mainly - nature of work / - bad organisation of work / - requests from colleagues or superiors / - external requests (clients etc.) / - machines or equipment working badly / - bad design of workplace of work station / - other	ESWC
	consequences: % where interruptions are disruptive, without consequences, positive, not relevant	ESWC

deadline and efficiency pressure / haste	**)	LI / OSH
	% of employees working at very high speed	ESWC, Country Profiles
	% of employees working to tight deadlines	ESWC
	% of employees having enough time to get job done	ESWC
monotonous work	% of employees whose job involves monotonous tasks	ESWC
meaningful work	*)	PH
job control	% of employees having control over order of tasks	ESWC
	% of employees having control over methods of work	ESWC
	% of employees having control over speed or rate of work	ESWC
	% of employees having possibility to take breaks when desired	ESWC
	% of employees having possibility to decide freely when to take holidays or days off	ESWC
	% of employees having influence over working hours	ESWC
	% of employees having access to a telephone for private calls	ESWC
skills, training and empowerment	% of employees whose job involves meeting precise quality standards	ESWC
	% of employees whose job involves assessing the quality of own work	ESWC
	% of employees whose job involves solving unforeseen problems on your own	ESWC
	% of employees whose job involves complex tasks	ESWC
	% of employees whose job involves learning new things	ESWC
	% of employees having responsibility for production planning	ESWC
	% of employees having responsibility for staffing	ESWC
	% of employees having responsibility for time schedules	ESWC
	% of employees whose job involves task rotation	ESWC
	% of employees whose job involves teamwork	ESWC
	perceived skills-job match: % of employees where demands are too high/ they match/ are too low	ESWC
	% of employees having undergone training paid for or provided by employer (or by oneself if self-employed) over the past 12 months	ESWC
	no. of days training provided over the past 12 months	ESWC
company climate	*)	OSH, LI, PH
job satisfaction	**)	PH, LI
	satisfaction with working conditions	ESWC
	% of employees working part-time wishing to work more / less / same number of hours	ESWC
	satisfaction of the employees referring to company culture, service, management	OSH
social support	% of employees having the possibility of getting assistance from colleagues if one asks for it	OSH
physical violence	% of employees subjected at work / aware of existence over past 12 months to physical violence from people within workplace	ESWC
	% of employees subjected .../... to physical violence from other people	ESWC
intimidation	% of employees subjected .../... to intimidation (by colleagues, superiors, customers, patients)	ESWC
unwanted sexual attention (harrassment)	% of employees subjected .../... to unwanted sexual attention	ESWC (OSH)

discrimination	% of employees subjected .../... to sexual discrimination	ESWC
	% of employees subjected .../... to age discrimination	ESWC
	% of employees subjected .../... to discrimination linked to nationality	ESWC
	% of employees subjected .../... to discrimination linked to ethnic background/race	ESWC
	% of employees subjected .../... to discrimination linked to disability	ESWC
	% of employees subjected .../... to discrimination linked to sexual orientation	ESWC
conflicts	*)	OSH, LI, PH
information and communication	**)	OSH, LI, PH
	% of employees being very well/ fairly well/ not/ not very well/ not at all well informed regarding risks resulting from the use of materials, instruments or products which one handles in the job	ESWC
	% of employees being able to discuss at the workplace the working conditions in general	ESWC
	% of employees being able to discuss at the workplace the organisation of own work when changes take place	ESWC
	discussions regarding the work take place with - colleagues / - superiors / - staff representatives / - outside experts / - on a regular basis / - on a formal basis	ESWC
	% where exchanges lead to improvements - at the own personal workplace / - in own office or factors / - in the organisation as a whole	ESWC
overworking	**)	OSH
	no. of times working more than 10 hrs. a day per month	ESWC
contact with clients	% of employees whose job involves dealing directly with clients who are not employees at your workplace such as customers, passengers, pupils, patients etc.	ESWC
Class 4. Health and safety systems		
Stratification: All indicators of Class 4 should be stratified by the following aspects: age, gender, nationality/migration, region, occupation, branches, sector, employment status (employed, unemployed, inactive), disabled, early retired, size of enterprise		
4.1 Prevention, health protection and health promotion		
4.1.1 Disease prevention		
OSH culture in enterprises	% of enterprises having integrated OSH in their corporate philosophy	Berlin
OSH campaigns in enterprises	% of enterprises offering OSH programmes aiming to improve working conditions	Berlin
	% of employees participating in OSH programmes aiming to improve their working conditions	Berlin
design of working conditions	% of enterprises using ergonomic designed equipment, e.g. VDU according to TCO 99	Berlin
	% of employees being provided with safe/ergonomic designed equipment at work	Berlin
	% of employees working safe/ergonomic designed workplaces	Berlin
education, training, information	% of enterprises providing information on risks resulting from the working conditions	Berlin
	% of employees being informed regarding risks resulting from their working conditions	Berlin
	% of employees receiving training at the start of work	Berlin
	% of employees receiving training to improve skills when working in high risk jobs	Berlin

medical surveillance	number of preplacement medical examinations	PH
	coverage of employees by preplacement medical examinations	PH
	number of periodic occupational medical examinations	PH
	coverage of employees by periodic occupational medical examinations	PH, HESME
	% of employees undergoing self-assessment of health	HESME
vaccination programmes	% of working population/employees participating in vaccinations (HBV, influenza) programmes	HESME
4.1.2 Health Promotion	(under this category all indicators of the project which relate to health promotion are subsumed; they could, however, also be sorted under other categories if health promotion is viewed as a cross-sectional aspect)	ECHI
campaigns on health behaviours	awareness of elevated blood pressure	ECHI
	awareness of elevated serum cholesterol	ECHI
	campaigns on injury prevention	ECHI
mental health promotion	*)	ECHI
work/life-balance-programmes in enterprises	e.g. child care, parental leave	OSH
instructions	*)	LI
assessment of health promotion needs	% of population in working age/employees under regular assessment of health promotion needs	HESME
existence of workplace health promotion	**)	PH
	% of enterprises having a corporate philosophy on workplace health promotion in an organisation	ENWHP, PH
	% of enterprises providing a separate budget for workplace health promotion aside from the budget for occupational health and safety in an organisation	ENWHP, PH
	financial investment in HESME as percentage of the enterprise total budget or gross income	HESME
	% of enterprises having a steering committee, project group or something similar functioning within the organisation which plans, monitors and evaluates the health promotion measures in which all health-related key functions in the organisation are represented	ENWHP, PH
	% of enterprises having a contract with external preventive services (OH services and others) specifying their role in HESME	HESME
quality of workplace health promotion programmes	**)	PH
	% of enterprises regulary and systematically collecting all information (internal and external) required for the planning and implementation of health promotion measures	ENWHP, PH
	% of enterprises providing the opportunity for all staff to actively engage in workplace health matters	ENWHP, PH
	superiors support their staff	ENWHP, PH
	providance of a good working atmosphere	ENWHP, PH
	% of enterprises having a commitment of top enterprise managers to implement GP HESME	HESME
	% of enterprises systematically evaluating and continously improving all measures	ENWHP
	% of enterprises producing an annual report on HESME performance	HESME
	% of enterprises implementing and interlinking measures for health-promoting work organisation and job design as well as measures to promote healthy behaviours	ENWHP, PH

distribution of specific programs	% of enterprises/institutions running stress reduction/prevention programmes	PH
	% of enterprises/institutions running smoking cessation programmes	PH
	% of enterprises/institutions running nutrition programmes	PH
	% of enterprises/institutions running problem drinking programmes	PH
	% of enterprises/institutions running physical exercise programmes	PH
	% of enterprises/institutions running drug use programmes	ECHI
	% of enterprises/institutions providing access to important health-related facilities (e.g. existence of break and rest rooms, canteen, sports amenities)	ENWHP, PH
reintegration	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	ENWHP
corporate social responsibility	% of enterprises supporting health-related, social, cultural and welfare initiatives	ENWHP
trust and commitment	e.g. Gallup Q12-measure for worker engagement	OSH
perceived justice	*)	OSH
coverage by health promotion programmes	% of employees participating in specified workplace health promotion programmes	HESME
	% of population employed in enterprises offering specific workplace health promotion programs	HESME
	% of employees participating in programmes aimed at improvement of their work ability and employability	HESME
	number and percentage of enterprises that have demonstrated implementation of GP HESME	HESME
providance of healthy and environmentally friendly products and services	% of enterprises that managed to prove that they provide healthy and environmentally friendly products and services, and provide product stewardships throughout the products' life cycles	HESME
workplace health promotion specialists	% of enterprises employing workplace health promotion specialists	PH
GP HESME benchmarking comparisons	% of enterprises participating in GP HESME benchmarking comparisons	HESME
4.1.3 Health protection		
regulations on occupational safety & health	% of health risk areas sufficiently covered by OSH regulations	OSH, LI
	% of active labour force covered by efficient enforcement of occupational health and safety legislation	HESME
compliance with OSH regulations	% of enterprises complying with a given legal provision	LI / Berlin
	% of violations against a given legal provision	LI / Berlin
ratification of ILO OH&S conventions	% of conventions	Country Profiles
	number of ratified ILO conventions, particularly ILO convention NO. 155 and 161	HESME

4.2 Health and safety resources		
4.2.1 Facilities		
OSH management in enterprises	% of enterprises which have introduced appropriate OSH management systems (certified or otherwise documented)	HESME, OSH, LI, Berlin
	% of enterprises (regularly) conducting risk assessment	OSH, LI, PH, Berlin
OSH services	number(s) of safety engineering/occupational medical units per 10.000 employees	OSH, LI, PH
	% of employees/enterprises covered by safety specialists	Berlin
	% of employees/enterprises covered by health services	Country Profiles, HESME, Berlin
	% of employees/enterprises covered by a system for recording, notification and compensation of occupational accidents and diseases	HESME
risk management	number of medical treatment centres for chemical poisonings per 10.000 employees	HESME
networks	% of enterprises active cooperating in networks fostering OSH	OSH, Berlin
training	number of training units in OSH for employers per 1.000 enterprises	OSH, Berlin
	number of training units in OSH for employers per 10.000 employees	OSH, Berlin
	number of training units in OSH for worker representatives per 1.000 enterprises	OSH, Berlin
	number of training units in OSH for professionals (safety and occupational medicine) per 1.000 enterprises	OSH, Berlin
existence of tripartite bodies (government, employers, employees) on OHS and HESME	number of such bodies	HESME
4.2.2 Manpower		
human resources in labour safety at workplaces	safety representatives and managers / 1000 employed	Country Profiles
	number of safety specialists per 100 000 full-time workers	OSH, LI, PH
human resources in occupational health services	occupational physicians / 1000 employed	OSH, LI, Country Profiles, HESME
	occupational nurses / 1000 employed	OSH, LI, Country Profiles, HESME
human resources in labour inspection	inspectors/ 1000 employed	Country Profiles, LI

4.2.3 Education		
academic institutions	number of academic institutions (universities, national institutes, others) providing education to occupational physicians, occupational nurses, safety engineers, labour inspectors, environmental engineers, occupational hygienist, ergonomists, health promotion specialists and other HES specialists	HESME
graduates	number of graduates per year per 100.000 population of occupational physicians, occupational nurses, safety engineers, labour inspectors, environmental engineers, occupational hygienist, ergonomists, health promotion specialists and other HES specialists	HESME
research on HESME	number of academic research institutions (universities, national institutes and others) carrying out scientific research and development studies in different areas of HESME	HESME
	percentage of GNP/gross local product invested in scientific research and development studies aimed at providing data for improvement of HESME	HESME
measures to improve employability	number of centers providing education and training (with assurance of this service quality) to improve work ability and employability and their total educational capacity in number of participants per year	HESME
4.2.4 Work-related aspects of social insurance systems		OSH
sickness benefits	days covered by employer	coordinators
	full vs. partial benefits	coordinators
accident insurance	**)	OSH
	type of compensation system	coordinators
	number of occupational diseases covered	coordinators
disability pension benefits	full vs. partial benefits	coordinators
unemployment benefits	*)	coordinators
4.3 Health care (service) utilisation		
inspection	**)	OSH
	number of workplaces where there has been health needs assessment	PH
	number of workplaces that have assessed occupational risk	PH
	utilisation of occupational safety engineering units	OSH, LI, PH
	utilisation of the enforcement authorities	LI
rehabilitation (possibly differentiated by employed/ self-employed)	% of employees receiving ambulant rehabilitation (rehabilitation programs for specific diseases/disorders)/year	SI
	% of employees receiving medical rehabilitation in institution (rehabilitation programs for specific physical diseases)/year	SI
	% of employees receiving medical rehabilitation in institution (rehabilitation programs for specific mental disorders)/year	SI
	% of employees receiving vocational rehabilitation/year	SI
	% of employees receiving both medical and vocational rehabilitation/year	SI
	% of employees returning to the same work after a sickness spell incl. rehabilitation/year	SI
	% of employees returning to another work after a sickness spell incl. rehabilitation/year	SI

disability benefits / disability pensions (possibly differentiated by employed/ self-employed)	% of population collecting full and partial disability pension respectively/year	SI
	% of population collecting full and partial disability benefit respectively/year	SI
	% of population newly granted disability benefit/year	SI
	% of population newly granted disability pension/year	SI
	% of disability benefits recipients working/year	SI
Information management	publishing	OSH
	campaigns	OSH
	use of websites	OSH
	use of hotlines	OSH
4.4 Health expenditures / financing		
expenditures on occupational safety & health measures	expenditures by accident insurance companies, health insurance companies, public expenditure, expenditure from the enterprises, private expenditure as % of total health expenditure or % of GNP/GDP	OSH, LI, PH
expenditure of workplace health promotion measures	expenditures by accident insurance companies, health insurance companies, public expenditure, expenditure from the enterprises, private expenditure as % of total health expenditure or as % of GNP/GDP	PH
state expenditure for supervision	*)	LI
cost of lost working days due to sickness absence	*)	PH
costs of occupational accidents and diseases	cost of accidents and diseases at work as a percentage of GDP	PH/ HESME
cost of disability pensions, allowances, medical/vocational rehabilitation and integration	*)	PH
4.5 Health (and safety) care quality/performance		
4.5.1 Subjective Indicators		ECHI
sustainability of work	ability to do the same job when 60 years old	ESWC
perception of the OSH system	% of population satisfied with health system	ECHI
	employer's and employee's view	OSH, LI,PH

*) Due to the complexity of the concepts that are aimed to be measured, an appropriate operational definition still needs to be elaborated in a separate step.

**) Further operational definitions of the generic indicator are conceivable, additionally to those already listed.

Explanation of abbreviations in column "origin"	
ECHI -	ECHI 2-list
ESWC -	European Survey on Working Conditions (2000)
Quality Work -	set of indicators used to monitor "Quality of Work" in Europe (SOC 504)
HESME -	indicators proposed for Good Practice in Health, Environment and Safety Management (WHO)
Country Prof. -	Work and Health Country Profiles (WHO)
OSH -	satellite workshop "Occupational Health and Safety"
PH -	satellite workshop "Public Health"
LI -	satellite workshop "Labour Inspectorate"
Social Ins. -	satellite workshop "Social Insurance"
Berlin -	plenary meeting in Berlin (February 2004)
coordinators -	added by the coordinators

Annex 7: Domain windows

Tables A2.1 to A2.9 show the indicators that were chosen by the experts for monitoring the relevant policy domains.
As described in chapter 5, there were 27 indicators which were selected for all or for 8 of the domain windows (listed in Table 6). To make the lists for the domain windows less redundant, we excluded these indicators from the lists below. Therefore, in tables A2.1 to A2.9 only those indicators are compiled for each of the domain windows that were selected additionally to those listed in table 6.
The last column indicates the number of nominations each indicator got by the project partners. As the first two domain windows (working conditions, health inequalities) were compiled consensually at a plenary meeting, they received only one nomination.

Table A2.1: Indicators for the policy domain “Improving working conditions”

Policy domain: Improving working conditions		
generic indicator	***operational indicator***	****)***
enterprises	total number of enterprises	1
work-related health risks	% of employees who think that health is at risk because of work	1
noise	% of employees exposed to noise so loud that you would have to raise your voice to talk to people	1
sedentary working		1
carrying or moving heavy loads	% of employees whose job involves carrying or moving heavy loads	1
lifting loads manually		1
painful or tiring positions/postures	% of employees whose job involves painful or tiring positions	1
repetitive movements	% of employees whose job involves repetitive hand or arm movements	1
work equipment		1
working with computers	% of employees working with PCs, network, mainframe	1
deadline and efficiency pressure		1
monotonous work	% of employees whose job involves monotonous tasks	1
meaningful work		1
job control	% of employees having control over order of tasks	1
company climate		1
job satisfaction		1
intimidation	% of employees subjected .../... to intimidation	1
long working days	long working days: no. of times working more than 10 hrs. a day per month	1
human resources in labour safety at workplaces	safety representatives and managers / 1000 employed	1
human resources in occupational health services	occupational physicians / 1000 employed	1
human resources in labour inspection	inspectors/ 1000 employed	1
inspection		1
cost of lost working days due to sickness absence		1
costs of occupational accidents and diseases	cost of accidents and diseases at work as a percentage of GDP	1
cost of disability pensions, allowances, medical/vocational rehabilitation and integration		1
	% of enterprises which have introduced appropriate OSH management systems (certified or otherwise documented)	1
training		1

*) number of nominations

Table A2.2: Indicators for the policy domain “Combating health inequalities”

Policy domain: Combating health inequalities		
generic indicator	***operational indicator***	***)**
total population		1
educational attainment		1
payment system	for employees: % whose remuneration includes - basic fixed salary/wage; - piece rate or productivity payments; - extra payments for additional hours of work/overtime etc.	1
death rates		1
work-related health risks	% of employees who think that health is at risk because of work	1
emotional resilience	measured by the vitality index (4 questions of the Copenhagen Psychosocial Questionnaire)	1
level of knowledge about safety and health at the workplace		1
smoking		1
alcohol use		1
(il)licit drug use		1
physical activity / exercise		1
carrying or moving heavy loads	% of employees whose job involves carrying or moving heavy loads	1
lifting loads manually		1
painful or tiring positions/postures	% of employees whose job involves painful or tiring positions	1
repetitive movements	% of employees whose job involves repetitive hand or arm movements	1
repetitive tasks	% of employees whose job involves short repetitive tasks of less than 5s / 30s / 1min etc.	1
job control	% of employees having control over order of tasks	1
skills, training and empowerment	% of employees whose job involves meeting precise quality standards	1
discrimination	% of employees subjected .../... to sexual discrimination	1
reintegration/rehabilitation	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	1
medical surveillance	number of preplacement medical examinations	1
	number(s) of safety engineering/occupational medical units per 10.000 employees	1
human resources in occupational health services	occupational physicians / 1000 employed	1
measures to improve employability	number of centers providing education and training (with assurance of this service quality) to improve work ability and employability and their total educational capacity in number of participants per year	1
rehabilitation		1
Information management		1
training		1

*) number of nominations

Table A2.3: Indicators for the policy domain “Enhancing agreement on international cooperation and regulations”

Policy domain: Enhancing agreement on international cooperation and regulations (I)		
generic indicator	***operational indicator***	****)***
level of knowledge about safety and health at the workplace		3
payment system	for employees: % whose remuneration includes - basic fixed salary/wage; - piece rate or productivity payments; - extra payments for additional hours of work/overtime etc.	3
ratification of ILO OH&S conventions	% of conventions	3
perception of the OSH system	% of population satisfied with health system	3
educational attainment		2
work-related health risks	% of employees who think that health is at risk because of work	2
human resources in occupational health services	occupational physicians / 1000 employed	2
costs of occupational accidents and diseases	cost of accidents and diseases at work as a percentage of GDP	2
sustainability of work	ability to do the same job when 60 years old	2
	employment rate for population	2
enterprises	total number of enterprises	2
education, training, information	% of enterprises providing information on risks resulting from the working conditions	2
human resources in labour safety at workplaces	safety representatives and managers / 1000 employed	2
human resources in labour inspection	inspectors/ 1000 employed	2
demographic changes (older employees)		2
labour relations	monitoring instrument EIRO from European Foundation; index or several operational indicators	2
Work-related aspects of social insurance systems		2
existence of tripartite bodies (governm., employers, employees) on OHS and HESME		2
coping ability		1
emotional resilience	measured by the vitality index (4 questions of the Copenhagen Psychosocial Questionnaire)	1
smoking		1
alcohol use		1
repetitive movements	% of employees whose job involves repetitive hand or arm movements	1
OSH culture in enterprises	% of enterprises having integrated OSH in their corporate philosophy	1
sickness benefits		1
pension benefits	disability pension benefits, full vs. partial benefits	1
unemployment benefits		1
cost of lost working days due to sickness absence		1
cost of disability pensions, allowances, medical/vocational rehabilitation and integration		1
(general) mental health	psychological distress: % population below cutpoint score	1
physical activity / exercise		1

working with computers	% of employees working with PCs, network, mainframe	1
death rates		1
obesity		1
professional experience	e.g. number of years, number of professions, number of contracts	1
	no. of weekly working hours (in main paid job)	1
	% of employed working at least 50h/week	1
	working shifts: % of employees working shifts	1
design of working conditions	% of enterprises using ergonomic designed equipment, e.g. VDU according to TCO 99	1
expenditure of workplace health promotion measures		1
migration/diversity		1
total population		1
	no. with unlimited permanent contract, fixed term contract (duration in years and months), temporary employment agency contract, apprenticeship or other training scheme, other	1
	% of employees working part-time	1
	total number of workers in the local unit of establishment: 1, 2-4, 5-9, 10-49, 50-99, 100-249, 250-499, 500 and over	1
	evaluation of the incidence rate, defined as the number of accidents at work per 100.000 persons in employment	1
	days covered by employer	1
Information management		1
turnover of labour		1
death rates	mortality rate in the working population (18-65)	1
	percentage of working hours lost due to sickness and work injury of those contracted/person/year	1
commuting time	minutes per day normally spent travelling from home to work and back	1
gender of boss	% of employees whose immediate boss is a man/ woman	1
bio-chemical exposure	% of employees exposed to breathing in vapours, fumes, dust, or dangerous substances such as: chemicals, infectious materials, etc.	1
	% of employees receiving training at the start of work	1
risk management	number of medical treatment centres for chemical poisonings per 10.000 employees	1
perceived justice		1
Education		1
	for self-employed: % whose remuneration includes - income from self-employment such as own business, profession or farm - payments based on the overall performance of the company (profit sharing scheme) etc.	1
hardiness index		1
nutrition during workday generally/ healthy diet		1
	% of employees subjected .../... to physical violence from other people	1
	% of employees being informed regarding risks resulting from their working conditions	1
	regular and systematic collection of all information (internal and external) required for the planning and implementation of health promotion measures	1
networks	% of enterprises active cooperating in networks fostering	1

	OSH	
trust and commitment		1
	no. of self-employed without employees, self-employed with employees, employed, other	1
	unemployment aged 15-24 as a percentage of the population aged 15-24	1
sense of coherence		1
Substance use		1
Nutrition (at work)		1
Physical environment		1
physical workplace exposures		1
psychosocial aspects of work		1
	% of employees being very well/ fairly well/ ... informed regarding risks resulting from the use of materials, instruments or products which one handles in the job	1
Disease prevention		1
	% of employees participating in OSH programmes aiming to improve their working conditions	1
	coverage of employees by preplacement medical examinations	1
	number of ratified ILO conventions, particularly ILO convention NO. 155 and 161	1
	% of employees/enterprises covered by safety specialists	1
	% of employees/enterprises covered by health services	1
	% of employees/enterprises covered by a system for recording, notification and compensation of occupational accidents and diseases	1
	occupational nurses / 1000 employed	1
Education		1
	employer's and employee's view	1
new risks		1

*) number of nominations

Table A2.4: Indicators for the policy domain “Enhancing intrinsic job quality (job satisfaction)”

Policy domain: Enhancing intrinsic job quality (job satisfaction) (II)		
generic indicator	***operational indicator***	***)**
payment system	for employees: % whose remuneration includes - basic fixed salary/wage; - piece rate or productivity payments; - extra payments for additional hours of work/overtime; - extra payments compensating for bad or dangerous working conditions etc.	4
deadline and efficiency pressure		4
monotonous work	% of employees whose job involves monotonous tasks	4
company climate		4
job satisfaction		4
work-related health risks	% of employees who think that health is at risk because of work	3
work rhythms		3
meaningful work		3
job control	% of employees having control over order of tasks	3
skills, training and empowerment	% of employees whose job involves meeting precise quality standards	3
social support	% of employees having the possibility of getting assistance from colleagues if one asks for it	3
long working days	long working days: no. of times working more than 10 hrs. a day per month	3
emotional resilience	measured by the vitality index (4 questions of the Copenhagen Psychosocial Questionnaire)	2
gender of boss	% of employees whose immediate boss is a man/ woman	2
repetitive tasks	% of employees whose job involves short repetitive tasks of less than 5s / 30s / 1min / ...	2
	perceived skills-job match: % of employees where demands are too high, they match, are too low	2
discrimination	% of employees subjected .../... to sexual discrimination	2
conflicts		2
OSH culture in enterprises	% of enterprises having integrated OSH in their corporate philosophy	2
education, training, information	% of enterprises providing information on risks resulting from the working conditions	2
distribution of specific programs		2
overworking		2
training		2
Education		1
educational attainment		1
	employment rate for population	1
labour relations	monitoring instrument EIRO from European Foundation; index or several operational indicators	1
Income distribution		1
death rates		1
	sickness absence at work due to total work-related diseases expressed in lost working years per 100.000 employees	1
(general) mental health	psychological distress: % population below cutpoint score	1
coping ability		1
professional experience	e.g. number of years, number of professions, number of	1

	contracts	
hardiness index		1
level of knowledge about safety and health at the workplace		1
smoking		1
alcohol use		1
(il)licit drug use		1
physical activity / exercise		1
	no. of weekly working hours (in main paid job)	1
	% of employed working at least 50h/week	1
	night work: number of times a month working at night, for at least 2 hrs. between 10pm and 5 am	1
	Sunday work: number of times working on Sundays per month	1
	working shifts: % of employees working shifts	1
	% of employees for who working hours fit very well/ fairly well/ not very well/ not at all well with family or social commitments outside work	1
noise	% of employees exposed to noise so loud that you would have to raise your voice to talk to people	1
wearing personal protective equipment	% of employees whose job involves wearing personal protective equipment	1
sedentary working		1
carrying or moving heavy loads	% of employees whose job involves carrying or moving heavy loads	1
painful or tiring positions/postures	% of employees whose job involves painful or tiring positions	1
repetitive movements	% of employees whose job involves repetitive hand or arm movements	1
work equipment		1
working with computers	% of employees working with PCs, network, mainframe	1
	% of employees whose pace of work is dependent on direct control of the boss	1
	frequency of task interruptions: % of employees having to interrupt a task they are doing in order to take on an unforeseen tasks several times a day, a few times a day, several times a week, a few times a week, never	1
	% of employees having control over speed or rate of work	1
	% of employees having possibility to take breaks when desired	1
	% of employees having possibility to decide freely when to take holidays or days off	1
	% of employees whose job involves complex tasks	1
	% of employees whose job involves learning new things	1
	% of employees having responsibility for production planning	1
	% of employees having responsibility for staffing	1
	% of employees having responsibility for time schedules	1
	% of employees whose job involves task rotation	1
	% of employees whose job involves teamwork	1
	satisfaction with working conditions	1
	% of employees subjected .../... to physical violence from other people	1
intimidation	% of employees subjected .../... to intimidation	1
unwanted sexual attention (harassment)	% of employees subjected .../... to unwanted sexual attention	1

contact with clients	% of employees whose job involves dealing directly with clients who are not employees at your workplace such as customers, passengers, pupils, patients etc.	1
OSH campaigns in enterprises	% of enterprises offering OSH programmes aiming to improve working conditions	1
	% of employees being provided with safe/ergonomic designed equipment at work	1
medical surveillance	number of preplacement medical examinations	1
vaccination programs	% of working population/employees participating in vaccinations (HBV, influenza) programmes	1
mental health promotion		1
work/life-balance-programmes in enterprises		1
	opportunity for all staff to actively engage in workplace health matters	1
	superiors support their staff	1
	providance of a good working atmosphere	1
	systematic evaluation and continuous improvement of all measures	1
reintegration	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	1
corporate social responsibility	% of enterprises supporting health-related, social, cultural and welfare initiatives	1
ratification of ILO OH&S conventions	% of conventions	1
risk management	number of medical treatment centres for chemical poisonings per 10.000 employees	1
existence of tripartite bodies (governm., employers, employees) on OHS and HESME		1
human resources in labour safety at workplaces		1
human resources in occupational health services		1
human resources in labour inspection	inspectors/ 1000 employed	1
sickness benefits		1
pension benefits	disability pension benefits, full vs. partial benefits	1
unemployment benefits		1
inspection		1
sustainability of work	ability to do the same job when 60 years old	1
perception of the OSH system	% of population satisfied with health system	1
trust and commitment		1
haste		1
corporate ethics		1
perceived justice		1

*) number of nominations

Table A2.5: Indicators for the policy domain “Promoting social inclusion”

Policy domain: Promoting social inclusion (III)		
generic indicator	***operational indicator***	****)***
total population		5
rehabilitation		5
(general) mental health	psychological distress: % population below cutpoint score	4
discrimination	% of employees subjected .../... to sexual discrimination	4
reintegration/rehabilitation	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	4
reintegration	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	4
disability benefits / disability pensions		4
educational attainment		3
payment system	for employees: % whose remuneration includes - basic fixed salary/wage; - piece rate or productivity payments; - extra payments for additional hours of work/overtime etc.	3
death rates		3
work-related health risks	% of employees who think that health is at risk because of work	3
social support	% of employees having the possibility of getting assistance from colleagues if one asks for it	3
sickness benefits		3
pension benefits	disability pension benefits, full vs. partial benefits	3
unemployment benefits		3
cost of disability pensions, allowances, medical/vocational rehabilitation and integration		3
labour relations	monitoring instrument EIRO from European Foundation; index or several operational indicators	2
death rates	mortality rate in the working population (18-65)	2
change in the health status		2
coping ability		2
emotional resilience	measured by the vitality index (4 questions of the Copenhagen Psychosocial Questionnaire)	2
physical violence	% of employees subjected at work / aware of existence over past 12 months to physical violence from people within workplace	2
corporate social responsibility	% of enterprises supporting health-related, social, cultural and welfare initiatives	2
	employment rate for population	1
	population of employable individuals	1
	population of limited employable individuals (mental or physical disability)	1

	The gap between the employment and unemployment rates for ethnic minorities and immigrants, taking into account the distinction between low and high level qualifications, as compared with the overall rates	1
	The gap between the employment and unemployment rates for disabled people, taking into account the distinction between low and high level qualifications, as compared with the overall rates	1
enterprises	total number of enterprises	1
enterprise turnover		1
turnover of labour		1
	Eurostat: % of population with income below 60% of national median (equivalised; 'poverty line'), or:	1
	average individual income per capita	1
	psychological well-being: % population below cutpoint	1
	happiness: % population in upper 2 out of 5 response categories	1
smoking		1
alcohol use		1
physical activity / exercise		1
work equipment		1
work rhythms		1
	% of employees whose pace of work is dependent on work done by colleagues	1
skills, training and empowerment	% of employees whose job involves meeting precise quality standards	1
	satisfaction with working conditions	1
intimidation	% of employees subjected .../... to intimidation	1
	% of employees subjected .../... to age discrimination	1
	% of employees subjected .../... to discrimination linked to nationality	1
	% of employees subjected .../... to discrimination linked to ethnic background/race	1
conflicts		1
	% of employees being able to discuss at the workplace the working conditions in general (ESWC)	1
	% of employees being able to discuss at the workplace the organisation of own work when changes take place (ESWC)	1
	Discussions regarding the work take place with - colleagues - superiors - staff representatives - outside experts - on a regular basis - on a formal basis (ESWC)	1
contact with clients	% of employees whose job involves dealing directly with clients who are not employees at your workplace such as customers, passengers, pupils, patients etc.	1
OSH culture in enterprises	% of enterprises having integrated OSH in their corporate philosophy	1
medical surveillance	number of preplacement medical examinations	1

	superiors support their staff	1
	providance of a good working atmosphere	1
	% of enterprises/institutions running stress reduction/prevention programmes	1
	% of enterprises/institutions running problem drinking programmes	1
	% of enterprises/institutions running drug use programmes	1
	% of employees participating in programmes aimed at improvement of their work ability and employability	1
measures to improve employability	number of centers providing education and training (with assurance of this service quality) to improve work ability and employability and their totoal educational capacity in number of participants per year	1
Work-related aspects of social insurance systems		1
	days covered by employer	1
	type of compensation system	1
	number of occupational diseases covered	1
Information management		1
cost of lost working days due to sickness absence		1
costs of occupational accidents and diseases		1
sustainability of work	ability to do the same job when 60 years old	1
migration/diversity		1
perceived justice		1

*) number of nominations

Table A2.6: Indicators for the policy domain “Advocating health promotion”

Policy domain: Advocating health promotion (IV)		
generic indicator	***operational indicator***	****)***
work-related health risks	% of employees who think that health is at risk because of work	5
smoking		5
alcohol use		5
physical activity / exercise		5
campaigns on health behaviours	awareness of elevated blood pressure	5
mental health promotion		5
work/life-balance-programmes in enterprises		5
assessment of health promotion needs		5
expenditure of workplace health promotion measures		5
death rates		4
(general) mental health	psychological distress: % population below cutpoint score	4
serum cholesterol	mean/sd of serum total cholesterol (mmol/l)	4
blood sugar-diabetes		4
(il)licit drug use		4
drinking water availability		4
nutrition during workday generally/ healthy diet		4
	existence of a corporate philosophy on workplace health promotion in an organisation	4
	providance of a separate budget for workplace health promotion aside from the budget for occupational health and safety in an organisation	4
	existence of a steering committee, project group or something similar functioning within the organisation which plans, monitors and evaluates the health promotion measures in which all health-related key functions in the organisation are represented	4
	regular and systematic collection of all information (internal and external) required for the planning and implementation of health promotion measures	4
	% of enterprises/institutions running stress reduction/prevention programmes	4
	% of enterprises/institutions running smoking cessation programmes	4
	% of enterprises/institutions running nutrition programmes	4
	% of enterprises/institutions running problem drinking programmes	4
	% of enterprises/institutions running physical exercise programmes	4
	% of enterprises/institutions running drug use programmes	4
	% of enterprises/institutions providing access to important health-related facilities (e.g. existence of break and rest rooms, canteen, sports amenities)	4
coverage by health promotion programmes	% of employees participating in specified workplace health promotion programmes	4
enterprises	total number of enterprises	3
death rates	mortality rate in the working population (18-65)	3

change in the health status		3
blood pressure	mean/sd of systolic BP	3
obesity		3
coping ability		3
vaccination programmes	% of working population/employees participating in vaccinations (HBV, influenza) programmes	3
instructions		3
indicators for the quality of workplace health promotion		3
	opportunity for all staff to actively engage in workplace health matters	3
	systematic evaluation and continuous improvement of all measures	3
total population		2
emotional resilience	measured by the vitality index (4 questions of the Copenhagen Psychosocial Questionnaire)	2
job control	% of employees having control over order of tasks	2
skills, training and empowerment	% of employees whose job involves meeting precise quality standards	2
job satisfaction		2
social support	% of employees having the possibility of getting assistance from colleagues if one asks for it	2
OSH culture in enterprises	% of enterprises having integrated OSH in their corporate philosophy	2
education, training, information	% of enterprises providing information on risks resulting from the working conditions	2
	awareness of elevated serum cholesterol	2
	campaigns on injury prevention	2
	superiors support their staff	2
	implementation and interlinkage of measures for health-promoting work organisation and job design as well as measures to promote healthy behaviours	2
distribution of specific programs		2
reintegration	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	2
corporate social responsibility	% of enterprises supporitng health-related, social, cultural and welfare initiatives	2
	% of population employed in enterprises offering specific workplace health promotion programs	2
	% of employees participating in programmes aimed at improvement of their work ability and employability	2
workplace health promotion specialists	number of workplace health promotion specialists	2
cost of lost working days due to sickness absence		2
enterprise turnover		1
turnover of labour		1
payment system	for employees: % whose remuneration includes - basic fixed salary/wage; - piece rate or productivity payments; - extra payments for additional hours of work/overtime; etc.	1
	percentage of persons not working the whole reference week (though having a job) due to sickness, injury or temporary disability (as defined in LFS; absence due to ill health, injuries and work injuries combined)	1
	prevalence of hypertension	1

professional experience	e.g. number of years, number of professions, number of contracts	1
level of knowledge about safety and health at the workplace		1
nutrition for risk groups	e.g. shiftworkers	1
work rhythms		1
company climate		1
physical violence	% of employees subjected at work / aware of existence over past 12 months to physical violence from people within workplace	1
intimidation	% of employees subjected .../... to intimidation	1
unwanted sexual attention (harassment)	% of employees subjected ... / ... to unwanted sexual attention	1
	% of employees being able to discuss at the workplace the working conditions in general (ESWC)	1
	% of employees being able to discuss at the workplace the organisation of own work when changes take place (ESWC)	1
	Discussions regarding the work take place with - colleagues - superiors - staff representatives - outside experts - on a regular basis - on a formal basis (ESWC)	1
long working days	long working days: no. of times working more than 10 hrs. a day per month	1
OSH campaigns in enterprises	% of enterprises offering OSH programmes aiming to improve working conditions	1
design of working conditions	% of enterprises using ergonomic designed equipment, e.g. VDU according to TCO 99	1
	% of employees being informed regarding risks resulting from their working conditions	1
	% of employees receiving training at the start of work	1
	% of employees receiving training to improve skills when working in high risk jobs	1
reintegration/rehabilitation	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	1
medical surveillance	number of preplacement medical examinations	1
	% of employees undergoing self-assessment of health	1
	number and percentage of enterprises that have demonstrated implementation of GP HESME	1
providance of healthy and environmentally friendly products and services	percentage of enterprises that which managed to prove that they provide healthy and environmentally friendly products and services, and provide product stewardships throughout the products' life cycles	1
academic institutions	number of academic institutions (universities, national institutes, others) providing education to occupational physicians, occupational nurses, safety engineers, labour inspectors, environmental engineers, occupational hygienist, ergonomists, health promotion specialists and other HES specialists	1
graduates	number of graduates per year per 100.000 population of occupational physicians, occupational nurses, safety engineers, labour inspectors, environmental engineers, occupational hygienist, ergonomists, health promotion specialists and other HES specialists	1

research on HESME	number of academic research institutions (universities, national institutes and others) carrying out scientific and development studies in different areas of HESME	1
Work-related aspects of social insurance systems		1
sickness benefits		1
pension benefits	disability pension benefits, full vs. partial benefits	1
unemployment benefits		1
	number of workplaces where there has been health needs assessment	1
	number of workplaces that have assessed occupational risk	1
Information management		1
costs of occupational accidents and diseases		1
cost of disability pensions, allowances, medical/vocational rehabilitation and integration		1
sustainability of work	ability to do the same job when 60 years old	1
training		1

*) number of nominations

Table A2.7: Indicators for the policy domain “Optimising sickness absence management”

Policy domain: Optimising sickness absence management (V)		
generic indicator	***operational indicator***	***)**
sickness benefits		6
reintegration/rehabilitation	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	5
	sickness absence at work due to total work-related diseases expressed in lost working years per 100.000 employees	4
	average number of sickness absence days/spell/year (duration)	4
reintegration	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	4
cost of lost working days due to sickness absence		4
	average number of sickness absence days/person/year	3
	percentage of persons absent due to sickness and work injury/year	3
lifting loads manually		3
repetitive movements	% of employees whose job involves repetitive hand or arm movements	3
monotonous work	% of employees whose job involves monotonous tasks	3
work/life-balance-programmes in enterprises	e.g. child care, parental leave	3
rehabilitation		3
costs of occupational accidents and diseases	cost of accidents and diseases at work as a percentage of GDP	3
cost of disability pensions, allowances, medical/vocational rehabilitation and integration		3
educational attainment		2
	employment rate for population	2
	% of population not in labour force; Eurostat: unemployed proportion in active population; longterm: >12 mnts (for 15-24: >6 mnts)	2
	total number of workers in the local unit of establishment: 1, 2-4, 5-9, 10-49, 50-99, 100-249, 250-499, 500 and over	2
	number of days absence in main paid job due to accident at work over the past 12 months	2
	percentage of persons not working the whole reference week (though having a job) due to sickness, injury or temporary disability (as defined in LFS; absence due to ill health, injuries and work injuries combined)	2
	average number of sickness absence spells/person/year	2
	percentage of working hours lost due to sickness and work injury of those contracted/person/year	2
	number of days absence during previous 12 months due to accident at work	2
	number of days absence during previous 12 months due to health problems caused by work	2
obesity		2
coping ability		2
professional experience	e.g. number of years, number of professions, number of	2

	contracts	
emotional resilience	measured by the vitality index (4 questions of the Copenhagen Psychosocial Questionnaire)	2
	no. of weekly working hours (in main paid job)	2
	% of employed working at least 50h/week	2
	night work: number of times a month working at night, for at least 2 hrs. between 10pm and 5 am	2
	working shifts: % of employees working shifts	2
sedentary working		2
carrying or moving heavy loads	% of employees whose job involves carrying or moving heavy loads	2
painful or tiring positions/postures	% of employees whose job involves painful or tiring positions	2
repetitive tasks	% of employees whose job involves short repetitive tasks of less than 5s / 30s / 1min /	2
work rhythms		2
deadline and efficiency pressure		2
job control	% of employees having control over order of tasks	2
company climate		2
job satisfaction		2
conflicts		2
OSH culture in enterprises	% of enterprises having integrated OSH in their corporate philosophy	2
campaigns on health behaviours	awareness of elevated blood pressure	2
mental health promotion		2
human resources in occupational health services	occupational physicians / 1000 employed	2
	days covered by employer	2
	full vs. partial benefits	2
pension benefits	disability pension benefits, full vs. partial benefits	2
unemployment benefits		2
disability benefits / disability pensions		2
expenditure of workplace health promotion measures	% of total health expenditure, % of GNP/GDP	2
sustainability of work	ability to do the same job when 60 years old	2
demographic changes (older employees)		2
migration/diversity		2
	no. with unlimited permanent contract, fixed term contract (duration in years and months), temporary employment agency contract, apprenticeship or other training scheme, other	1
	no. of people under one's supervision: none, 1-4, 5-9, 10 and over	1
	% of employees working part-time	1
	No, %, 4 ISCED classes	1
	Percentage of working age population participating in education and training	1
enterprises	total number of enterprises	1
	Gini coefficient	1
	evaluation of the incidence rate, defined as the number of accidents at work per 100.000 persons in employment	1
	sickness absence at work due to occupational accidents expressed in lost working years per 100.000 employees	1
	rate of early retirement due to ischemic heart disease (ICD	1

	10: I20.I25) per 100.000 population	
	rate of early retirement due to musculoskeletal disorders (M00-M99) per 100.000 population	1
	rate of early retirement due to mental and behavioral disorders (F00-F99) per 100.000 population	1
(general) mental health	psychological distress: % population below cutpoint score	1
change in the health status		1
blood pressure	mean/sd of systolic BP	1
serum cholesterol	mean/sd of serum total cholesterol (mmol/l)	1
blood sugar-diabetes		1
level of knowledge about safety and health at the workplace	knowledge concerning regulations	1
smoking		1
	percentage of smokers	1
alcohol use		1
	total consumption, litre pure alcohol/person/year	1
(il)licit drug use		1
commuting time	minutes per day normally spent travelling from home to work and back	1
gender of boss	% of employees whose immediate boss is a man/ woman	1
noise	% of employees exposed to noise so loud that you would have to raise your voice to talk to people	1
vibration	% of employees exposed to vibrations from hand, tools, machinery, etc.	1
bio-chemical exposure	% of employees exposed to breathing in vapours, fumes, dust, or dangerous substances such as: chemicals, infectious materials, etc.	1
lighting		1
working with computers	% of employees working with PCs, network, mainframe	1
	% of employees having control over methods of work	1
skills, training and empowerment	% of employees whose job involves meeting precise quality standards	1
	no. of days training provided over the past 12 months	1
social support	% of employees having the possibility of getting assistance from colleagues if one asks for it	1
intimidation	% of employees subjected .../... to intimidation	1
discrimination	% of employees subjected .../... to sexual discrimination	1
long working days	long working days: no. of times working more than 10 hrs. a day per month	1
OSH campaigns in enterprises	% of enterprises offering OSH programmes aiming to improve working conditions	1
design of working conditions	% of enterprises using ergonomic designed equipment, e.g. VDU according to TCO 99	1
education, training, information	% of enterprises providing information on risks resulting from the working conditions	1
medical surveillance	number of preplacement medical examinations	1
vaccination programmes	% of working population/employees participating in vaccinations (HBV, influenza) programmes	1
	existence of a corporate philosophy on workplace health promotion in an organisation	1
coverage by health promotion programmes	% of employees participating in specified workplace health promotion programmes	1
	% of population employed in enterprises offering specific workplace health promotion programs	1
	% of employees participating in programmes aimed at	1

	improvement of their work ability and employability	
workplace health promotion specialists	number of workplace health promotion specialists	1
ratification of ILO OH&S conventions	% of conventions	1
	% of enterprises (regularly) conducting risk assessment	1
	number(s) of safety engineering/occupational medical units per 10.000 employees	1
human resources in labour safety at workplaces	safety representatives and managers / 1000 employed	1
inspection		1
	percentage of employees receiving ambulant rehabilitation (rehabilitation programs for specific diseases/disorders)/year	1
	percentage of employees receiving medical rehabilitation in institution (rehabilitation programs for specific physical diseases)/year	1
	percentage of employees receiving medical rehabilitation in institution (rehabilitation programs for specific mental disorders)/year	1
	percentage of employees receiving vocational rehabilitation/year	1
	percentage of employees receiving both medical and vocational rehabilitation/year	1
	percentage of employees returning to the same work after a sickness spell incl. rehabilitation/year	1
	percentage of employees returning to another work after a sickness spell incl. rehabilitation/year	1
overworking		1
shortage of sleep		1
irregular work forms		1
	% of enterprises which have introduced appropriate OSH management systems (certified or otherwise documented)	1

*) number of nominations

Table A2.8: Indicators for the policy domain “Prevention of accidents and occupational ill-health”

Policy domain: Prevention of accidents and occupational ill-health (VI)		
generic indicator	***operational indicator***	***)**
OSH culture in enterprises	% of enterprises having integrated OSH in their corporate philosophy	4
human resources in labour safety at workplaces	safety representatives and managers / 1000 employed	4
human resources in occupational health services	occupational physicians / 1000 employed	4
	total number of workers in the local unit of establishment: 1, 2-4, 5-9, 10-49, 50-99, 100-249, 250-499, 500 and over	3
	number of days absence in main paid job due to accident at work over the past 12 months	3
work-related health risks	% of employees who think that health is at risk because of work	3
level of knowledge about safety and health at the workplace	knowledge concerning regulations	3
noise	% of employees exposed to noise so loud that you would have to raise your voice to talk to people	3
lifting loads manually		3
painful or tiring positions/postures	% of employees whose job involves painful or tiring positions	3
repetitive movements	% of employees whose job involves repetitive hand or arm movements	3
deadline and efficiency pressure		3
monotonous work	% of employees whose job involves monotonous tasks	3
OSH campaigns in enterprises	% of enterprises offering OSH programmes aiming to improve working conditions	3
design of working conditions	% of enterprises using ergonomic designed equipment, e.g. VDU according to TCO 99	3
education, training, information	% of enterprises providing information on risks resulting from the working conditions	3
expenditure of workplace health promotion measures	% of total health expenditure, % of GNP/GDP	3
	employment rate for population	2
	% of population not in labour force; Eurostat: unemployed proportion in active population; longterm: >12 mnts (for 15-24: >6 mnts)	2
	sickness absence at work due to total work-related diseases expressed in lost working years per 100.000 employees	2
	evaluation of the incidence rate, defined as the number of accidents at work per 100.000 persons in employment	2
	sickness absence at work due to occupational accidents expressed in lost working years per 100.000 employees	2
	number of compensated occupational diseases on official list (compared with best countries)	2
	average number of sickness absence days/person/year	2
	working shifts: % of employees working shifts	2
mechanical hazards	moving vehicles, moving parts of the production machinery	2
vibration	% of employees exposed to vibrations from hand, tools, machinery, etc.	2
wearing personal protective equipment	% of employees whose job involves wearing personal protective equipment	2

carrying or moving heavy loads	% of employees whose job involves carrying or moving heavy loads	2
repetitive tasks	% of employees whose job involves short repetitive tasks of less than 5s / 30s / 1min etc.	2
work equipment		2
work rhythms		2
job control	% of employees having control over order of tasks	2
skills, training and empowerment	% of employees whose job involves meeting precise quality standards	2
reintegration/rehabilitation	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	2
campaigns on health behaviours	awareness of elevated blood pressure	2
coverage by health promotion programmes	% of employees participating in specified workplace health promotion programmes	2
ratification of ILO OH&S conventions	% of conventions	2
	% of enterprises (regularly) conducting risk assessment	2
sickness benefits		2
pension benefits	disability pension benefits, full vs. partial benefits	2
unemployment benefits		2
inspection		2
costs of occupational accidents and diseases	cost of accidents and diseases at work as a percentage of GDP	2
cost of disability pensions, allowances, medical/vocational rehabilitation and integration		2
sustainability of work	ability to do the same job when 60 years old	2
demographic changes (older employees)		2
migration/diversity		2
overworking		2
	no. with unlimited permanent contract, fixed term contract (duration in years and months), temporary employment agency contract, apprenticeship or other training scheme, other	1
	no. of people under one's supervision: none, 1-4, 5-9, 10 and over	1
	% of employees working part-time	1
educational attainment		1
	No, %, 4 ISCED classes	1
	Percentage of working age population participating in education and training	1
enterprises	total number of enterprises	1
	Gini coefficient	1
payment system	for employees: % whose remuneration includes - basic fixed salary/wage; - piece rate or productivity payments; - extra payments for additional hours of work/overtime; etc.	1
	for self-employed: % whose remuneration includes - income from self-employment such as own business, profession or farm - payments based on the overall performance of the company (profit sharing scheme) - payments based on the overall performance of a group - incomes from shares in the company; - other	1

	percentage of persons not working the whole reference week (though having a job) due to sickness, injury or temporary disability (as defined in LFS; absence due to ill health, injuries and work injuries combined)	1
	average number of sickness absence spells/person/year	1
	average number of sickness absence days/spell/year (duration)	1
	percentage of working hours lost due to sickness and work injury of those contracted/person/year	1
	percentage of persons absent due to sickness and work injury/year	1
	number of days absence during previous 12 months due to accident at work	1
	rate of early retirement as a result of occupational accidents or disease per 100.000 employees or per 1000 occupational accidents	1
	rate of early retirement due to ischemic heart disease (ICD 10: I20.I25) per 100.000 population	1
	rate of early retirement due to musculoskeletal disorders (M00-M99) per 100.000 population	1
	rate of early retirement due to mental and behavioral disorders (F00-F99) per 100.000 population	1
(general) mental health	psychological distress: % population below cutpoint score	1
change in the health status		1
obesity		1
coping ability		1
smoking		1
	percentage of smokers	1
alcohol use		1
	total consumption, litre pure alcohol/person/year	1
(il)licit drug use		1
indoor air at work		1
	no. of weekly working hours (in main paid job)	1
	% of employed working at least 50h/week	1
	night work: number of times a month working at night, for at least 2 hrs. between 10pm and 5 am	1
commuting time	minutes per day normally spent travelling from home to work and back	1
heights		1
bio-chemical exposure	% of employees exposed to breathing in vapours, fumes, dust, or dangerous substances such as: chemicals, infectious materials, etc.	1
radiation	% of employees exposed to radiation such as X-rays, radioactive radiation, welding light, laser beams	1
lighting		1
sedentary working		1
working with computers	% of employees working with PCs, network, mainframe	1
meaningful work		1
job satisfaction		1
social support	% of employees having the possibility of getting assistance from colleagues if one asks for it	1
discrimination	% of employees subjected .../... to sexual discrimination	1
conflicts		1
long working days	long working days: no. of times working more than 10 hrs. a day per month	1

	% of employees being provided with safe/ergonomic designed equipment at work	1
	% of employees receiving training at the start of work	1
	% of employees receiving training to improve skills when working in high risk jobs	1
medical surveillance	number of preplacement medical examinations	1
	number of periodic occupational medical examinations	1
	coverage of employees by periodic occupational medical examinations	1
vaccination programmes	% of working population/employees participating in vaccinations (HBV, influenza) programmes	1
	campaigns on injury prevention	1
work/life-balance-programmes in enterprises	e.g. child care, parental leave	1
	existence of a corporate philosophy on workplace health promotion in an organisation	1
	implementation and interlinkage of measures for health-promoting work organisation and job design as well as measures to promote healthy behaviours	1
reintegration	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	1
	% of population employed in enterprises offering specific workplace health promotion programs	1
	% of employees participating in programmes aimed at improvement of their work ability and employability	1
workplace health promotion specialists	number of workplace health promotion specialists	1
GP HESME benchmarking comparisons	percentage of enterprises participating in GP HESME benchmarking comparisons	1
	number(s) of safety engineering/occupational medical units per 10.000 employees	1
risk management	number of medical treatment centres for chemical poisonings per 10.000 employees	1
human resources in labour inspection	inspectors/ 1000 employed	1
	days covered by employer	1
	full vs. partial benefits	1
	number of occupational diseases covered	1
of occupational safety engineering units		1
rehabilitation		1
	percentage of employees receiving ambulant rehabilitation (rehabilitation programs for specific diseases/disorders)/year	1
	percentage of employees receiving medical rehabilitation in institution (rehabilitation programs for specific physical diseases)/year	1
	percentage of employees receiving medical rehabilitation in institution (rehabilitation programs for specific mental disorders)/year	1
	percentage of employees receiving vocational rehabilitation/year	1
	percentage of employees receiving both medical and vocational rehabilitation/year	1
	percentage of employees returning to the same work after a sickness spell incl. rehabilitation/year	1
	percentage of employees returning to another work after a sickness spell incl. rehabilitation/year	1
disability benefits / disability pensions		1

state expenditure for supervision		1
cost of lost working days due to sickness absence		1
perception of the OSH system	% of population satisfied with health system	1
shortage of sleep		1
irregular work forms		1
	% of enterprises which have introduced appropriate OSH management systems (certified or otherwise documented)	1
training		1

*) number of nominations

Table A2.9: Indicators for the policy domain “Increasing effectiveness of disability management”

Policy domain: Increasing effectiveness of disability management (VII)		
generic indicator	***operational indicator***	****)***
reintegration/rehabilitation		6
rehabilitation		6
reintegration	% of enterprises/institutions providing action on reintegration of staff (especially disabled staff) when they return to work after a longer-term period of sick-leave	5
sickness benefits		5
pension benefits		5
unemployment benefits		4
disability benefits / disability pensions		4
cost of disability pensions, allowances, medical/vocational rehabilitation and integration		4
	employment rate for population	3
sedentary working		3
painful or tiring positions/postures		3
repetitive movements		3
cost of lost working days due to sickness absence		3
costs of occupational accidents and diseases		3
educational attainment		2
	% of population not in labour force; Eurostat: unemployed proportion in active population; longterm: >12 mnts (for 15-24: >6 mnts)	2
	total number of workers in the local unit of establishment: 1, 2-4, 5-9, 10-49, 50-99, 100-249, 250-499, 500 and over	2
	sickness absence at work due to total work-related diseases expressed in lost working years per 100.000 employees	2
	number of days absence in main paid job due to accident at work over the past 12 months	2
	percentage of persons not working the whole reference week (though having a job) due to sickness, injury or temporary disability (as defined in LFS; absence due to ill health, injuries and work injuries combined)	2
	average number of sickness absence days/person/year	2
	average number of sickness absence days/spell/year (duration)	2
	number of days absence during previous 12 months due to health problems caused by work	2
coping ability		2
professional experience		2
emotional resilience		2
	no. of weekly working hours (in main paid job)	2
	% of employed working at least 50h/week	2
	working shifts: % of employees working shifts	2
lifting loads manually		2
work rhythms		2
deadline and efficiency pressure		2

monotonous work		2
job control	% of employees having control over order of tasks	2
skills, training and empowerment		2
OSH culture in enterprises		2
design of working conditions		2
education, training, information		2
mental health promotion		2
	existence of a corporate philosophy on workplace health promotion in an organisation	2
coverage by health promotion programmes		2
human resources in occupational health services		2
	percentage of population collecting full and partial disability pension respectively/year	2
	percentage of population collecting full and partial disability benefit respectively/year	2
	percentage of population newly granted disability pension/year	2
sustainability of work		2
	no. with unlimited permanent contract, fixed term contract (duration in years and months), temporary employment agency contract, apprenticeship or other training scheme, other	1
	no. of people under one's supervision: none, 1-4, 5-9, 10 and over	1
	% of employees working part-time	1
	No, %, 4 ISCED classes	1
	Percentage of working age population participating in education and training	1
	population of employable individuals	1
	population of limited employable individuals (mental or physical disability)	1
	average duration of unemployment	1
	number of employees who left their last job for family or responsibilities or for education purposes no more than 12 months ago who return later to work but are currently not available for work (for the same reasons why they left their last job) as a % of all employees	1
	Gini coefficient	1
	net monthly income from main paid job	1
	evaluation of the incidence rate, defined as the number of accidents at work per 100.000 persons in employment	1
	sickness absence at work due to occupational accidents expressed in lost working years per 100.000 employees	1
	average number of sickness absence spells/person/year	1
	percentage of persons absent due to sickness and work injury/year	1
	number of days absence during previous 12 months due to accident at work	1
	rate of early retirement due to ischemic heart disease (ICD 10: I20.I25) per 100.000 population	1
	rate of early retirement due to musculoskeletal disorders (M00-M99) per 100.000 population	1
	rate of early retirement due to mental and behavioral disorders (F00-F99) per 100.000 population	1
change in the health status		1

obesity		1
level of knowledge about safety and health at the workplace		1
	percentage of smokers	1
	total consumption, litre pure alcohol/person/year	1
physical activity / exercise		1
	night work: number of times a month working at night, for at least 2 hrs. between 10pm and 5 am	1
mechanical hazards		1
noise	% of employees exposed to noise so loud that you would have to raise your voice to talk to people	1
climate	% of employees exposed to high temperature which make you perspire even when not working	1
vibration	% of employees exposed to vibrations from hand, tools, machinery, etc.	1
carrying or moving heavy loads		1
repetitive tasks		1
work equipment		1
working with computers		1
	no. of days training provided over the past 12 months	1
company climate		1
job satisfaction		1
social support	% of employees having the possibility of getting assistance from colleagues if one asks for it	1
conflicts		1
long working days		1
OSH campaigns in enterprises		1
medical surveillance		1
campaigns on health behaviours		1
work/life-balance-programmes in enterprises		1
assessment of health promotion needs		1
	providance of a separate budget for workplace health promotion aside from the budget for occupational health and safety in an organisation	1
	systematic evaluation and continuous improvement of all measures	1
	implementation and interlinkage of measures for health-promoting work organisation and job design as well as measures to promote healthy behaviours	1
	% of population employed in enterprises offering specific workplace health promotion programs	1
	% of employees participating in programmes aimed at improvement of their work ability and employability	1
workplace health promotion specialists		1
ratification of ILO OH&S conventions		1
	% of enterprises (regularly) conducting risk assessment	1
	number(s) of safety engineering/occupational medical units per 10.000 employees	1
networks	% of enterprises active cooperating in networks fostering OSH	1
human resources in labour safety at workplaces		1
inspection		1
	percentage of employees receiving ambulant rehabilitation	1

	(rehabilitation programs for specific diseases/disorders)/year	
	percentage of employees receiving medical rehabilitation in institution (rehabilitation programs for specific physical diseases)/year	1
	percentage of employees receiving medical rehabilitation in institution (rehabilitation programs for specific mental disorders)/year	1
	percentage of employees receiving vocational rehabilitation/year	1
	percentage of disability benefits recipients working/year	1
expenditure of workplace health promotion measures		1
demographic changes (older employees)		1
migration/diversity		1
overworking		1
	% of enterprises which have introduced appropriate OSH management systems (certified or otherwise documented)	1

*) number of nominations

Annex 8: Report on the short survey on the availability and comparability of sickness absence data and disability data

During the WORKHEALTH social insurance satellite meeting in Stockholm it was agreed that data of the social insurance institutions in Europe due to very different national laws and regulations may be hardly comparable. However, it was thought reasonable that for purposes of work-related health monitoring it may be sufficient to include data from member states that provide comparable data. In order to find out whether such a common data basis is given it was decided to carry out a small survey on availability and comparability of sickness absence data and disability data. The survey was constrained to the WORKHEALTH partners from social insurance institution and to those who are thought to be in close touch.

Questionnaires on the data availability in six countries were included (Austria, Germany, Finland, Iceland, Netherlands and Sweden). The results are summarised in this report.

SICKNESS ABSENCE

Please first define the population covered by the social insurance data that are available to you.

AT: employees (with the exception of civil servants)
DE: app. 90 % of the population is covered by social insurance data. Special regulation for certain professions or self employed
IS: whole population covered for disability pension. Limited data on shorter sickness absence.
NL: The social Insurance system has no access to sickness absence data
SE: Population aged 16-64 earning at least 9000 SEK/year. Not been granted a permanent full disability pension. Special conditions for self-employed, students, unemployed etc. (exact number of persons covered is unknown)
FI: entire population

If you have only access to a specific part of the whole social insurance system in your country, please fill in the following questions with regard to those data you have access to. In this case, please define to what extend the data you have access to are representative for the whole country.

AT: access to data of whole Austria
DE: App. 20% of population available to the BKK system. Sickness absence data apply to employees (without Beamte)
NL: Two sources available: 1. Central Bureau of Statistics (based on sample of companies); 2. occupational health service (only for companies under contract, data not available for others)

Table A3: Available social insurance data for sickness absence

Indicators		Stratification criteria							
		diagnosis (ICD)	sex	age	data yearly available	occupations and branches	full-time or part-time	number of employees at local unit	location of company
number of spells									
per 100 person years	for labour force*				NL	NL: branches		NL: company size	
	for insured population	AT	AT	AT	AT	AT: branches		AT	AT
per 100.000 persons	for labour force*	SE: sample	SE	SE	SE	S: occup, branch (sample)			
	for insured population	AT, DE, SE (sample), FI	AT, DE, SE, FI	AT, DE, SE, FI	AT, DE, SE, FI	AT: branches; DE; SE: occup, branch (sample); FI	DE, SE	AT, DE	AT, DE, SE
Indicators		**Stratification criteria**							
duration of spell									
per 100 person years	for labour force*								
	for insured population	AT	AT	AT	AT	AT: branches		AT	AT
per 100.000 persons	for labour force*	SE: sample	SE	SE	SE	SE: occup, branch (sample)	SE		
	for insured population	AT, DE, SE: sample, FI	AT, DE, SE, FI	AT, DE, SE, FI	AT, DE, SE, FI	AT: branches; DE; SE: occup, branch (sample); FI	DE, SE	AT, DE	AT, DE, SE

1) data per person years and for labour force in preparation at BKK
2) NL info apply to data based on sample of companies, representative for total labour force

1) Sickness absence is registered from which day on?

Day 1: AT: partly; DE: partly, NL: in theory
Day 3: AT, DE, IS
Day 7:
other: SE: day 21 at the time being
FI: 10th working day

2) Diagnosis registered are defined by a physician.

Yes: AT, DE, SE: partly, FI

3) Please specify the information available to you concerning the diagnosis (e.g. which classification system is used, diagnosis are available at which level of detail).

AT: ICD9, since July 2003 ICD10 (3digits)
DE: ICD9, since 2002 ICD10 (3 digits)
FI: until 2003 ICD10 for sample; from 2004 ICD10 for all recipients

4) Which classification systems are used for occupations and branches (e.g. ISCO, NACE)?

AT: ÖNAS 95 (2 digits)
DE: Klassifizierung der Berufe, NACE
NL: not relevant (?)
SE: ISCO88COM
FI: modification of ISCO

DISABILITY

1) What is disability pension in your country?

AT: §273(1) ASVG: Als berufsunfähig gilt der Versicherte, dessen Arbeitsfähigkeit infolge seines körperlichen oder geistigen Zustandes auf weniger als die Hälfte derjenigen eines körperlichen und geistig gesunden Versicherten von ähnlicher Ausbildung und gleichwertigen Kenntnissen und Fähigkeiten herabgesunken ist (when workability is reduced by more then 50%)

DE: Disability pension is granted to people whose workability is permanently (or at least for a long time) reduced. Disability is assessed and testified individually by a qualified physician. The amount of pension depends on former income and degree of disability.

IS: Those who are aged 16 to 67 years and have been living in Iceland for at least three years before applying for disability pension or have been living in Iceland for six

months and had unrestricted working capacity when they moved to Iceland are eligible for disability pensions if their working capacity is reduced by at least 75% due to consequences of medically accepted diseases or handicap. The evaluation of the working capacity is based on the British Personal Capability Assessment (former called the All Work Test).

NL: --

SE: (answers also 3) Those who have become incapacitated to work, at least 25 %, for a long period of time, are eligible for a disability pension. Disability pension can be collected either as a permanent pension or temporary pension if the working capacity is reduced for a long period of time (at least a year) but not permanently. Pension can be collected as 25%, 50% 75% and 100% of pension and is income related with a ceiling.
Contrary to many other countries, sickness benefit period is not limited in Sweden. It may last one, two years, even longer. Therefore, the percentage of disability pensioners in Sweden is not directly comparable with that of other countries.

FI: see attachment

2) What are disability benefits?

DE: disability benefits could be occasional support measures (roll chairs etc.). The term is not unique.

NL: --

FI: The child disability allowance, the disability allowance, the pensioner's care allowance.

3) Who is eligible for disability pensions and/or disability benefits?

AT: insured employees who are classified as disabled by a physician commissioned by the insurer

DE: Prerequisite for disability pension is a lifelong working period of at least 5 years.

NL: All workers who one year of sick leave are still not able to do their old job and for which an assessment is made that they can only do other jobs with a lost in income of more than 15%

SE: Disability allowance provides financial security for people with functional disabilities who need the help of another person and/or have additional costs due to their disability, at home or at work (No regular statistics available on how many need

the allowance for work). Car allowance is provided to help people with permanent functional disabilities who find it difficult to get around without the aid of a motor vehicle of their own. Wage subsidies and sheltered workshops are available for the employment of disabled persons.
(Assistance allowance is designed to be used for personal assistants (carers) who can help them in their daily lives. Not relevant for work-related health.)

FI: See attachment.

Table A4: Available data for disability

Indicators	**Stratification criteria**							
	diagnosis (ICD)	sex	age	data yearly available	occupations and branches	full-time or part-time	number of employees at local unit	location of company
% of people receiving disability pension/benefits per labour force*	AT, DE: partly, IS, NL, FI	AT, DE, IS, NL, FI	AT, DE, IS, NL, FI	AT, DE, IS, NL, FI	AT: partly, DE: partly, NL	DE: partly, IS, NL, FI	AT: partly, NL, FI	A: partly, NL
% of people receiving disability benefits/pension who are still working (same job or not)	AT, NL	AT, D: partly, NL	AT, DE: partly, NL	AT, DE, NL	AT: partly, NL	NL	AT: partly, NL	AT: partly, NL
% of people receiving disability benefits working in an adjusted workplace								

1) Please specify the information available to you concerning the diagnosis (e.g. which classification system is used, diagnosis are available at which level of detail).

all: ICD10

2) Which classification systems are used for occupations and branches (e.g. ISCO, NACE)?

DE: NACE

Attachment: Information on Finnish pension system provided by Jorma Järvisalo

1) What is disability pension in your country?

The Finnish statutory pension program comprises a national scheme and an earnings-related pension scheme. The earnings-related scheme is further divided into private and public sector schemes. The national pension scheme encompasses all permanent residents of Finland and the earnings-related scheme covers all public and private sector employees as well as self-employed persons and farmers.

Disability pensions are payable under both the national pension scheme and the statutory earnings-related pension scheme. Since 1996 national pensions have been pension-tested: once the statutory earnings-related pension reaches a certain limit, no national pension is paid at all. In 2002 there were altogether 267204 disability pensioners in Finland. 19 per cent of them received only a national disability pension, 44 per cent received only an earnings-related disability pension, and 37 per cent received a disability pension from both schemes.

The amount of national pension depends on the pension recipient`s earnings-related pension income, family ties and municipality. A full national pension is granted on the basis of 40 years of residence. The amount of the earnings-related pension depends on the pensionable time and the amount of the pensionable earnings.

Statutory disability pensions are also payable on the basis of work injuries, occupational diseases, traffic accidents and military injuries. For these injuries there are separate insurance systems.

2) Who is eligible for disability pensions (and/or disability benefits)?

In the national pension scheme and the earnings-related pension scheme there are two types of disability pension: the ordinary disability pension and the individual early retirement pension, however, the latter will be gradually abolished.

Under the national pension scheme *the ordinary disability pension* is payable to persons between ages of 16 and 64 who, on account of disease, defect or injury are unfit for work which, considering their age, occupation, education and place of residence, would be suitable for them. According to earnings-related pension laws, an ordinary disability pension may be awarded to an insured person under the age of 65 who has lost at least two fifths of his work capacity through illness, defect of injury and whose incapacity is estimated to last for at least one year. In the assessment of disability, for example education, age and previous work experience are taken into account.

In the earnings-related scheme a disability pension is either full or partial. A full disability pension is paid if at least three fifths of work capacity is lost, and partial disability pension when between two fifths and three fifths is lost.

Both national and earnings-related disability pension can be paid either without a time limit or temporarily in the form of a cash rehabilitation benefit. A cash rehabilitation benefit is awarded if it is likely that the person may completely or partly recover the ability to work through medical treatment or rehabilitation measures.

The individual early retirement pension is a special form of disability pension designed for ageing employees or self-employed persons who have reduced work capacity but are not sick enough to qualify for the ordinary disability pension. It can be awarded to persons between 60 and 64 years of age with a long working career, provided that their work capacity has been permanently reduced to such an extent that they cannot be expected to continue in the same place of work in their present job or occupation. The earnings-related pension reform of 2005 includes the gradual termination of the individual early retirement pension: it is no more available for those born in or after 1944.

The pension reform of 2005 will also change the qualifying age for ordinary disability pension. Currently disability pension is transformed into an old age pension at the normal retirement age, which in most cases is 65. From the beginning of 2005 it will be possible to take an earnings-related old age pension between the ages of 63 and 68. This means that earnings-related disability pension will be available only for those under the age of 63.

There is an increasing awareness that work has a major impact on public health and that this should be reflected in a health monitoring system. In the context of the activities undertaken by the European Commission to set up a European health monitoring system, the WORKHEALTH project established indicators that reflect the impact of work on public health and enables work-related health monitoring to be conducted from a public health perspective.

This publication presents the results of the WORKHEALTH project. It encompasses a synopsis of already existing European and international work-related indicator systems and a comprehensive compilation of the relevant indicators proposed in these systems, supplemented by the indicators developed in the WORKHEALTH project. As a theoretical framework, a model is presented which characterises work-related health monitoring as a policy cycle with different policies relevant for the workplace setting (e.g. optimising sickness absence management, improving working conditions) that ultimately have an effect on public health. These policy domains can be monitored by using specific subsets of indicators, compiled in so-called "domain windows". Finally, a short list of indicators comprises those indicators which are judged as most relevant for work-related health monitoring in Europe from a public health perspective. The publication closes with an overview of the relevant data sources at European and international level and an analysis of the availability and comparability of data for work-related health monitoring.

The WORKHEALTH project is supported by the European Commission and carried out by a working group under the co-ordination of the Federal Association of Company Health Insurance Funds (BKK Bundesverband). Co-operating partners are social security institutions, ministries, research institutions and occupational health and safety institutions from 13 EU Member States and Iceland.

ISBN 3-86509-248-9

WORK HEALTH

BKK Bundesverband BKK