

# ‘Monitoring of Occupational Safety and Health in the European Union’

Report to the European Agency,

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(Final draft, December 9, 2002)

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## Summary

### Objective and methodology of this study

#### Objective

The objective of the project was the production of an Inventory and an assessment of 15-20 existing and currently used OSH Monitoring systems in the European member states and the organisation of a workshop on the issue wherein possible options for a European OSH Monitoring system will be discussed.

The report should contain an overall analysis of the monitoring systems, highlighting interesting elements and pointing out shortcomings in the existing schemes (including where information is lacking). In addition to the analysis, the report should contain suggestions about the content of a possible OSH Monitoring system at European level. These suggestions should especially take into account the new Community strategy on OSH, the outcome of the current work undertaken by the Dublin Foundation and the Belgian Presidency on developing indicators for the quality of work, as well as the work carried out by Eurostat

#### The methodology of the inventory

The systems to be described and analysed should not necessarily be 'the best' but should express in a representative way 'the variety' available in the European Union with respect to aim, use, content, and methodology of systems. Thus, the list of systems should include worker surveys, databases, registers of accidents, diseases, and/or absenteeism, policy-directed systems and intervention- and OSH-management oriented systems. The choice also should include systems from as many member states as possible.

Eurostat's Labour Force Survey and the European Foundation's Working Conditions Survey were not included in the list of systems. These important and well-known systems will be described in the introduction of the report. The European Agency asked the national Focal Points to give their comments on and to agree with the list of systems. This led to the final list of 23 systems (see Table A).

#### The Questionnaire used in the inventory

A questionnaire for the Inventory was suggested by the contractor and discussed with the Agency and the OSH Monitoring Expert Group. The final version of the Questionnaire had the following chapters.

- Basic information (name, 'owner', basic documents)
- Contents of the system (work environment, health and safety, OSH-management, employee and company description)
- Methodology (data gathering, processing, publication; reliability of the data, etc.)
- Internal use/aim of the system
- External use of the system
- Costs of the system
- Future of the system
- Final evaluative comments

The questionnaire is included in Annex 1 of this report.

#### The group of system-information suppliers

This project was carried out by the contractor (TNO Work & Employment in the Netherlands) in close co-operation with a group of system-information suppliers across the European member states and Norway.

**Table A: The final list of systems in the inventory**

Country	Type of system	Name of the system (in English)
1. France	Worker Survey	Working Conditions Survey (Enquête Nationale Conditions Travail)
2. France	„	Medical Monitoring Survey of Professional Risks (SUMER)
3. Spain	„	National Working Conditions Survey (ENCT)
4. Sweden	„	The Work Environment Statistics/Survey including the Work Related Health Problems Survey (published separately)
5. Germany	Exposure database	Measurement System of Workplace Exposures of the ‘Berufsgenossenschaften’
6. France	Register of accidents, diseases, and/or ill-health	National Network for Occupational Accidents
7. Italy	„	Data system on Work, accidents, diseases, absenteeism, work disability and inspections (of INAIL)
8. Spain	„	Occupational Accidents and Diseases Statistics
9. Sweden	„	The Work Injury Information System (ISA)
10. UK	„	Combined use of ‘Self Reported Work Related Illness Survey’ (SWI) and ‘Occupational Disease Intelligence Network’ (ODIN)
11. UK	„	Combined use of ‘Reporting of Injuries, Diseases and dangerous Occurrences Regulations 1995’ (RIDDOR) and ‘Labour Force Survey’ (LFS)
12. Finland	„	Occupation and Cancer Register (combined with census data)
13. Denmark	„	The Occupational Hospitalisation Register
14. Finland	Register of absenteeism	Sickness allowance Register
15. Denmark	Multi-source and policy directed system	Study of preventive activities in Companies (this is one of the three tracks or systems within ‘The Surveillance of the Progress in the Action Programme for a clean Working Environment in 2005’)
16. Netherlands	„	Yearly OSH Balance Report (OSH Balance; a compilation of several data sources on OSH)
17. Germany	„	Yearly ‘Status Report’ on Health and Safety at Work (based on statistical data and special survey reports)
18. UK	„	The Costs to Britain of Workplace accidents and work-related ill health in 1995/96
19. Belgium	Intervention- and OSH-management related system	Safety Index of Companies
20. Ireland	„	Promotion and Campaign Activities of the Health & Safety Authority
21. Ireland	„	System for Accidents and Field Enforcement, combined with National Household Survey data
22. Netherlands	„	Yearly Inspection/OSH Monitor (Arbomonitor)
23. Norway	„	Register for enterprises and working accidents

## The content of the 23 systems

We first describe the 23 systems in comparison with each other. Later on the systems will be summarized and described as three groups of systems.

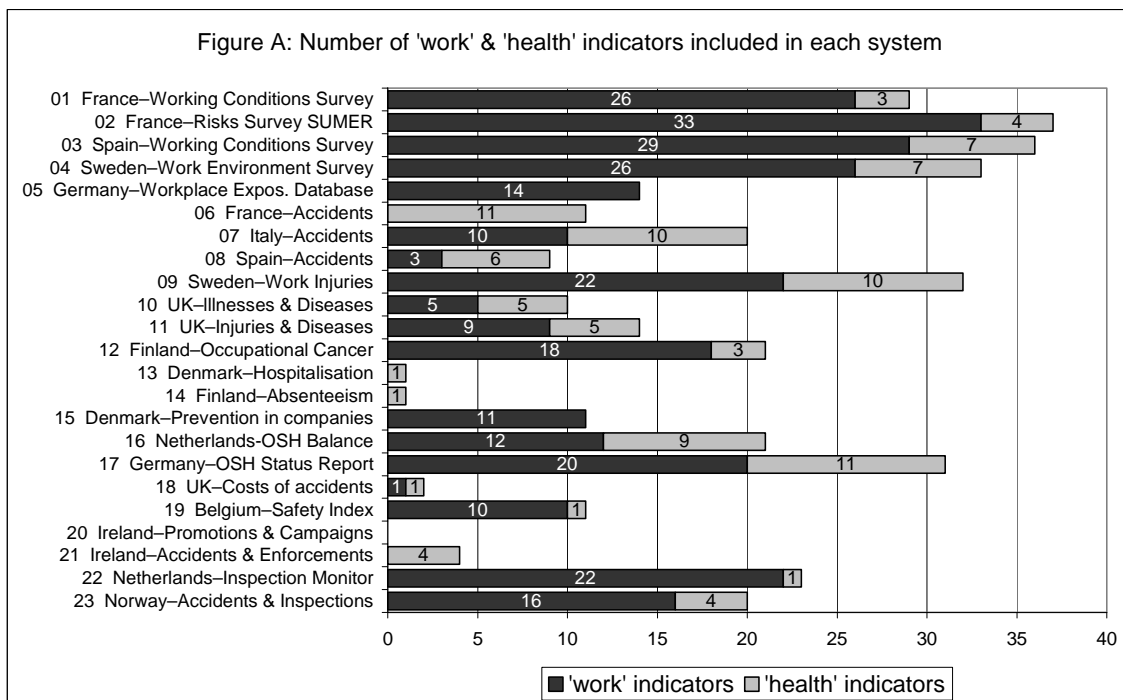
We start this part of the results by describing the content of the systems.

### *What is the content of the systems?*

As Figure A shows, in nine systems the **work environment** (safety, substances, physical, mental and other psychosocial factors, work organisation, work security) is most broadly described:

- |  |                                   |
|--|-----------------------------------|
| 01 France–Working Conditions Survey          | 12 Finland–Occupation & Cancer    |
| 02 France–Risks Survey SUMER                 | 17 Germany–OSH Status report      |
| 03 Spain–Working Conditions Survey           | 22 NL–Inspection monitor          |
| 04 Sweden–Work Environment Statistics/Survey | 23 Norway–Accidents & Inspections |
| 09 Sweden–Work Injuries                      |                                   |

All these systems include at least 16 aspects or indicators of the work environment.



On the other hand, it may be seen in Figure A, that there are five systems that do not focus on to the work environment: France–Accidents, Denmark–Hospitalisation, Finland–Absenteeism, Ireland–Promotions & Campaigns, and Ireland–Accidents & Enforcements. They are concentrated on 'health' or 'outcome' indicators.

When we turn to the **'health' or 'outcome' indicators**, we see these are most broadly described in eight systems (see also Figure A):

- |  |                                   |
|--|-----------------------------------|
| 03 Spain–Working Conditions Survey           | 08 Spain–Accidents                |
| 04 Sweden–Work Environment Statistics/Survey | 09 Sweden–Work Injuries           |
| 06 France–Accidents                          | 16 Netherlands–OSH Balance Report |
| 07 Italy–Accidents                           | 17 Germany–OSH Status report.     |

These systems include at least six 'outcome' indicators (i.e., fatal and other accidents, occupational diseases, mental and physical health, absenteeism, work disability).

We can also see (Figure A) that five systems are concentrated on one specific work outcome:

- 13 Denmark–Hospitalisation (hospitalisation)
- 14 Finland–Absenteeism (absenteeism)
- 18 UK–Accidents Costs (impact of OSH measured by costs)
- 19 Belgium–Safety Index (safety performance of companies)
- 22 NL–Inspection Monitor (fulfilment of legal OSH-requirements, awareness of sanctions, etc.)

Three systems are not focused on health or outcomes: the German Workplace Exposure Database, the Danish Prevention in Companies, and the Irish Promotions & Campaigns system. The German and the Danish system (# 5 and 15) focus on the work environment. It was concluded that the Irish system (# 20) was not a real monitoring system with data, in the context of this project, but rather a description of the Irish Health & Safety Authority’s promotion and campaign activities.

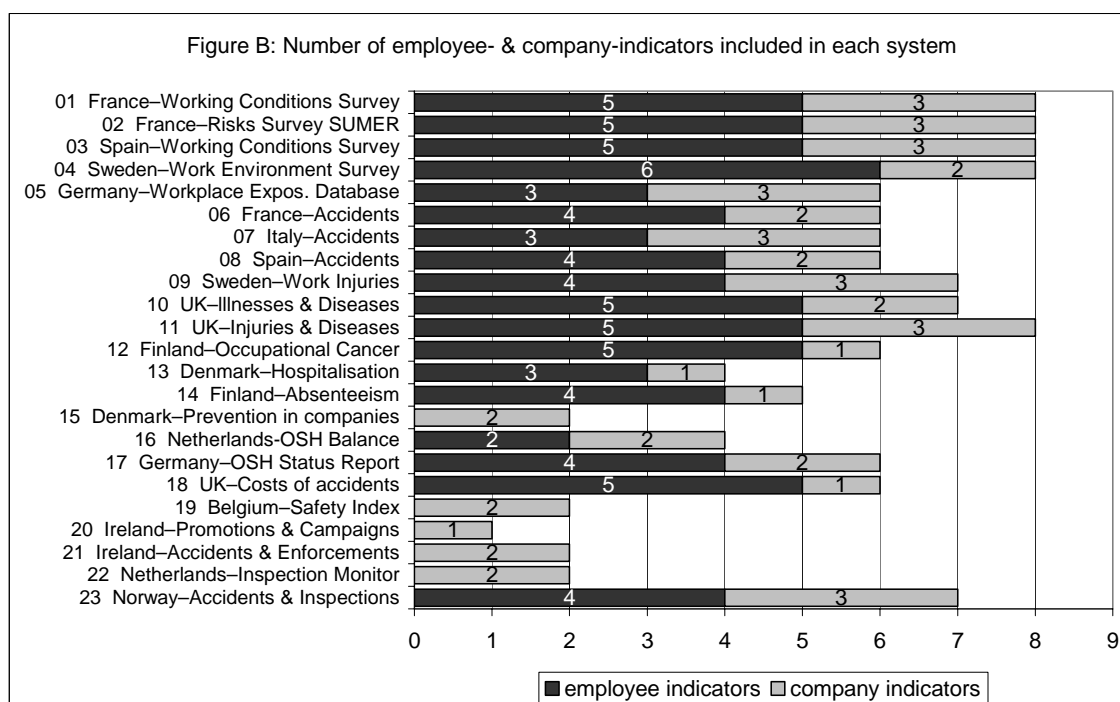
**OSH-management indicators** (number of OSH-experts in companies or in preventive services, activities of services, OSH-coverage, inspections, etc.) are especially gathered in:

- 03 Spain–Working Conditions Survey
- 04 Sweden–Work Environment Statistics/Survey
- 15 Denmark–Prevention in Companies
- 16 Netherlands–OSH Balance Report
- 17 Germany–OSH Status report
- 19 Belgium–Safety index of companies
- 21 Ireland–Accidents & Enforcements
- 22 Netherlands–Inspection Monitor
- 23 Norway–Accidents & Inspections

For OSH Monitoring it is important to have information available on ‘**risk categories**’, such as sex and age groups, professional groups, branches of industry, etc. (see the European Agency’s ‘State of OSH in the EU’ Report, 2000, wherein one of the conclusions was that information on employee- and company-indicators was rare). Figure B shows that many systems include employee- as well as company-characteristics. There are even 18 systems which include at least four of those indicators.

In addition, five systems may be described as typically non-employee oriented systems (they have companies and/or labour inspectorates as their focus, see also Figure B):

- 15 Denmark–Prevention in Companies
- 19 Belgium–Safety index of companies
- 20 Ireland–Promotions & Campaigns
- 21 Ireland–Accidents & Enforcements
- 22 Netherlands–Inspection Monitor



## The aims and the internal use of the systems

The 23 OSH Monitoring systems reviewed are mainly used for the following goals:

- to *develop knowledge* on Occupational Health and Safety or to study that field, e.g., to identify risks and risk groups, to identify trends in OSH and changes over the years, and to identify awareness of and compliance with legal requirements
- to *support prevention*, to develop preventive policies, to identify preventive structures
- to *set priorities* of activities and to support labour inspections, for example, in determining priorities in inspection
- to *evaluate* or control the effect or the efficiency of actions or measures, to monitor OSH-management, -interventions, -outcomes, the progress of actions, costs of absenteeism
- to make *benchmarking* possible, for example by comparing with other European countries
- to provide a *basis for discussions* between social partners, and to present the yearly development of OSH to social partners, media and larger public, to provide a basis for actions of occupational physicians
- to make additional studies and research - often by external institutes - on specific topics possible (this is mentioned with respect to the French and the Swedish National Working Conditions Survey, and the Danish Occupational Hospitalisation Register)
- to report to European institutions
- to demonstrate what the costs of OSH are
- and also: to make compensations possible

### Priority setting as a goal

Priority setting turned out to be possible with all the systems (with the exception of the Irish Promotions & Campaigns List, see Annex 6).

Priority setting is aimed at branches of industry, enterprises, groups of workers, occupational groups, types of prevention, high and low risk groups, different diseases, OSH-costs of sectors or diseases, labour inspection activities/interventions.

### Evaluation and monitoring as a goal

Ten of the 23 systems are actually used for the **evaluation or monitoring of the effectiveness of policies, actions and/or campaigns:**

04 Sweden–Work Environment Statistics/Survey	13 Denmark–Hospitalisation
05 Germany–Workplace Exposure Database	17 Germany–OSH Status report
09 Sweden–Work Injuries	19 Belgium–Safety index of companies
11 UK–Injuries & Diseases	21 Ireland–Accidents & Enforcements
12 Finland–Occupation & Cancer	23 Norway–Accidents & Inspections

This type of use is most strongly the case, as may be expected, in the five intervention- and OSH-management-oriented systems (systems # 19 to 23). The Belgian Safety index of companies shows, for example, that larger companies respect safety legislation more than smaller companies.

Surveys are the least used in this respect, though there are some new tendencies:

- The Swedish Work Environment Authority has used survey data for the evaluation of their own activities. This Authority also uses the Work injury system for that purpose.
- In the UK HSE (Health and Safety Executive) uses the RIDDOR-information<sup>1</sup> and intends to use the SWI-ODIN-information<sup>2</sup> for the evaluation of its own activities. Their strategies ‘Revitalising Health and Safety’ and ‘Securing Health Together’, which have set targets for occupational health, will be monitored by reference to these systems.
- The trends in occupational diseases and accidents described in the German OSH Status report are checked against preventive actions and legislation.

<sup>1</sup> RIDDOR = Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (1995)

<sup>2</sup> SWI = Self Reported Work Related Illness Survey; ODIN = Occupational Disease Intelligence Network

- With the help of the Danish Occupational Hospitalisation Register one of the aims of the WHO programme ‘Health for All’ (on ischaemic heart morbidity) was evaluated.
  - The data presented in the yearly Dutch ‘OSH Balance Report’ are related to policies, actions or campaigns, but not in the sense of evaluation, but more as the rationale behind the interventions.
- Finally, it is remarkable that some systems are said to be not used for monitoring the effectiveness of policies, actions and/or campaigns. With respect to the two Spanish systems it is remarked that the data are not used in such a way at the moment but certainly can be used for that purpose. With respect to the Dutch OSH Balance it is added that some of the labour inspectorate data are used for the evaluation of the effectiveness of the Ministry’s OSH-policy.

The data of almost all systems are used for the preparation of governmental and/or company actions in the field of OSH. Governments use OSH Monitoring data for:

- the preparation of their annual directives (France),
- the definition of new exposure limit values (Germany),
- the formulation of a program of financial incentives with respect to accidents (Italy),
- the identification of companies with higher accident rates than those of the branch of industry they belong to, so that the Labour and OSH authorities may submit them to special surveillance (Spain),
- the formulation of occupational health policies on muskolo-skeletal diseases and stress (UK),
- the preparation of a large national intervention programme with respect to the ten most hazardous professions (Denmark),
- setting priorities of the Labour inspectorate, for example, with respect to the right occupations, branches of industry and diagnoses (Finland).

Companies use the data for

- the preparation of additional exposure reducing measures (Germany),
- their OSH management with respect to accidents (Sweden),
- their safety improving actions (Netherlands).

#### *Systems used for cost-benefit-analysis*

Data on **costs of outcomes (i.e. of occupational accidents and diseases)** are gathered in five systems:

06 France–Accidents	17 Germany–OSH Status report
07 Italy–Accidents	18 UK–Accidents Costs
14 Finland–Absenteeism	

Seven systems are used or could be used for **cost-benefit-analysis** of Occupational Safety & Health. These systems are:

07 Italy–Accidents	14 Finland–Absenteeism
09 Sweden–Work Injuries	18 UK–Accidents Costs
10 UK–Illnesses & Diseases	23 Norway–Accidents & Inspections
11 UK–Injuries & Diseases	

Most of these cost-benefit-related systems are based on registers of population-data. It is striking that in some systems data on the costs of outcomes (occupational accidents and diseases) are collected, but not used for cost-benefit analysis.

### **The methodologies used in the systems**

Taken all in all, there are three main types of data gathering methods used, viz. surveys, registers, and workplace observation techniques. We summarize the methods as follows (see also Table B):

surveys or questionnaires	14 systems
social security registers	9 systems
observations at the workplace	8 systems
national census data	5 systems
others (such as additional case studies, record keeping of activities, company OSH-documents)	7 systems



First, there are five systems which completely rely on surveys:

- |                                     |  |
|-------------------------------------|--|
| 01 France–Working Conditions Survey | 04 Sweden–Work Environment Statistics/Survey |
| 02 France–Risks Survey SUMER        | 10 UK–Illnesses & Diseases                   |
| 03 Spain–Working Conditions Survey  |  |

Second, four systems completely rely on social security registers:

- |                     |                         |
|---------------------|-------------------------|
| 06 France–Accidents | 09 Sweden–Work Injuries |
| 08 Spain–Accidents  | 14 Finland–Absenteeism  |

Third, two systems fully rely on observations in the workplace:

- 05 Germany–Workplace Exposure Database  
19 Belgium–Safety index of companies

The other 12 systems gather their data from two or more sources (surveys, workplace observations, social security registers, other registers, census data, case studies, reports from employers, company OSH-documentations, etc.).

As explained, surveys and/or questionnaires are the most popular data-gathering method among the 23 systems in this project <sup>3</sup>. But 11 of the 23 systems are actually multi-source systems, since they use two or more data gathering methods. There are even 8 systems that use three or four methods.

**Table B: Type of data sources used by each system**

	surveys	registers	workplace observations	census data	others *)	sample data	population data
1 France–Working Conditions Survey	X					X	
2 France–Risks Survey SUMER	X					X	
3 Spain–Working Conditions Survey	X					X	
4 Sweden–Work Environment Survey	X					X	
5 Germany–Workplace Expos. Database			X			X	
6 France–Accidents		X					X
7 Italy–Accidents	X	X	X				X
8 Spain–Accidents		X					X
9 Sweden–Work Injuries		X					X
10 UK–Illnesses & Diseases	X					X	X
11 UK–Injuries & Diseases	X		X		X		X
12 Finland–Occupational Cancer	X			X	X		X
13 Denmark–Hospitalisation				X	X		X
14 Finland–Absenteeism		X				X	
15 Denmark–Prevention in companies	X		X			X	
16 Netherlands-OSH Balance	X	X		X		X	X
17 Germany–OSH Status Report	X	X		X		X	X
18 UK–Costs of accidents	X				X		X
19 Belgium–Safety Index			X			X	
20 Ireland–Promotions & Campaigns					X		
21 Ireland–Accidents & Enforcements		X	X		X	X	X
22 Netherlands–Inspection Monitor	X		X	X	X	X	
23 Norway–Accidents & Inspections	X	X	X			X	
Total number	14	9	8	5	7	14	12

\*) such as additional case studies, record keeping of activities, company OSH-documents

<sup>3</sup> The most frequently used monitoring systems in the EU member states are accident and disease registers, not surveys, since these type of registers are compulsory. Because these registers are often rather similar, only a few of them were included in this study.

### Population or sample data?

Among the 23 systems there are ten systems fully and only based on sample data (see Table B):

01 France–Working Conditions Survey	14 Finland–Absenteeism
02 France–Risks Survey SUMER	15 Denmark–Prevention in Companies
03 Spain–Working Conditions Survey	19 Belgium–Safety index of companies
04 Sweden–Work Environment Statistics/Survey	22 Netherlands–Inspection Monitor
05 Germany–Workplace Exposure Database	23 Norway–Accidents & Inspections

Next, there are eight systems which fully and only rely on population-data:

06 France–Accidents	11 UK–Injuries & Diseases
07 Italy–Accidents	12 Finland–Occupation & Cancer
08 Spain–Accidents	13 Denmark–Hospitalisation
09 Sweden–Work Injuries	18 UK–Accidents Costs

Third, there are four systems which rely on population- as well as on sample-data:

10 UK–Illnesses & Diseases	17 Germany–OSH Status report
16 Netherlands–OSH Balance Report	21 Ireland–Accidents & Enforcements

In the UK-system (# 10) ‘own’ data are used together with Labour Force survey data. In the Irish system (# 21) ‘own’ data are used as well as national household survey data. The typical multi-source publications of the Netherlands’ (# 16) and the German governments’ (# 17), use data of sample surveys, accident and disease registers, as well as Labour Force survey data.

It may be added that population data – when representative – of course are more precise and/or reliable than sample data – when representative -. With population data often more sub-division is possible in risk factors, health effects, and branches or occupations. But samples are used to gather data for cost-benefit-reasons. When population and sample data are not representative, and/or underreport the work and health situation, both may have drawbacks.

Finally, among the 23 there is one system (20 Ireland–Promotions & Campaigns) which is not a data collection system, but a list of the 2001-promotion and campaign activities of the Health & Safety Authority in Ireland. The list includes, for example, educational programs on Occupational Health and Safety for future engineers, architects, students in second level schools, as well as ‘partnerships’ with local businesses, business organisations, employee groups and other key players in the working communities. One may question the inclusion of this system in the list of 23 OSH Monitoring systems.

### What is the periodicity of data gathering?

For 13 of the 23 systems the data gathering is an ongoing or continuous process. Especially for surveys the data gathering is limited to a specific period, once a year, every two years or even less frequent.

Systems which rely on more methods (such as surveys, as well as social security registers, observations) of course have different data collection periodicity characteristics.

The mean time required for the preparation of the publications is about 9 months.

### Reliability, validity and underreporting

Information was also gathered on the reliability and validity of the 23 systems. For a few systems there was no or little information available on these subjects. With respect to some others it was said that reliability and validity was ‘good’, ‘sufficient’, ‘accurate’ or ‘complete’ or that questions were tested beforehand.

With respect to the Spanish and Swedish accident systems special reliability checks and controls were mentioned, carried out during the gathering and processing period of the data. For some other systems information was supplied on sampling errors and confidence ratios.

In the French ‘Enquête Nationale’ explicit attention is given to the ‘translation’ of the central concepts into the related questions and to analysis of trends in time, to see whether results show stability.

Other systems (e.g., the Spanish ‘Encuesta Nacional’) mention analysis of time trends as a check on reliability and validity.

The Danish Hospitalisation System uses systematic comparisons with ad hoc studies to check the validity and reliability of the system. The Italian Accident system mentions comparison with accident data of other countries in the Eurostat statistics. Here Eurostat data are seen as a 'golden standard'.

In the Danish Study of Preventive activities of Companies within the overall Surveillance system 10 percent of the companies interviewed by telephone are also visited by OSH-experts to check the quality of the information given by telephone.

In the Enquête SUMER a seasonal bias was discovered. Data-gathering the whole year round was the solution.

In three cases (UK Injuries & Diseases/RIDDOR, Germany Workplace Exposure Database, Finnish Occupation & Cancer system) quality management, quality assurance or quality control systems are used to monitor and guarantee the quality of the data.

A certain degree of underreporting is reported to be a problem in at least the following six systems:

09 Sweden–Work Injuries	14 Finland–Absenteeism
10 UK–Illnesses & Diseases	21 Ireland–Accidents & Enforcements
11 UK–Injuries & Diseases	23 Norway–Accidents & Inspections

Most of these systems use methods (such as weighting) to overcome these problems.

With respect to 13 of the 23 systems studies are available on the validity and reliability of the systems. They are mentioned in this report.

## **User group opinions and transferability of the systems to other countries**

### External and internal user group opinions

For most monitoring systems there has not been actual contact with external user groups. In those cases estimations on what the external opinion might be is reported. For a few systems no information at all is available on user group opinions.

For seven systems (the three French and the two Spanish systems, the Italian Accident system, the Danish Hospitalisation system), there has been actual contact by telephone or written contact with external users of the systems. With respect to other systems, such as the Danish Surveillance system, it was mentioned that the social partners are already involved in the design and development of the system. For three systems (the German Exposure Database, the Swedish accident system, the UK-RIDDOR system) earlier reviews or evaluations are used and described.

Almost all systems report on internal user group opinions.

We believe that the following general conclusions may be drawn.

- Many systems report continuous developments and improvements, both from a methodological and a content perspective
- The accident systems report the innovations recently recommended by Eurostat (inclusion of information on causes of accidents, etc.)
- ICT plays an important role in the renovation of systems; electronic notification or declaration of accidents, optical reading, interviewing via the internet and consultation of results on the internet is made possible and has an impact on many features of the systems
- Inviting the social partners to participate in the scientific preparation and/or in advisory boards is suggested and also actually realized; these committees and boards play a role in the quality assurance process.
- On the basis of the system evaluations it is not possible to say that some systems are judged better than other systems. Neither is it possible to say that some external user groups have a more positive or a more negative opinion than other user groups
- Only a few times the content of the systems is criticized, as lacking relevant elements (some accident systems, such as the French accidents system, would be valued higher when including more information on the work environment)
- In larger countries, such as Spain, there is a need for more detailed regional working conditions survey-information, next to the national information.

- There are indications that multi-source systems cause some special methodological problems (lack of clarity of comparative concepts, how to deal with contradictory results)
- Though special studies have proven the validity and reliability of large-scale survey questionnaires, employers sometimes criticize the employee questionnaire methodology as being too subjective and not validated with employer opinions
- Clients, researchers, media and other interested people nowadays have a better access to the data than ever before and are better able to judge the quality and the accessibility of the data. Perhaps for this reason it is reported several times that the output of the systems needs to be published earlier or in a more client-friendly way

#### Transferability of the systems

With the exception of one system (# 9 the Swedish Work Injury system, because this system is said to be strongly connected to Swedish legislation) all systems are reported to be transferable to other countries. This is surprising, since actual comparison between EU-countries with respect to cost-benefit-analysis (see the UK-system, and the European Agency publication on costs & benefits of OSH) turned out to be problematic. Additionally, in several reports there was mention of legislative thresholds that may play a role in the transferability of systems from one country to another.

For some systems the answer with respect to transferability to other countries simply is 'yes' or positive. With respect to other systems additional arguments supporting the idea of transferability are presented. We report several of the arguments given why transferability is possible.

First, the argument of the similarity to EU approaches:

- The French 'Enquête nationale' is very similar to the European Working Conditions Survey.
- The German Exposure database is already used for risk assessment in the 'EU-existing-substances program', and similar systems are used in the UK and France.

Second, the argument of similarity between member states' systems:

- With respect to the Accident and diseases notification systems it is argued that many countries have these kind of systems.
- The Swedish Survey is similar to the so-called 'Nordic Questionnaire on Psychological and Social Factors at Work', used in the Nordic countries (see Dallner et al, 2000; Lindström, et al, 2000).
- Similar calculations, as are done for the Finnish Occupation & cancer-system, are carried out in other Nordic countries, and even published jointly.

In connection with the Netherlands' 'OSH Balance Report' it is mentioned that European unifications gradually make it easier to compare data among countries, and to transfer systems from one country to another.

#### Costs of the systems

For some systems parts of the costs information were available. However, for the majority of the 23 systems it was too difficult to make out what exactly the costs for data gathering, data processing and data publishing are. Therefore it is not possible to give a reliable picture of this part of the information. The information received shows that the 'owner' of the system in all cases pays for data gathering, processing and publishing.

In some cases they are financially supported by other organisations, which pay a part of the activities. In Finland, for example, the Finnish Cancer Registry works together with the Finnish Institute for Occupational Health in project # 12. In Denmark, the Danish Working Environment Authority, works together (for project # 15) with the National Institute of Occupational Health and the Centre for Alternative Social Analysis. In the Netherlands, for project 16 and 22, the Ministry of Labour works together with the Labour Inspectorate and the Census Bureau.

In Sweden, the Work Environment Authority, works together in project # 4 with the National Institute for Working Life.

## Future plans of the systems

When asked for future plans of the OSH Monitoring systems, several new developments are mentioned.

### Inclusion of other risk factors

- In the German Exposure Database further physical exposures will be included.

### Inclusion of other health indicators

- The future French 'Enquête nationale' will probably contain more health elements than nowadays.
- In the Finnish Occupation & Cancer system it is being considered whether to include non-cancer outcomes.

### Renovation of occupational accident systems

- The French Occupational Accidents system will be completely restructured within two years. It will contain more information on injuries and accidents (circumstances, costs, etc.).
- In Spain similar changes are planned. Also, electronic notification of accidents is in preparation.
- In Italy a complete restyling of the Accidents & Diseases Databank is planned, based on the new Eurostat/ESAW-needs (European Statistics on Accidents-2001 methodology).
- Also the Swedish ISA Work Injury Information system is being restructured. Eurostat recommendations have been and will be implemented. In addition, optical reading and electronic distribution play an important role.

### Inclusion of other branches & occupations:

- New editions of the Spanish 'Encuesta nacional' will be adapted so that branches which are now excluded (agriculture, fishing, mining) could be included.

### Combining complex data sources

- For HSE's SWI-ODIN-system on illnesses and diseases a programme of statistical developments are planned. Also HSE's RIDDOR-regulations will be reviewed.
- The Danish Study of Preventive activities of Companies (within the overall Surveillance system) is still underway and data have not yet been published. The system will be evaluated and experiences will be used to improve the existing system.
- Future issues of the Netherlands' 'OSH Balance Report' will probably contain more information on interventions, effectiveness and the developments in the national preventive capacity.
- Since the Dutch 'OSH Monitor' nowadays focuses on the observation of legal requirements by companies and much less on OSH-risks or outcomes of the requirements, in the near future more attention will be given to preventive measures taken by companies, biological agents and vibrations.

### Other improvements

- The future aim of the Danish Hospitalisation Register is to establish it on a permanent basis.
- HSE in the UK is currently considering various options to provide an update of the 'Cost to Britain' study of Workplace accidents and work-related ill-health
- In Belgium the Labour Inspectorate will implement an improved system for the 'Safety Index of Companies'.

## The 23 systems summarized in headlines

- The 23 European OSH Monitoring systems that are described and reviewed in this report are not necessarily 'the best' but express in a representative way 'the variety' available in the European Union with respect to aim, use, content, and methodology of systems.
- The choice also should include systems from as many member states as possible.
- The list of systems includes worker surveys, databases, registers of accidents, diseases, and/or absenteeism, policy-directed systems and intervention- and OSH-management oriented systems.
- Four types of data gathering are used: surveys or questionnaires (14 systems), social security registers (9 systems), workplace observations (8 systems), and use of national census data (5 systems).
- The variety in the 23 systems turned out to be high indeed, since there are systems which describe

- 30 to 40 ‘work’ and ‘health’ indicators, and systems which concentrate on one or two indicators.
- For OSH Monitoring it is important to have information available on ‘risk categories’, such as sex and age groups, professional groups, branches of industry, etc. Many systems indeed include employee- as well as company-characteristics. There are even 18 systems which include at least four of those indicators. In addition, five systems may be described as typically non-employee oriented systems.
  - Seven systems are used or could be used for cost-benefit-analysis of Occupational Safety & Health.
  - In nine systems information on OSH-management (number of experts, coverage, inspectors, etc.) is available.
  - There is a large variety in aims and uses of the 23 systems: for knowledge development, the identification of trends, development of policies, setting priorities of activities, evaluation of actions and measures, supporting labour inspectorates, demonstrating what the OSH-costs are, providing a basis for discussion with social partners and occupational physicians, reporting to European institutions, making compensations possible, etc.
  - Priority setting is thought by the ‘owners’ to be possible with all the systems. Priority setting is aimed at branches of industry, enterprises, groups of workers, occupational groups, types of prevention, high and low risk groups, different diagnoses, OSH-costs of sectors or diseases, labour inspection activities/interventions.
  - Ten of the 23 systems are used for the evaluation of policies, actions and/or campaigns.
  - In addition, 10 systems use sample data and 8 systems use population data. The other 4 systems use both sample and population data. Population systems may be more precise, but are certainly much more expensive than sample systems.
  - Validation processes have been applied to most of the systems.
  - Almost all systems are said to be transferable to other countries, though in several reports there was mention of legislative thresholds that may play a role (e.g., survey questions are sometimes focused on typical country-related legislation).
  - External user group evaluations are available for only a part of the systems; internal user group opinions are available for almost all systems. Many systems report continuous developments and improvements, both from a methodological and a content perspective. Only a few times the content of the systems is criticized, as lacking relevant elements. One user group (the employers) seems to be critical towards the employee questionnaire methodology. Also, there are indications that multi-source systems cause problems with respect to the interpretation of results. More user groups seem to ask for faster publication of results, and in a more client-friendly way. Inviting the social partners to participate in the preparation and quality-assurance of systems is recommended.
  - Future plans of the systems concern specifically broadening of the systems (inclusion of new work or health indicators), methodological improvements in data gathering, ICT-driven innovations in data gathering and processing, adaptation to methodological improvements by Eurostat.

### **The 23 systems classified into three groups**

It is time to come to a more summarized picture of the situation and more concentrated conclusions. This is also necessary if we want to draw more global and long-term conclusions with respect to OSH Monitoring in the European Union. The question we ask ourselves is twofold:

(1) are there systems among the 23 which resemble or have (almost) the same profile?

(2) and if so, what characteristics (content, method, use) do these grouped systems have in common?

Because a lot of structured information is available on the systems, in terms of ‘yes’ or ‘no’ or ‘not known/not available’, it is possible to analyse this information statistically, in order to answer the questions described above. All in all, 74 yes-no aspects (the so-called ‘tick box’ information) of the content of the systems were available, 24 yes-no aspects of the methodology, and 18 yes-no aspects of the internal and external use. Of each of the 23 systems in total 116 aspect were available, and

statistically analysed. **Thus, we would like to emphasize that content, as well as method, as well as system use and aims play an equal role in this analysis. The annexes 3, 5, and 7 describe these 116 aspects included.**

Most of the 23 OSH Monitoring systems can be statistically classified into three larger groups (see Table C, wherein the ‘loadings’ of the 23 systems on the three different factors or groups are given; the higher the loading, the stronger the system is related to the factor or group).

These three groups are:

(1) systems with ‘high loadings’ on accidents, diseases, injuries and ill-health, and use of more sources of information (surveys, workplace observations and registers)

(2) systems with ‘high loadings’ on working conditions, and the use of surveys,

(3) systems with ‘high loadings’ on safety, substances, OSH, the work of labour inspectorates, safety-inspections, enforcement, surveillance, and based on company and workplace observations.

Table C also shows that there are four ‘in-between’ systems (systems that do not strongly belong to one of the three groups). These are: Sweden–Work Injuries, Finland–Occupation & Cancer, Netherlands-OSH Balance Report, Germany–OSH Status report. These four systems have aspects of at least two different groups.

**Table C: Classifying the 23 OSH-systems into three groups**

	Group 1: Accidents, ill health, absenteeism; registers and multi-source information	Group 2: Work & working conditions; worker sample surveys	Group 3: Safety, substances, OSH-service; company and workplace observations by inspections
01 France–Working Conditions Survey		<b>0,73</b>	
02 France–Risks Survey SUMER		<b>0,76</b>	
03 Spain–Working Conditions Survey		<b>0,63</b>	
04 Sweden–Work Environment Statistics/Survey		<b>0,72</b>	
05 Germany–Workplace Expos. Database			<b>0,66</b>
06 France–Accidents	<b>0,59</b>		
07 Italy–Accidents	<b>0,77</b>		
08 Spain–Accidents	<b>0,67</b>		
09 Sweden–Work Injuries	0,37	0,38	
10 UK–Illnesses & Diseases	<b>0,65</b>		
11 UK–Injuries & Diseases	<b>0,65</b>		
12 Finland–Occupation & Cancer	0,34	0,40	
13 Denmark–Hospitalisation	<b>0,50</b>		0,33
14 Finland–Absenteeism	<b>0,53</b>		0,33
15 Denmark–Prevention in Companies			<b>0,58</b>
16 Netherlands-OSH Balance Report		0,32	0,27
17 Germany–OSH Status report	0,34	0,46	
18 UK–Accidents Costs	<b>0,60</b>		
19 Belgium–Safety index of companies			<b>0,70</b>
20 Ireland–Promotions & Campaigns			<b>0,47</b>
21 Ireland–Accidents & Enforcements	0,36	–0,36	<b>0,57</b>
22 Netherlands–Inspection Monitor			<b>0,66</b>
23 Norway–Accidents & Inspections	<b>0,53</b>		

*The main characteristics of the three groups of systems*

Now what does each group of systems have in common? We may conclude that the three groups of systems have their strong and their less strong points. The general and averaged picture is shown in Table D.

But two things should be remarked beforehand. First, of course there are systems which fit very well in just one of the three profiles and other systems which fit less in one of the three. Second, the 23 systems do not differ significantly between each other in characteristics **not mentioned** in Table D. For example, the systems and the three groups of systems do not differ significantly in the use of data for priority setting, in the use of data for company and/or governmental action, and in the inclusion of company characteristics in the systems.

- The first group of systems is relatively weak on work indicators (the safety situation, work activity, dangerous substances, the physical and the mental work environment, psycho-social factors, working hours, employment status, training facilities), but strong on accidents, ill health, absenteeism, work disability and the costs of work outcomes and cost-benefit relations in general. This group lacks information on OSH-experts, OSH-coverage and OSH-interventions. The information in this group of systems is often used for costs-benefits analyses, but not for the evaluation of policies, actions or campaigns.
- The second group of systems is very complete with respect to work and working conditions. This group of systems also includes information on work accidents and ill-health. It lacks information on absenteeism, work disability and also on OSH-experts, OSH-coverage and OSH-interventions. The systems in this group are not or are only seldom used for cost-benefit analysis neither for the evaluation of policies or actions. This group of systems is used more for the development of knowledge on working conditions and the health of workers, for the identification of risk groups and trends, and for the long-term preparation of governmental policies.
- The third group of systems includes specific information on the safety situation, work activity, and dangerous substances, but not on other work characteristics. This group also lacks information on accidents, ill-health, absenteeism, etc. but is strong with respect to OSH-service, OSH-experts, OSH-coverage and OSH-interventions. Finally, this third group of systems has another strong point: the data these systems collect are often used for the evaluation of the effectiveness of policies, actions or campaigns. The data are not used for costs-benefits analyses.

**Table D: Main characteristics of the three groups of OSH Monitoring systems**

Group 1: Accidents, ill health, absenteeism; registers and multi-source information systems	Group 2: Work & working conditions; worker sample surveys	Group 3: Safety, substances, OSH-services, policy-directed, company and workplace observations by inspections
A good deal of information on:		
<b>content:</b> work activity, working hours, and employment status	<b>content:</b> <u>all</u> work characteristics (safety, substances, physical, mental and other psychosocial factors, work organisation, work security)	<b>content:</b> safety situation, work activity, dangerous substances
accidents, ill-health, absenteeism, work disability, costs of occupational accidents and diseases	accidents, ill-health	OSH-experts, OSH-coverage, OSH-interventions
employee as well as company characteristics	employee as well as company characteristics	company characteristics, but no employee characteristics
<b>methodology:</b> multi-source (surveys, observations, registers); population data; ongoing data gathering; some underreporting	<b>methodology:</b> only questionnaires; sample data; data gathering every two years or less; no underreporting	<b>methodology:</b> mainly workplace observations by inspections; sample data; ongoing data gathering; some underreporting
<b>use of data:</b> used for cost-benefit analysis; not much used for the evaluation of policies, actions or campaigns	<b>use of data:</b> not used for cost-benefit analysis; seldom used for the evaluation of policies, actions or campaigns	<b>use of data:</b> not used for cost-benefit analysis; often used for the evaluation of policies, actions or campaigns



## Discussion and recommendations

What might be concluded now with respect to the actual situation and the future of OSH Monitoring in the European Union as a whole?

To start with, we should underline that the 23 OSH Monitoring systems we reviewed, are only a part of all the systems available in Europe. In an earlier inventory it was concluded that even more than 200 systems exist all over Europe. On the other hand, the systems reviewed in this report are central and important to the countries involved. And they also give a good picture of the variety in OSH Monitoring systems that exist in the EU and Norway, since all or almost all the different type of national systems were included.

### *The definition of 'Quality of work' and 'Health and safety'*

First, it is important to define the relation between the results of this study and the EC-employment and social policies, including the EC-Strategy on Health and safety at work 2002-2006<sup>4</sup>. With the help of its employment and social policy the European Commission wants to improve the 'Quality of work' in the EU. Health and safety at work is one of the ten areas distinguished by the EC within the concept 'Quality of work'. With respect to Health and safety the EC distinguishes three indicators, namely accidents at work, occupational diseases, and stress levels and other difficulties concerning working relationships. The other areas of the quality of work – according to the EC - are, for example, intrinsic job quality, development of skills, life-long learning, gender equality, work organisation, non-discrimination, etc.

The EC adds the recommendation that the data from Eurostat and the European Foundation are used to monitor the development in the 'Quality of work'.

Our study indicates that many of the 23 European OSH Monitoring systems reviewed, include much more aspects than the 'health and safety' aspects, as defined in the narrow definition of the EC (accidents, diseases and stress). One could perhaps conclude that our group-1 systems are the real 'health and safety' monitoring systems. The group-2 systems (with their emphasis on different work and working conditions, as well as accidents and ill-health) seem to be much more 'quality of work' systems. The third group of systems (with their accent on safety, substances and OSH-management) seem to take an intermediate position.

It is important first to clarify the definition of OSH. Does OSH mainly include accidents and diseases, or does it also include relevant work characteristics and OSH-management? Without having this clear, it seems to be difficult to have a clear discussion on the future of OSH Monitoring.

### *Broad versus more focused OSH Monitoring systems*

The second question we would like to raise, is: what systems are broadest or cover the widest range of aspects of the working environment, health outcomes and OSH-service and –expertise?

Six systems, the four National Working Condition Surveys (from France, Spain and Sweden) and the two OSH Balance or OSH Status reports (from the Netherlands and Germany) cover about 30-40 aspects of the work environment, health outcomes and OSH-service and –expertise information (see Figure A in this summary for a part of the information).

The Netherlands Inspection Monitor and the Norwegian Accidents & Inspection system also include more than 25 aspects of the work environment, health outcomes and OSH-service information.

At the other end of the spectrum (the more narrow or focused systems), we find, for example, the Danish Hospitalisation System (# 13), the Finnish Absenteeism system (#14), the UK Costs of Accidents system (# 18), and the two Irish Labour Inspectorate systems (# 20 and 21).

It is important to emphasize that the 6-8 broad systems, mentioned above, also contain relatively much information on risk categories (sex, age, profession, number of working hours, branch of industry, etc., see Figure B in this summary).

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<sup>4</sup> European Commission, Adapting to change in work and society: a new Community strategy on health and safety at work 2002-2006 (11 March 2002, COM (2002) 118 final).

All these systems use sample surveys or questionnaires as the (main) data gathering technique, sometimes supported by other techniques, such as workplace observations, registers, and census data. Thus, when broad coverage is the aim of future OSH Monitoring the sample survey technique should be recommended.

#### OSH Monitoring systems and 'Work and Health Country Profiles'<sup>5</sup>

Thirdly, we would like to discuss the results of this study in relation to the 'Work and Health Country Profiles' report (Rantanen et al, 2001). This report has been written by the FIOH on the basis of an initiative of the WHO/Regional Office for Europe. It recommends core indicators for (1) an occupational health and safety system (such as human resources in labour safety inspection, in labour safety at workplaces, in occupational health services, coverage of occupational health services) (2) working conditions (noise, dangerous products or substances, asbestos and pesticide consumption, carrying or moving heavy loads, working at very high speed, working at least 50 hours per week), and (3) occupational health and safety outcomes (fatal and non-fatal work accidents, occupational diseases, perceived work ability).

Though one could perhaps question these core indicators (not included are, for example, the safety situation, vibrations, radiation, job control, job support, violence and harassment at work, night and shift work, absenteeism, work disability, etc. and risk categories, such as sex, age, profession, and branch of industry), but the general idea of developing a Work and Health monitoring system per country, should be evaluated as very positive in a European context.

The results of our study show that there are almost no monitoring systems available that include all these 'core indicators'. The use of more than one monitoring system per country seems to be needed to gather the information for these 'Work & Health Country Profile Reports'. The multi-source reports prepared yearly in Germany and the Netherlands (the Status Report and OSH Balance Report) have a lot in common with the 'Work & Health Country Profile Reports' advocated by the FIOH and the WHO. We refer to the similarity of the indicators used for (1) working conditions (2) occupational health and safety outcomes, and (3) the occupational health and safety system.

#### The degree of coverage of OSH-aspects by the European systems

The final and perhaps most important question we would like to discuss is: what are the best covered OSH-aspects at the European level, where might be gaps of information at that level, and what could be suggested in this respect from our analyses?

At the European level there are two important OSH data suppliers: Eurostat and the European Foundation for Living and Working Conditions in Dublin. Eurostat's Labour Force Survey (LFS) provides EU-wide information on the population, households, employment (rates, self-employment, employees, temporary and part-time employment, working time, etc.), unemployment and inactivity. Eurostat's European Statistics on Accidents and Work (ESAW) cover all accidents that result in absences of at least four days. Eurostat's ad hoc module of the 1999-LFS on Accidents at work and Occupational illnesses generated additional information on diseases, disabilities, other physical and psychological problems and accidental injuries at work.

The European Foundation's 1992-1996-2000 Surveys on Working Conditions provide information on the job, the physical, the organisational and the social work environment, work time, and health-related outcomes.

**From this one might conclude that at the European level information coverage is relatively low with respect to OSH-services/-coverage, OSH-experts, OSH-interventions, costs and benefits of OSH, workplace and company-based information on policies, actions and interventions and on the evaluation of the effectiveness of these actions.**

<sup>5</sup> Rantanen, J., T. Kauppinen, J. Toikkanen, K. Kurppa, S. Lehtinen, T. Leino. Work and Health Country profiles: country profiles and national surveillance indicators in occupational health and safety. Helsinki, Finnish Institute of Occupational Health, 2001.

The so-called group-3 systems we identified (especially the Netherlands' Inspection Monitor, the Danish Prevention in Companies system, the Belgian Safety Index of companies, and the Irish Accidents & Enforcement system), meet this wish for information best. There are, however, also some survey and multi-source systems in which information on OSH-service indicators is gathered. This is true for the Spanish and Swedish Work Environment Statistics/Survey, the Netherlands' OSH Balance Report, the German OSH Status Report and the Norwegian Accidents & Inspections system. Most of these OSH-service and OSH-expertise oriented systems are also used for the monitoring or evaluation of the effectiveness of policies, actions or campaigns.

#### Methodological perspectives

Above we concluded that at the European level information coverage is relatively low with respect to OSH-management, workplace and company-based information on policies, actions and interventions, etc. We also concluded that several existing OSH Monitoring systems provide important information with respect to this field.

But are data from these systems comparable or is it possible to join them into one common European System? According to our study almost all systems are reported to be transferable to other countries. But does mean that the data from the different systems are comparable?

There are publications, which show, that data even from very similar systems cannot be compared or joined (see the papers presented at the 13-th CEIES-seminar on 'Health and Safety at Work - EU Statistics' in Dublin 2001, especially Stamm's contribution 'Statistics on and indicators of accidents at work and work-related health hazards in Europe: a critical appraisal')<sup>6</sup>. Similar conclusions were drawn in a study on five European databases containing occupational air pollutant control measurements<sup>7</sup>. Finally, the European Agency in its 'State of OSH' (2000) also concluded that there was a need for systems at EU level with well structured questions and clear definitions to promote a common understanding and avoid ambiguity.

As long as no uniform data acquisition methodology is introduced the comparison of the data from different sources limps. This implies that a European Union system would have to be organised centrally. The data have to be gathered with a uniform method in a representative way. The collection of data through the method of questionnaires appears most fruitful, since this method is both repeatable and simply feasible. Additionally, the problem of underreporting is relatively small in this methodology. However, special attention should be paid to unambiguous formulation of questions and repeated testing of the questionnaires.

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<sup>6</sup> Eurostat. The 13-th CEIES Seminar 'Health and safety at work: EU-statistics'. Dublin, 10 and 11 May 2001.

<sup>7</sup> European Foundation for the Improvement of Living and Working Conditions. Exposure registers in Europe - Extractions of core information and possibilities for comparison between European databases for occupational air pollutant measurements. Office for Official Publications of the European Communities, 1994.

# 1 Objective of the project and time-table

According to the Call for Tender of the European Agency (OSHA/WE/2001/T05, December 2001), the objective of this project was the production of an Inventory and an assessment of 15-20 existing and currently used OSH Monitoring systems in the member states and the organisation of a workshop on the issue to discuss possible options for a European OSH Monitoring system.

The report should contain an overall analysis of the monitoring systems, highlighting interesting elements and pointing out shortcomings in the existing schemes (including where information is lacking). In addition to the analysis, the final report should contain suggestions or recommendations about the content of a possible OSH Monitoring system at European level. These suggestions should especially take into account the new Community strategy on OSH, the outcome of the current work undertaken by the Dublin Foundation and the Belgian Presidency on developing indicators for the quality of work, as well as the work carried out by Eurostat.

The project was carried out according to the following time-table.

## **Stage 1: Preparation of the project (March-April 2002)**

The contractor (TNO Work & Employment in the Netherlands) and the European Agency developed a 'long list' of systems and a questionnaire to describe the systems. These were discussed with the OSH Monitoring Expert Group, an advisory body of the European Agency. Also the Focal Points were asked to agree with these instruments. A group of 'reporting persons/organisations' in the different member states was composed. This group carried out the data gathering (see Stage 2).

## **Stage 2: Gathering the information with respect to the monitoring systems (May-June 2002)**

Each description of an OSH monitoring system should contain - among others - information about:

- the specific background/context of the system; including the aim/purposes
- a description of how the system operates in practice
- the experiences/opinions of 2-3 major stakeholders or target groups with respect to each system
- indications about plans for further development of the system
- the potential transferability of the system.

## **Stage 3: Analysis of the system descriptions and reporting (June-August 2002)**

The overall analysis of the monitoring systems described in the report should:

- highlight interesting elements and shortcomings in the systems (including where information lacks)
- include a summary in a comparative table format of the specific content
- contain a number of suggestions or recommendations about the content of a possible OSH Monitoring system at European level.

## **Stage 4: The workshop to be held in Bilbao in September 2002**

The report will be the basis for a Workshop on existing OSH monitoring systems in the member states to be held in Bilbao in September 2002.

The major findings of the study will be presented, and options for a future European OSH Monitoring system will be discussed. A summary document will be prepared after the workshop containing the proceedings/ outcomes of this workshop. This document must be finalised and agreed by 1 November 2002.

In chapter 3 the methods shortly mentioned above, will be outlined in more details.

## **2 Recent developments in OSH Monitoring in Europe**

### **2.1 European OSH Monitoring system studies**

In this chapter we first review three earlier studies on OSH Monitoring in Europe. Then we describe four important European OSH data systems from the European Foundation in Dublin and Eurostat in Luxembourg.

In the third place we also describe some important contextual circumstances: the European strategic goals, policies and guidelines in the field of Employment and Occupational Health and Safety.

Finally, three other relevant documents - from ILO, WHO and Eurostat - are mentioned.

#### **2.1.1 Systems for the Monitoring of Working Conditions relating to Health and Safety (European Foundation, 1991)**

In 1991 the European Foundation summarized what Monitoring systems on Working Conditions were available in the 12 EU-countries. The systems covered in the inquiry were classified into three types:

(a) systems describing working conditions in a country, region, sector, etc. The instruments falling into this category are surveys and (micro-) census;

(b) systems describing health & safety 'outcomes' of work. Reported occupational accidents and diseases, as well as work incapacity (sickness absence) are the major elements of this category;

(c) other systems, containing 'indirect data' on working conditions. This category comprises data bases, registers as well as documentation systems on substances, exposures, tools, etc.

The European Foundation formulated four recommendations regarding the state of affairs with respect to monitoring safety and health in the EC member states.

- (1) the availability of community wide and periodically updated overviews of monitoring systems is indispensable
- (2) since most monitoring systems focus on technical and physical aspects of working life, other potential hazards need to be included (mental strain, qualification, job uncertainty, etc.)
- (3) in the light of Community prevention policies and research programmes, reliable and standardised base-line information on working conditions (e.g. a survey) across the EC countries is needed
- (4) to give insight in how other EC-countries are dealing with the same problems and to benefit from foreign experiences international cooperation and network integration should be stimulated.

The first recommendation – the production of an overview of monitoring systems in the EU - was put into practice in 1995 (see § 2.1.2).

The third recommendation was realised very soon after the publication of the report, since in 1991/1992 the first European Working Conditions Survey was carried out in 12 EU-countries (see § 2.2.1).

#### **2.1.2 European Health and Safety databases (European Foundation, 1995)**

In 1995 the European Foundation published the European Health and Safety Database (HASTE) with summaries of descriptions of systems for monitoring health and safety at work.

The report provided summaries of 212 OSH Monitoring systems in the EU, divided in 15 types of systems. The report included system-information from the 15 European countries, Norway, the Czech Republic, the European Union and the World Health Organisation.

The following Table 1 provides the basic information from the HASTE-report.

**Table 1: OSH-systems described in the EFILWC-HASTE report (1995)**

	Type of system	Number of descriptions
1	Occupational accident registers	31
2	Occupational disease registers	25
3	Exposure registers (environmental and biological)	34
4	Product and substance registers	8
5	Cancer registers	4
6	Birth, death and mortality registers	8
7	Ill-health absenteeism registers	4
8	Preventive service activity registers	18
9	General health surveys	12
10	Quality of working life surveys	30
11	Working time and work organisation surveys	10
12	Labour force surveys	13
13	Demographic and economic census	4
14	Documentation centres	4
15	Others	11
Total number of systems described		212

The Table shows that all over Europe registers with occupational accidents and diseases and exposure data, as well as quality of working life surveys were most popular. Of these types more than 25 monitoring systems were available each.

### 2.1.3 State of OSH in the European Union (European Agency, 2000)

The European Agency carried out a Pilot Study in 1998-2000 on the 'State of Occupational Safety and Health in the European Union' as a first step in the development of a system for monitoring Occupational Safety and Health (OSH) in the European Union (see European Agency, Monitoring: the state of Occupational Safety and Health in the European Union, Pilot Study, 2000).

For this project a questionnaire format or manual was developed with the following sections:

- quantitative data from the second European Survey of Working Conditions (European Foundation, Dublin, 1996) per risk factor or exposure indicator
- a comparison of the these data with the national data in a member state with respect to the risk factor
- identification of risk categories (sector, occupation, company size, gender, age, employment status)
- identification of trends in the risk factor
- evaluation of the present state.

With the help of the Focal Points in the member states the required information was gathered. The European Agency's report provided 'a comprehensive factual qualitative snapshot of the state of OSH in the EU' (p. 26 of the report). It also presented valuable information with respect to each sector at risk (p. 26 of the report).

However, the report also underlined the weaknesses of the project. 'Obtaining quantitative data was to complex a task for this project' and 'shortage of qualitative data in some topic areas in some member states resulted in some issues being the collation of expert opinion' (also p. 26 of the report).

In addition, the report (p. 26-27) concluded that the pilot project demonstrated

- that a greater degree of commonality of questions in the Manual for the member states is desirable in the future (this refers to the need for well structured questions with clear definitions to promote a common understanding and to avoid ambiguity)
- that it is important to have more information on the degree to which specific legislation has been implemented in the EU-countries and to what extent this has been effective
- that information on some risk areas (or exposure categories), such as stress and work pace, was scarce and needs to be improved

- that in the future special attention has to be given to the relative importance of risk areas or exposure indicators ('priority setting')
- that information on risk areas was rarely available for important risk indicators, such as age, gender, employment status and company size
- that further clarifications are required of some special issues, especially with respect to preventive actions taken by member states (type of action, broad or focussed manner, etc.)

Since what has been concluded in this pilot project, it may be clear that the OSH Monitoring systems to be described in the 2002-project should have characteristics which fit well into the model described by the European Agency, which means that the systems

- should make it possible to establish priorities between risk areas and/or risk categories
- should make it possible to start formulating governmental policies and policies at branch levels

This implies that the systems preferably should describe more than one risk area or health & safety effect. Monitoring systems focussed on only one risk area or one exposure category do not meet these requirements.

## **2.2 European OSH data systems**

### **2.2.1 European Foundation Surveys on Working Conditions**

In 1991/1992 the First European Survey on Working Conditions (ESWC) was carried out under the supervision of the European Foundation in Dublin. In that year twelve EC-countries participated. The questionnaire was limited to 19 questions and 12,819 workers in the 12 countries were interviewed in their home situation.

In 1995/1996 and in 2000 Austria, Finland and Sweden also participated in the Survey, and the questionnaire was extended. The questionnaires comprised questions on demography, the job, the company, the physical work environment, time, the organisational work environment, the social work environment, and 'outcomes'. In 2000, the survey also included questions related to domestic work (unpaid work).

In 1995/1996 almost 16,000 workers, and in March 2000 21,703 workers were interviewed in face-to-face interviews. In 2000 around 1500 workers were interviewed in each country, with the exception of Luxembourg where the number of persons interviewed totalled 527. The 2000-report included time series wherever possible.

In 2001, the Foundation carried out a questionnaire-based survey on working conditions in twelve candidate countries (CC's) to the EU (Estonia, Lithuania, Latvia, Poland, the Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria, Cyprus and Malta). The Survey questionnaire was identical to that used in the Foundation's Third European Working Conditions Survey.

The results of the three surveys are described in Paoli (1992), Paoli (1996), and Paoli & Merlieć (2001).

### **2.2.2 Eurostat Labour Force Surveys (LFS)**

The Labour Force Survey 2000 (published by the European Commission and Eurostat in 2001) includes data from all 15 member states on:

- Population and households
- Employment
  - \* Employment rates
  - \* All in employment
  - \* Self-employment
  - \* Employees
  - \* Temporary employees
  - \* Part-time employment
  - \* All in employment having a second job
  - \* Working time
- Unemployment
- Inactivity

The results of the LFS 2000 are compiled on the basis of the population of private households (thus persons living in hospitals, religious institutions, etc. are excluded). The number of households in the LFS were 5,344 in Luxembourg, 11,608 in Belgium, 16,212 in Portugal, etc. until 75,699 in France and 148,007 household in Germany. In some countries not households, but addresses or persons were the sample unit. The response rate was between 55-60 percent in the Netherlands until 98 percent in Germany.

The results of the Labour Force Survey 2000 were published in 2001.

### **2.2.3 European Statistics on Accidents at Work (ESAW)**

The European Statistics on Accidents at work (ESAW) cover all accidents that resulted in an absence of at least four calendar days.

Some problems remain in comparing the number of accidents between member states, even after standardising for differences in the structure of economic activity. In some countries self-employed and family workers are not included. Also, in some countries road accidents are excluded, even when they happen in the course of a person's work. The main problem, however, stems from differences in the health care systems in the member states. In some countries the system implies a financial incentive to report accidents, in others not. These 'reporting arrangements' may cause under-reporting of accidents in the EU-countries.

In 1990 work began at European level (Eurostat and DG Employment and Social Affairs, together with the member states) to harmonise the criteria and the methodologies used to record data on accidents at work. The phases I and II of the ESAW project have been running since 1993 and 1996 respectively.

- Phase I covers variables which seek to identify the economic activity of the employer, the occupation, age and sex of the victim, the nature of the injury and the part of the body injured, as well as the geographical location, date and time of the accident.
- Phase II supplements these initial data with information on the size of the enterprise, the victim's nationality and employment status, as well as the consequences of the accident in terms of the number of days lost, permanent incapacity or death as a result of the accident.
- The new phase III on causes and circumstances is being in force progressively in the member states from 2001 onwards, following national implementation schedules taking into consideration the adaptations needed in their national declaration and codification systems of accidents at work. Initial results for a first set of member states are expected in 2003 on 2001 reference year data.

Recent ESAW-results were published by Dupré in 'Accidents at work in the EU 1998-1999' (EC, Eurostat, 2001) and in 'The health and safety of men and women at work' (EC, Eurostat, 2002).

The new methodology is published in 'European Statistics on accidents at work (ESAW) Methodology – 2001 edition' (Luxembourg, 2002).

### **2.2.4 European Occupational Diseases Statistics (EODS)**

The second harmonised statistical tool, developed by Eurostat and DG Employment and Social Affairs is the European Occupational Diseases Statistics (EODS).

For the EODS a pilot collection was carried out on the cases recognised in 1995 for 31 items of the European schedule of occupational diseases in the European Union. On the basis of this experience and of a preparatory analysis led by the Finnish Institute of Occupational Health (FIOH) in collaboration with the member states, the EODS Working Group of Eurostat decided in September 2000, the implementation of EODS Phase I. In this phase annual data will be collected on new recognised cases of occupational diseases from 2001 reference year onwards in 14 member states (Germany is not participating). Phase I of EODS will include information on the medical diagnosis, the exposure or factors that caused the disease as well as, for chemical and biological causal agents, the product that contained the agent. Gradually, data on diseases with a progressive nature will also be collected.

The overall aim of EODS is to obtain gradually harmonised, comparable and reliable data on occupational diseases in Europe. The launch of EODS Phase I is the first step of this progressive project.



### **2.2.5 Ad hoc module LFS 1999 on Accidents at work and Occupational Illnesses**

The third statistical tool is the ad hoc module of the LFS 1999 on Accidents at work and Occupational Illnesses. This 1999-module comprised five variables on diseases, disabilities and other physical or psychological health problems, apart from accidental injuries, suffered by persons during the past 12 months, caused or made worse by the work:

- \* number of health problems, with, if there is one or more, for the most serious of these
- \* the type of problem
- \* the number of days of absence from work (past 12 months)
- \* the job which caused or aggravated the problem
- \* the economic activity concerned.

The module also included six variables on accidental injuries occurring at work or in the course of work, during the past 12 months:

- \* number of injuries, and if there is one or more, for the most recent
- \* date
- \* type
- \* work status
- \* date when the person was able to start work again after the accident
- \* job being done when the accident occurred.

All in all, 544.000 to 650.000 persons from 11 member states were interviewed with parts of this module.

The results of the ad hoc module were published by Dupré in 'Accidents at work in the EU 1998-1999' (EC, Eurostat, 2001) and in 'Work-related health problems in the EU 1998-1999' (EC, Eurostat, 2001).

## **2.3 European strategic goals, policies and guidelines in the field of OSH**

In March 2000 in Lisbon the European Union set itself 'the strategic goal for the next decade to become 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'.

The Union also acknowledged the need to regularly discuss and assess progress made in achieving this goal on the basis of commonly agreed structural indicators.

To this end the European Council invited the Commission '... to draw up an annual synthesis report on progress on the basis of structural indicators to be agreed relating to employment, innovation, economic reform and social cohesion'.

### **2.3.1 EC on 'Employment & social policies: a framework for investing in quality'**

In this document the Commission (COM, 2001, 313 final, 20 June 2001) proposes a framework 'for promoting the goal of improving quality in work, in particular through the establishment of a coherent and broad set of indicators on quality in work'. The Commission also 'aims to ensure that the goal of promoting quality is fully and coherently integrated in employment and social policy through a progressive series of quality reviews...'

The Commission recommends 30 indicators of 10 different areas of Quality in Work. These areas are the following:

- (1) Intrinsic Job Quality
- (2) Skills, life-long learning and career development
- (3) Gender equality
- (4) Health and safety at work
- (5) Flexibility and security
- (6) Inclusion and access to the labour market
- (7) Work organisation and work: life balance
- (8) Social dialogue and worker involvement
- (9) Diversity and non-discrimination

(10) Overall work performance

As far as Health and safety at work is concerned, three indicators are recommended, namely (a) accidents at work, (b) occupational diseases (including new risks, e.g. repetitive strain), and (c) stress levels and other difficulties concerning working relationships.

The Commission recommends to use data from the EU Labour Force Survey, the European Statistics on Accidents at Work, and from the European Foundation, to monitor these quality indicators.

### **2.3.2 EC on ‘Structural indicators’**

This report represents the main outcome of the Commission’s work on structural indicators over the second year (COM, 2001, 619 final, 30 October 2001) in which the Commission had chosen a set of structural indicators. Some new indicators have been included and others had to be dropped. The new list includes 36 indicators in six fields for the ‘Synthesis Report 2002’:

- I. General Economic background
- II. Employment
- III. Innovation and research
- IV. Economic reform
- V. Social Cohesion
- VI. Environment

Employment includes the following 6 indicators:

1. Employment rate
2. Employment rate of older workers
3. Gender pay gap
4. Tax rate on low-wage earners
5. Life-long learning
6. Accidents at work

Accidents at work was included as a new indicator. In addition, the Commission suggested that developmental work will be carried out for several other indicators. Under employment ‘quality of work’ is seen as the indicator to be developed, especially with respect to gender pay data.

### **2.3.3 EC on ‘A new Community strategy on health and safety at work 2002-2006’**

Creating more and better jobs was the objective the European Union set itself at the Lisbon European Council in March 2000. Clearly, health and safety are essential elements in terms of the quality of work, and feature among the indicators recently adopted in the wake of the Commission’s report ‘Investing in quality’ of 20 June, 2001.

This document (COM, 2002, 118 final, 11 March 2002) sets out the Community’s strategy on health and safety at work 2002-2006. This strategy has three novel features:

- It adopts a global approach to well-being at work, taking account of changes in the world of work and the emergence of new risks, especially of a psycho-social nature. As such it is geared to enhancing the quality of work, and regards a safety and healthy working environment as one of the essential components;
- It is based on consolidating a culture of risk prevention, on combining a variety of political instruments – legislation, the social dialogue, progressive measures and best practices, corporate social responsibility and economic incentives – and so building partnerships between all players on the safety and health scene;
- It points up the fact that an ambitious social policy is a factor in the competitiveness equation and that, on the other side of the coin, having a ‘non-policy’ engenders costs which weigh heavily on economics and societies.

The Commission states (p.10) that the European Agency for Health and Safety at Work should act as a driving force in matters concerning awareness-building and risk anticipation. In the second half of 2002, the Commission will present a communication assessing the work of the Agency, and spelling out the role the Agency should be playing in this field.

The European Agency, according to the Commission (p. 10), should

- set up a ‘risk observatory’ based on examples of good practice,
- organise exchanges of experiences and information,

- integrate the candidate countries into these information networks,
- refocus the European Week on Health and Safety on users and final beneficiaries,
- establish a data base of best practices and information concerning ways of integrating disabled people and adapting equipment and the work environment to their needs

### **2.3.4 EU Council on ‘Guidelines for member states’ employment policies 2001’**

In this Council decision (EC/31, of 19 January 2001) it is stated in paragraph 14 of the annex that: ‘Member States will, where appropriate in partnership with the social partners or drawing upon agreements negotiated by social partners, *endeavour to ensure a better application at workplace level of existing health and safety legislation*

- (1) by stepping up and strengthening enforcement,
- (2) by providing guidance to help enterprises, especially SME’s, to comply with existing legislation,
- (3) by improving training on occupational health and safety, and
- (4) by promoting measures for the reduction of occupational accidents and diseases in traditional high risk sector’.

## **2.4 Other relevant documents**

### **2.4.1 ILO- InFocus Programme on Safety & Health at Work and the Environment**

The International Labour Organization (ILO) was founded to ensure everyone the right to decent work. In recent decades industrialized countries have seen a clear decrease in serious injuries, because of real advances in making the workplace healthier and safer. The challenge for ILO is to extend the benefits of this experience to the whole working world. The programme ‘SafeWork’ was designed to respond to this need. Its primary objectives are: (a) to create worldwide awareness of the dimensions and consequences of work-related accidents, injuries and diseases; (b) to promote the goal of basic protection for all workers in conformity with international labour standards; and (c) to enhance the capacity of member states and industry to design and implement effective preventive and protective policies and programmes.

Among the major outputs of ‘SafeWork’ there will be several monitoring-related products, such as:

- a World Report on Life and Death at Work, presenting the world situation regarding risks, accidents and diseases, policies and experience, and guidance for future action;
- a review of standards on occupational safety and health to determine the action needed to update and possibly consolidate them, and to translate them into practical policy and programmatic tools;
- a data bank on policies, programmes and good enterprise-level practices;
- a statistical programme to develop new survey tools, carry out national surveys;
- better national and global estimates of occupational fatalities and injuries;
- a report on the economics of accidents and preventive measures;
- national and industry-level programmes of action to tackle priority issues.

### **2.4.2 WHO/FIOH-report ‘Work and health Country Profiles’ (2001)**

This report (Rantanen et al, 2001) has been written on the basis of an initiative of the WHO/Regional Office for Europe. The document recommends core indicators of

- an occupational Health and safety system:
  - \* ratification rate of relevant ILO key conventions on OSH
  - \* human resources in labour safety inspection
  - \* human resources in labour safety at workplaces
  - \* human resources in occupational health services
  - \* coverage of occupational health services
- working conditions:
  - \* working in a high level of noise
  - \* handling or touching dangerous products or substances

- \* asbestos consumption
- \* pesticide consumption
- \* carrying or moving heavy loads
- \* working at very high speed
- \* working at least 50 hours per week
- occupational health and safety outcomes:
  - \* number of fatal work accidents
  - \* number of work accidents
  - \* number of occupational diseases (31 diseases as defined by the EU)
  - \* perceived work ability (Work Ability Index)

#### **2.4.3 Eurostat/CEIES 2001-Seminar ‘Health and safety at work: EU Statistics’**

In May 2001 CEIES (European Advisory Committee on Statistical Information in the Economic and Social Spheres) organised the 13<sup>th</sup> Seminar in Dublin. This time the subject was ‘Health and safety at work: EU statistics’. The field of the seminar was limited to ‘the provision of harmonised quantitative information on work-related accidents and diseases for monitoring purposes, policy-making and policy evaluation and prevention’. However, in the discussions this field was easily enlarged and connected to education, work and working conditions, labour market flexibility, productivity, labour intensity, training and health in general.

In the seminar the producers view and the users view on Measuring Health and Safety at Work were confronted. The producers were, among others, Eurostat, the European Commission, the European Foundation, the European Agency, and representative of national statistical and research organisations of member states. Among the users there were representatives of the European Trade Union and research institutes.

It was emphasised that data needs arise from the rapid transformation of the labour market, changing work patterns, participation of new groups in the labour market, and the recognition of new types of illnesses and disabilities, such as RSI and stress.

With respect to the available European data sources, it was concluded that (1) the speed of delivery of the data, (2) the quality of the data (lack of clear definitions, sampling errors, low response rates, response biases because of different country-related norms and values, etc.), and (3) the possible division of the data into social and institutional risk groups needs improvement.

In the conclusions the important position of the Labour Force Survey (LFS), the European Statistics on Accidents at Work (ESAW), and the European Occupational Diseases Statistics (EODS) were underlined. Additionally, it was argued that in the near future, it will become necessary to integrate information from different sources.

One of the strategic conclusions of the seminar was that it is necessary to move towards a more integrated European system of quantitative and qualitative information on health and safety aspects of the changing working conditions. Eurostat, the European Foundation, and the European Agency were connected to this suggestion.

## **2.5 Developments in OSH Monitoring in Europe: summary and conclusions**

Since the beginning of the years '90, activities in the field of OSH Monitoring were intensified. Available monitoring systems and databases were summarized by the European Foundation. The European Foundation started its 4-yearly Working Conditions Survey, carried out in 1992, 1996 and 2000. Eurostat and DG Employment and Social Affairs, together with the member states, intensified their efforts to harmonise and improve the European statistics on accident at work. This work is now in its third and final phase.

The European Agency carried out a pilot-project on the State of OSH in the European Union as a first step in the development of a system for monitoring OSH in the European Union. After carrying out this pilot-project, the European Agency advocated a system that should contain qualitative and quantitative data obtained with well structured questions and clear definitions to promote a common understanding. Next to information on work and health the system to be developed should contain

information on relevant implemented legislation. In addition, the new system should make it possible to set priorities between risk areas and/or risk categories and make it possible to formulate governmental policies and policies at branch level.

The European Commission developed strategic goals, policies and guidelines in the field of OSH. In June 2001 the EC proposed a framework 'for promoting the goal of improving quality in work, in particular through the establishment of a coherent and broad set of indicators on quality in work'. The Commission recommended 30 indicators of 10 different areas of Quality in Work. Health and safety at work is one of them. Three indicators are recommended by the EC to measure this area, namely: (a) accidents at work, (b) occupational diseases (including new risks, e.g. repetitive strain), and (c) stress levels and other difficulties concerning working relationships. The Commission recommended to use data from the EU Labour Force Survey, the European Statistics on Accidents at Work, and from the European Foundation, to monitor these quality indicators.

In its 'Strategy on health and safety at work 2002-2006' of March 2002 the EC states that the European Agency for Health and Safety at Work should act as a driving force in matters concerning awareness-building and risk anticipation in Europe. The European Agency, according to the EC, should set up a 'risk observatory' based on examples of good practice, and should also establish a data base of best practices and information concerning ways of integrating disabled people and adapting the work environment to their needs.

Furthermore, United Nations organisations as the International Labour Organisation (ILO) and the World Health Organisation (WHO) are active in the field of OSH. The ILO developed the SafeWork-programme to create awareness and policies. The WHO/Regional Office for Europe initiated the development of a system with which core indicators per country may be described, 'Work and Health Country Profiles'.

We might conclude, that at the European level, the collection of and publication on working condition data is clearly in the hands of the European Foundation for the Improvement of Living and Working Condition in Dublin. Furthermore, Eurostat and DG Employment and Social Affairs are clearly involved in the collection and publication of data with respect to the work force, accidents at work, and occupational diseases at European level.

Thus, one might conclude that monitoring of working conditions, accidents at work, and occupational diseases is well organised at European level.

However, in the field of Health and safety, there are several areas of which data collection and data publication are not yet well organised at European level. To our opinion, this is true, for example, for (1) the field of OSH management (services, experts, country-coverage, etc.), (2) for labour inspection activities, (3) for best practices in the field of OSH, and (4) for cost-benefit information.

## **3 The methodology of the OSH Monitoring systems inventory**

### **3.1 The development of a typology of OSH Monitoring systems and the ‘long list’**

As said in Chapter 1 of this report, the objective of this project was the production of an Inventory and an assessment of existing and currently used OSH Monitoring systems in the member states, to be discussed in a workshop to find out what possible options are for a European OSH Monitoring system. The Agency and OSH Monitoring Expert Group underlined in April 2002 that the systems to be described and analysed should not necessarily be ‘the best’ but should express ‘the variety available’ in the European Union and Norway.

Starting from this ‘variety’-point of view we first tried to develop a typology of OSH monitoring systems. From the HASTE-report (European Foundation, 1995) the following typology of OSH Monitoring systems could be derived:

- Work force-systems (Labour force surveys, Demographic and economic census)
- Work environment-systems (Environmental and biological exposure registers, Quality of working life surveys, Work organisation surveys, Product and substances registers)
- Health effect-systems (Occupational accident and/or disease registers, Birth, death and mortality registers, Absenteeism registers, General health surveys)
- Preventive service activity registers.

In addition, the European Agency (2000) distinguished the following system-types in the Pilot Study:

- risk areas or exposure categories (physical, chemical and biological risks, posture and movement exposure, psycho-social working conditions, violence, etc.)
- the context of work (personal protective equipment)
- OSH outcomes (muskulo-skeletal disorders, stress, sickness absence)
- risk categories (sector, occupation, company size, gender, age, employment status)
- preventive actions taken, interventions applied by member states (type of action, broad or focussed manner, etc.)

From these options we finally suggested that the OSH Monitoring systems to be described, were ordered as follows:

- (1) Work force systems (for example, the European Labour Force Survey)
- (2) Worker surveys or questionnaires on work & health (these exist, for example, in the Nordic countries, Germany, the UK, the Netherlands, France, Spain)
- (3) Exposure databases (for example, the German Exposure database)
- (4) Register of substances (for example, the German Register of substances and products)
- (5) Register of accidents and diseases (exist in many European countries)
- (6) Sickness leave or absenteeism systems (also exist in many European countries)
- (7) Multi-source and explicitly policy-directed systems (such as the Netherlands ‘OSH Balance, the German ‘Status report on OSH’, and the Danish ‘Surveillance of progress’ programme).

In April 2002 a meeting was held in Bilbao with the European OSH Monitoring Expert Group- an advisory body of the European Agency - to discuss the ‘long list’ with 26 OSH Monitoring systems, prepared by the contractor and the European Agency.

During this Expert Group meeting it was decided to delete some proposed systems and to add some others, mainly for reasons of broad European coverage and equilibrium. It was also decided not to include Eurostat’ Labour Force Survey, the European Foundation’s Working Conditions Survey and FIOH’s ‘Work and Health Country-profiles’ report in the list, but to describe these important systems/documents in the introduction of the report (see chapter 2). This led to a final list of 23 systems (see Table 2).

Furthermore, it is important to underline that one category of systems was added during that consultation period, i.e. ‘intervention and OSH-management related systems’ (see systems 19 to 23 in Table 2).

### 3.2 The ‘short list’ of systems in the inventory

**Table 2: The final list (‘short list’) of systems in the Inventory**

Country	Type of system	Name of the system (in English)
1. France	Worker Survey	Working Conditions Survey (Enquête Nationale Conditions Travail)
2. France	„	Medical Monitoring Survey of Professional Risks (SUMER)
3. Spain	„	National Working Conditions Survey (ENCT)
4. Sweden	„	The Work Environment Statistics/Survey, including the Work Related Health Problems Survey (published separately)
5. Germany	Exposure database	Measurement System of Workplace Exposures of the ‘Berufsgenossenschaften’
6. France	Register of accidents, diseases, and/or ill-health	National Network for Occupational Accidents
7. Italy	„	Data system on Work, accidents, diseases, absenteeism, work disability and inspections (of INAIL)
8. Spain	„	Occupational Accidents and Diseases Statistics
9. Sweden	„	The Work Injury Information System (ISA)
10. UK	„	Combined use of ‘Self Reported Work Related Illness Survey’ (SWI) and ‘Occupational Disease Intelligence Network’ (ODIN)
11. UK	„	Combined use of ‘Reporting of Injuries, Diseases and dangerous Occurrences Regulations 1995’ (RIDDOR) and ‘Labour Force Survey’ (LFS)
12. Finland	„	Occupation and Cancer Register (combined with census data)
13. Denmark	„	The Occupational Hospitalisation Register
14. Finland	Register of absenteeism	Sickness allowance Register
15. Denmark	Multi-source and policy directed system	Study of Preventive Activities in Companies (one of the three sub-systems within ‘The Surveillance of the Progress in the Action Programme for a clean Working Environment in 2005’)
16. Netherlands	„	Yearly OSH Balance Report (OSH Balance; a compilation of several data sources on OSH)
17. Germany	„	Yearly ‘Status Report’ on Health and Safety at Work (based on statistical data and special survey reports)
18. UK	„	The Costs to Britain of Workplace accidents and work-related ill health in 1995/96
19. Belgium	Intervention- and OSH-management related system	Safety Index of Companies
20. Ireland	„	Promotion and Campaign Activities of the Health & Safety Authority
21. Ireland	„	System for Accidents and Field Enforcement, combined with National Household Survey data
22. Netherlands	„	Yearly Inspection/OSH Monitor (Arbomonitor)
23. Norway	„	Register for enterprises and working accidents

In Annex 2 more details are presented on these 23 systems. There the ‘owners’ are described too. In Annex 10 report and papers are presented describing the systems and describing results of the systems.

### 3.3 The Questionnaire used in the Inventory

A questionnaire for the Inventory was suggested by the contractor and discussed with the OSH Monitoring Expert Group. On the basis of their valuable comments and on those from the European Agency a new version of the questionnaire was made. The Questionnaire knew the following chapters (see Annex 1).

- Basic information (name, ‘owner’, basic documents)

- Contents of the system (work environment, health and safety, employee and company description)
- Method
- Costs of the system
- Internal use/aim of the system
- External use of the system
- Future of the system
- Final evaluative comments

This Questionnaire was send out to the group of information suppliers (see Annex 11) from May 13, 2002. About a month later the majority of the questionnaires were send back to the contractor.

### **3.4 The group of system-information suppliers**

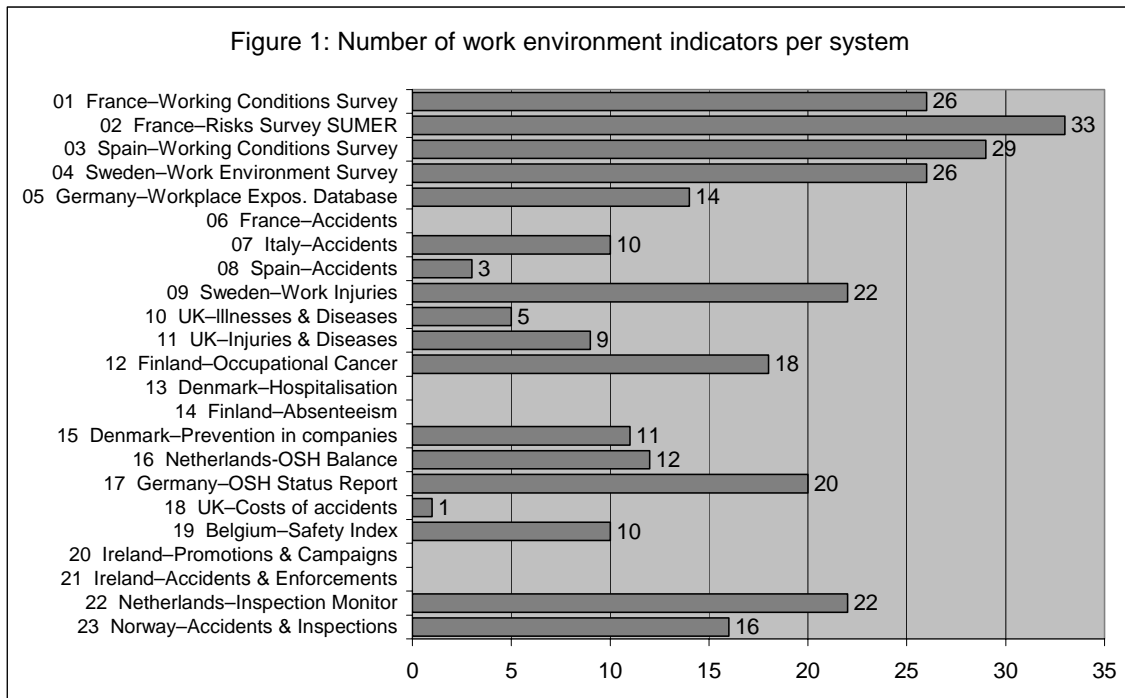
This project is carried out by the contractor (TNO Work & Employment) in close co-operation with a group of system-information suppliers (see Annex 11).



## 4 The results: a comparative analysis of the 23 systems

In this chapter we will describe the 23 systems in some detail and compare them with each other. In chapter 5 the systems will be summarized and described as three groups of systems.

### 4.1 The content of the systems



The structured information on the work environment indicators included in the systems - presented in more detail in Annex 3 - is summarized in Figure 1.

As Figure 1 shows, in nine systems the **work environment** (safety, substances, physical, mental and other psychosocial factors, work organisation, work security) is most broadly described:

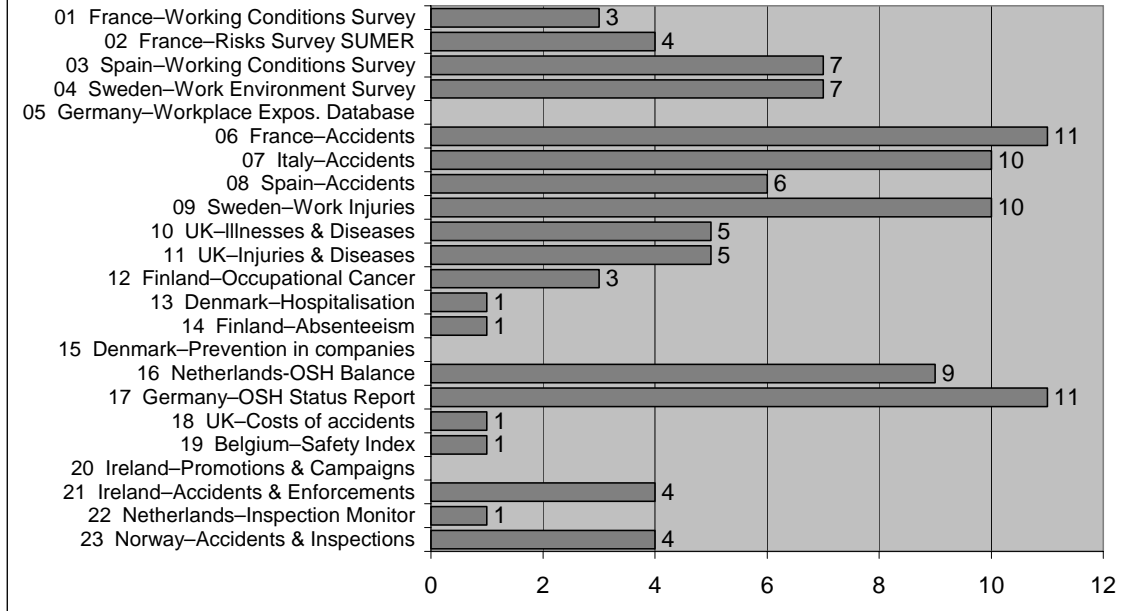
- |  |                                   |
|--|-----------------------------------|
| 01 France–Working Conditions Survey          | 12 Finland–Occupation & Cancer    |
| 02 France–Risks Survey SUMER                 | 17 Germany–OSH Status report      |
| 03 Spain–Working Conditions Survey           | 22 NL–Inspection monitor          |
| 04 Sweden–Work Environment Statistics/Survey | 23 Norway–Accidents & Inspections |
| 09 Sweden–Work Injuries                      |                                   |

All these systems include at least 16 aspects or indicators of the work environment.

On the other hand, there are five systems that do not focus on to the work environment:

- |                            |                                      |
|----------------------------|--------------------------------------|
| 06 France–Accidents        | 20 Ireland–Promotions & Campaigns    |
| 13 Denmark–Hospitalisation | 21 Ireland–Accidents & Enforcements. |
| 14 Finland–Absenteeism     |                                      |

Figure 2: Number of 'outcome' or 'health' indicators per system



As Figure 2 shows accidents, ill-health, absenteeism, work disability (outcome-indicators) are most broadly described – with 6 or more aspects - in eight systems:

- |  |                               |
|--|-------------------------------|
| 03 Spain-Working Conditions Survey           | 08 Spain-Accidents            |
| 04 Sweden-Work Environment Statistics/Survey | 09 Sweden-Work Injuries       |
| 06 France-Accidents                          | 16 NL-OSH Balance Report      |
| 07 Italy-Accidents                           | 17 Germany-OSH Status report. |

Five systems are concentrated on one specific work outcome:

- 13 Denmark-Hospitalisation (hospitalisation)
- 14 Finland-Absenteeism (absenteeism)
- 18 UK-Accidents Costs (impact of OSH measured by costs)
- 19 Belgium-Safety Index of companies (safety performance of companies)
- 22 NL-Inspection Monitor (fulfilment of legal OSH-requirements, awareness of sanctions, etc.)

Three systems do not focus on 'work outcomes (health and safety):

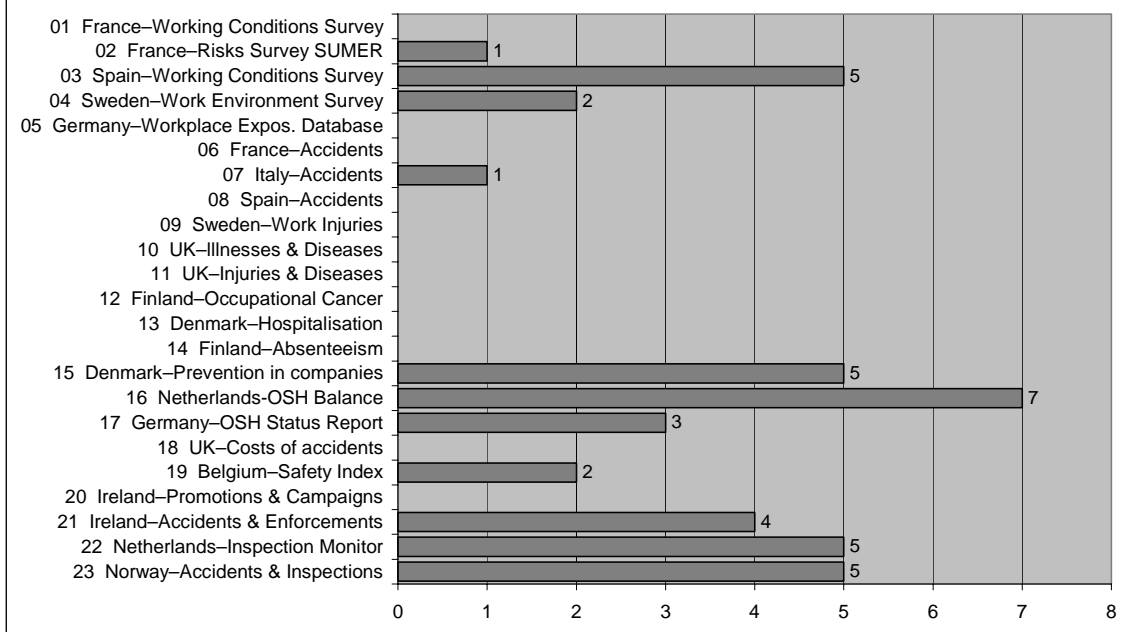
- 05 Germany-Workplace Exposure Database
- 15 Denmark-Prevention in Companies
- 20 Ireland -Promotions & Campaigns

The German and the Danish system (# 5 and 15) focus on the work environment. It was concluded that the Irish system (# 20) was not a real monitoring system with data, in the context of this project, but a description of the Irish Health & Safety Authority's promotion and campaign activities.

Data on costs of outcomes (occupational accidents and diseases) are gathered in the following five systems:

- |                        |                              |
|------------------------|------------------------------|
| 06 France-Accidents    | 17 Germany-OSH Status report |
| 07 Italy-Accidents     | 18 UK-Accidents Costs        |
| 14 Finland-Absenteeism |                              |

Figure 3: Number of OSH-service & -intervention indicators per system



As Figure 3 indicates, OSH-service indicators are especially gathered in:

- |  |                                      |
|--|--------------------------------------|
| 03 Spain-Working Conditions Survey           | 19 Belgium-Safety index of companies |
| 04 Sweden-Work Environment Statistics/Survey | 21 Ireland-Accidents & Enforcements  |
| 15 Denmark-Prevention in Companies           | 22 NL-Inspection Monitor             |
| 16 NL-OSH Balance Report                     | 23 Norway-Accidents & Inspections    |
| 17 Germany-OSH Status report                 |                                      |

Figure 4: Number of employee indicators included in each system

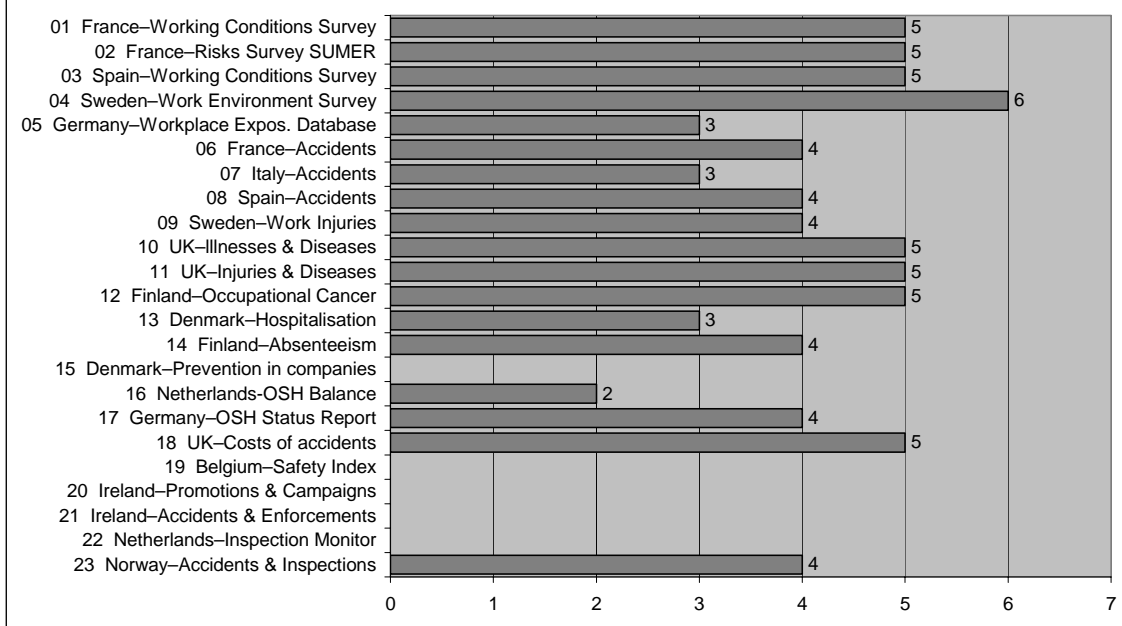


Figure 4 gives the information on the employee-indicators (sex, age, profession, branch of industry, etc.) included in each system. Even 18 systems include two or more employee-indicators in their data-bases. In addition, all systems include one, two or three company-characteristics in their system.

Five systems may be described as typically non-employee oriented systems (they have companies and/or labour inspectorates as their focus):

15 Denmark–Prevention in Companies	21 Ireland–Accidents & Enforcements
19 Belgium–Safety index of companies	22 NL–Inspection Monitor
20 Ireland–Promotions & Campaigns	

Many systems include employee- as well as company-indicators. There are even 18 systems which include at least four of those indicators.

## 4.2 Aims of the systems and internal use

According to the information given in Annex 4, the systems are mainly used for the following goals:

- to develop knowledge on Occupational Health and Safety or to study that field, e.g., to identify risks and risk groups (this is typically a survey questionnaire goal)
- to identify trends in OSH, changes over the years (this also is mostly a survey questionnaire goal)
- to develop preventive policies, to identify preventive structures and to support prevention
- to evaluate or control the effect or the efficiency of actions or measures
- to set priorities of activities
- to monitor OSH management, interventions, outcomes, the progress of actions, costs of absenteeism
- to demonstrate what the costs of OSH are
- to support labour inspections and determine priorities in inspection
- to provide a basis for discussions between social partners
- to provide a basis for actions of occupational physicians
- to report to European institutions
- for benchmarking, by comparing, for example, with other European countries
- to make studies and research possible
- to identify awareness of and compliance with legal requirements
- to present the yearly development of OSH to social partners, media and larger public
- and also: to make compensations possible

The information in Annex 5 supplies additional structural information on the use of the systems.

Also, the data of almost all systems are used for company and/or governmental actions in the field of OSH (see Annex 5, question 26).

On the other hand, only seven systems are used for cost-benefit-analysis of Occupational Safety & Health (see Annex 5, question 27a). These systems are:

07 Italy–Accidents	14 Finland–Absenteeism
09 Sweden–Work Injuries	18 UK–Accidents Costs
10 UK–Illnesses & Diseases	23 Norway–Accidents & Inspections
11 UK–Injuries & Diseases	

Most of these cost-benefit-related systems are based on registers of population-data.

Ten systems are actually used for the evaluation or monitoring of the effectiveness of policies, actions and/or campaigns (see Annex 5, question 27c):

04 Sweden–Work Environment Statistics/Survey	13 Denmark–Hospitalisation
05 Germany–Workplace Exposure Database	17 Germany–OSH Status report
09 Sweden–Work Injuries	19 Belgium–Safety index of companies
11 UK–Injuries & Diseases	21 Ireland–Accidents & Enforcements
12 Finland–Occupation & Cancer	23 Norway–Accidents & Inspections

Finally, it is remarkable that none of the systems from France, Italy, Spain, and the Netherlands are said to be used for monitoring the effectiveness of policies, actions and/or campaigns. With respect to the two Spanish systems it is remarked that the data are not used in such a way at the moment but certainly can be used for that purpose. With respect to the Dutch OSH Balance it is added that some of the labour inspectorate data are used for the evaluation of the effectiveness of the Ministry's OSH-policy.

In addition, the data of almost all systems are used for the preparation of governmental and/or company actions in the field of OSH. Some examples of governmental actions are:

- In France the results of the National Working Conditions Survey are used by the Ministry of Labour for the preparation of their annual directives.
- The German government uses the Workplace Exposure data for the definition of new exposure limit values.
- In Italy a governmental program of financial incentives was formulated on the basis of occupational accident data.
- In Spain, in 2000-2001, the Ministry of Work and Social Affairs used the occupational accident data to promote a Plan against work accidents. This plan included, first of all, the identification of the companies with higher incidence rates than those of the branch of industry they belong to, so that the Labour and OSH authorities could submit them to special surveillance. Occupational accident data in Spain have also been used to determine those branches which deserve more dedication in terms of research and preventive activities.
- In the UK the scale of work-related musculoskeletal illness, and of work-related stress revealed by the SWI surveys has had a major impact on HSE's occupational health policies. These two topics are the subjects of 'priority programmes' in HSE's strategic plan.
- In Denmark 'The ten most hazardous professions' is a large national intervention programme based on data from the Occupational Hospitalisation Register and the National Work Environment Cohort Study.
- For Finland it is reported that the absenteeism data target the efforts of the Labour inspectorate in, for example, the field of musculoskeletal diseases, to the right occupations, branches of industry and diagnoses.

Examples of company actions based on the data gathered are:

- In Germany data from the Workplace Exposure Database are used by companies for the preparation of additional exposure reducing measures.
- In Sweden - and in other countries - companies keep accident registers of their own work related injuries as a source for their OSH management. For this purpose companies sometimes ask ISA reference data on injuries.
- In the Netherlands – as in other countries – the information gathered during the visit of the OSH-Inspector is a basis for action by companies. At the moment of data gathering for the OSH Monitor the company is also checked out for compliance with legal OSH-requirements. Legal sanctions (a warning, a penalty, or even a company stand still) were applied in slightly more than half of the companies visited.

### **4.3 Systems to be used for priority setting?**

Priority setting (Annex 5, question 25) is possible with all the systems (with the exception of the Irish Promotions & Campaigns List, which actually is not a Monitoring system).

In Annex 6 detailed information is reported on the possibilities of the systems with respect to priority setting. There it is seen that priority setting may be related to:

- branches of industry (for example: Spain-National Working Conditions Survey, Spain-Accidents & Diseases System, Sweden-Work Injury System),
- workplaces with high exposure to chemical/biological agents and noise (Germany-Exposure database, and Sweden-Work Injury system),
- professions (France-National Working Conditions Survey),
- age-, sex- and occupational risk groups (among others: Sweden-National Work Environment Statistics/Survey, Spain-National Working Conditions Survey, Finnish Occupation & Cancer register, Denmark-Preventive activities of companies system),
- types of prevention (France-Risk Survey SUMER),
- costs of diseases (UK-Costs of Accidents system),
- compliance with health and safety of sectors, branches and occupations (Ireland-Accidents & Enforcements system, Netherlands-OSH Inspection Monitor)
- labour inspection activities/interventions (Norway-Accidents & Inspections system).

In the UK it is added that both political and professional judgments are also needed – next to monitoring data – to set the right priorities.

#### **4.4 Systems to be used for the evaluation of policies, actions or campaigns?**

Ten of the 23 systems are used for the evaluation of policies, actions and/or campaigns (see Annex 5, question 27-c). These are:

04 Sweden–Work Environment Statistics/Survey	13 Denmark–Hospitalisation
05 Germany–Workplace Exposure Database	17 Germany–OSH Status report
09 Sweden–Work Injuries	19 Belgium–Safety index of companies
11 UK–Injuries & Diseases	21 Ireland–Accidents & Enforcements
12 Finland–Occupation & Cancer	23 Norway–Accidents & Inspections

This is most strongly the case indeed in the five intervention- and OSH-management-oriented systems. The Belgian Safety index of companies shows, for example, that larger companies respect safety legislation more than smaller companies.

Surveys are the least used in this respect. Only the Swedish Work Environment Authority has used survey data for the evaluation of their own activities. This Authority also used the Work injury system for that purpose.

In the UK HSE uses the RIDDOR-information and intends to use the SWI-ODIN-information for the evaluation of its own activities. Their strategies ‘Revitalising Health and Safety’ and ‘Securing Health Together’, which have set targets for occupational health will be monitored by reference to these systems.

With the help of the Danish Occupational Hospitalisation Register one of the aims of the WHO programme ‘Health for All’ (on ischaemic heart morbidity, see Tüchsen & Endahl, 1999) was evaluated.

The data presented in the Dutch ‘OSH Balance Report’ are related to policies, actions or campaigns, but not in the sense of evaluation, but more as the rationale behind the interventions.

The German OSH Status report trends in occupational diseases and accidents are checked against preventive actions and legislation.

#### **4.5 Data gathering methods**

Annex 7 reports the essentials with respect to the methods used in the 23 systems.

Taken all in all, there are mainly three types of data gathering methods used, namely surveys, registers, and workplace observation techniques.

Annex 7 gives the structured information on the methodology of the systems. We summarize the data gathering methods as follows:

surveys or questionnaires	14 systems
social security registers	9 systems
observations at the workplace	8 systems
national census data	5 systems
others (record linkages between more systems, other registers, additional case studies, record keeping of activities, company OSH-documents)	7 systems

First, there are five systems which completely rely on surveys:

- |                                     |  |
|-------------------------------------|--|
| 01 France–Working Conditions Survey | 04 Sweden–Work Environment Statistics/Survey |
| 02 France–Risks Survey SUMER        | 10 UK–Illnesses & Diseases                   |
| 03 Spain–Working Conditions Survey  |  |

Second, there are four systems which completely rely on social security registers:

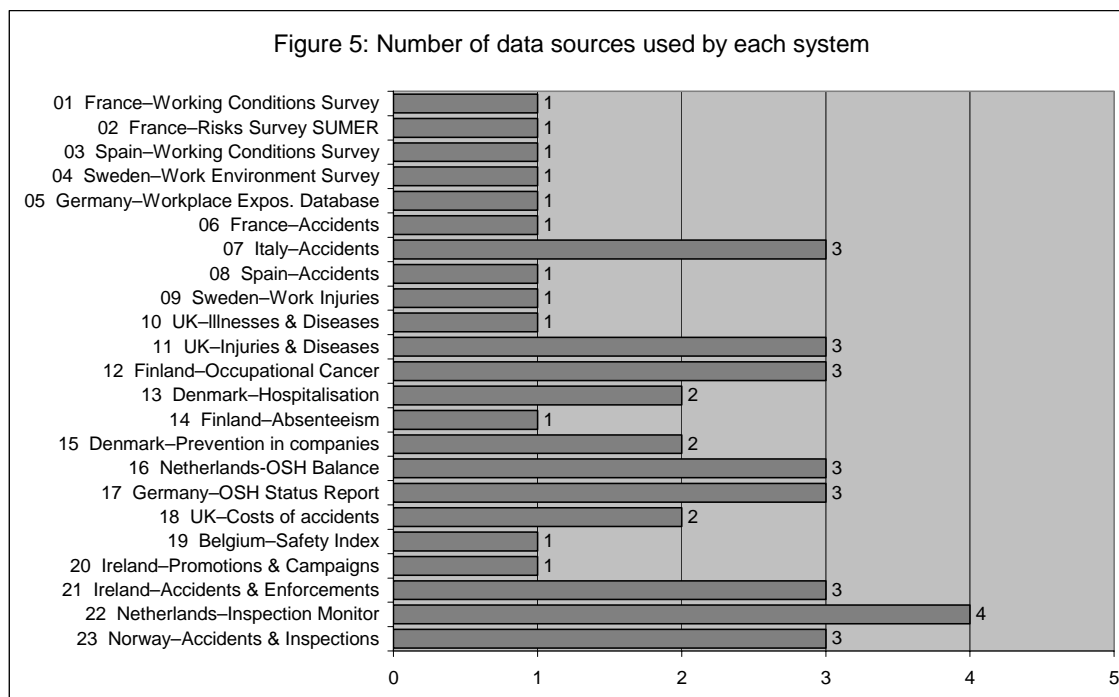
- |                     |                         |
|---------------------|-------------------------|
| 06 France–Accidents | 09 Sweden–Work Injuries |
| 08 Spain–Accidents  | 14 Finland–Absenteeism  |

Third, there are two systems which rely on observations in the workplace:

- |   |
|---|
| 05 Germany –Workplace Exposure Database |
| 19 Belgium–Safety index of companies    |

The other 12 systems gather their data from two or more sources (surveys, workplace observations, social security registers, other registers, census data, case studies, reports from employers, company OSH-documentations, etc.).

Surveys and/or questionnaires are the most popular data-gathering method. But 11 of the 23 systems are actually multi-source systems, since they use two or more data gathering methods. There are even 8 systems that use three or four methods, see Figure 5.



#### 4.6 Population or sample data?

Among the 23 systems (see Annex 7, question 13) there are ten systems fully based on sample data:

01 France–Working Conditions Survey	14 Finland–Absenteeism
02 France–Risks Survey SUMER	15 Denmark–Prevention in Companies
03 Spain–Working Conditions Survey	19 Belgium–Safety index of companies
04 Sweden–Work Environment Statistics/Survey	22 NL–Inspection Monitor
05 Germany–Workplace Exposure Database	23 Norway–Accidents & Inspections

**Table 3: Population or sample size (Question 13)**

Short name of system	Size of population or sample
1. France- Enquête National	One active person out of 10 in the ENSEE-Employment Survey: 22.000 workers in 1998
2. France-Risks Survey	60.000 workers, interviewed by 1500 occupational physicians, mostly from the private sector (2002); public sector employees are added
3. Spain-National Survey	3419 employers and 3702 employees (1999); one employee was interviewed in the smaller companies, two employees interviewed in the larger companies (250+)
4. Sweden-National Survey	Sample of 15.000 employees and self-employed workers
5. Germany-Exposure Database	30.000 sample-measurements (with 70000 analyses) from 4000 enterprises each year (a non-representative sample)
6. France-Accidents	17.000.000 wage-earners in the private sector
7. Italy-Accidents & Diseases	Population covered by INAIL, no exact numbers given
8. Spain-Accidents & Diseases	13.000.000 workers covered by the national social security system for accidents at work (2001)
9. Sweden-Work injury system	The working population under the Social Insurance Administration; the Swedish Work Environment Authority receives and enters the data into the Work Injury Information System database
10. UK-Illnesses & Diseases	In the country-wide sample: self reported work-related illness information through the Labour Force Survey (100.000 adults who have ever worked); also population-based information on work-related diseases from occupational physicians (ODIN-network)
11. UK-Injuries & Diseases	RIDDOR: All employers and self-employed notify work-related accident data; system covers all sectors of the economy, public and private business. LFS: a sample survey of 60.000 households in GB (includes questions on accidents)
12. Finland-Occupation & Cancer	Occupation-specific cancer incidence risk estimates from 1971 onwards (500.000 cancer cases) are calculated for the entire Finnish population
13. Denmark-Hospitalisation	All 2.600.000 Danish workers (aged 20-59 and with occupation)
14. Finland-Absenteeism	Sample of 6,6 percent of working population in social security register
15. Denmark-Prevention in Companies	3300 companies (both employer and safety representative are interviewed); a sample of 10 percent of the companies is also visited by occupational health professionals in order to validate the interviews
16. Netherlands-OSH Balance Report	Different sources: Census Bureau Worker Survey data (4000 workers yearly); absence data of 800 companies from Census Bureau; accident data from a register at emergency departments of Dutch hospitals and from the Labour Inspectorate
17. Germany-OSH Status Report	Large surveys with different sizes from different sources
18. UK-Costs of Accidents	Labour Force Survey, New Earnings Survey and case study information on accidents
19. Belgium-Safety index of companies	Safety data of 26,000 of all 170,000 employers in Belgium
20. Ireland-Promotion & Campaigns	Not applicable; systems is list of Promotion and Campaign activities
21. Ireland-Accidents & Enforcements	Approximately 9000 accidents and 13.000 workplace observations
22. Netherlands-OSH Inspection Monitor	OSH data from visits of labour inspectors of 1725 companies a year
23. Norway-Accidents & Inspections	Information on inspections, interventions, and work accidents of an unknown number of companies



Next, there are eight systems which fully rely on population-data:

06 France–Accidents	11 UK–Injuries & Diseases
07 Italy–Accidents	12 Finland–Occupation & Cancer
08 Spain–Accidents	13 Denmark–Hospitalisation
09 Sweden–Work Injuries	18 UK–Accidents Costs

Third, there are four systems which rely both on population- as well as sample-data:

10 UK–Illnesses & Diseases	17 Germany–OSH Status report
16 NL–OSH Balance Report	21 Ireland–Accidents & Enforcements

Finally, among the 23 there is one system (20 Ire–Promotions & Campaigns) which is not a data collection system, but a list of the 2001-promotion and campaign activities of the Health & Safety Authority in Ireland. The list includes, for example, educational programs on Occupational Health and Safety for future engineers, architects, students in second level schools, as well as ‘partnerships’ with local businesses, business organisations, employee groups and other key players in the working communities. One may question the inclusion of this system in the list of 23 OSH Monitoring systems. Table 3 presents more detailed information on the population and/or sample characteristics.

#### 4.7 Periodicity of data gathering

As may be seen in Annex 7 (question 15), for 13 of the 23 systems the data gathering is an ongoing or continuous process. Especially for surveys the data gathering is limited to a specific period, once a year, every two years or even less frequent.

Systems which rely on more methods (such as surveys, as well as social security registers, observations) of course have different data collection periodicity characteristics.

**Table 4: Time required for gathering, processing and publishing data (Questions 12 and 13)**

	Time required for data gathering	Time required for processing the data	Time required for publishing the data
1. France- Enquête National	1 year	3 months	6-9 months
2. France-Risks Survey	1 year	6 months	6-9 months
3. Spain-National Survey	3 months	2 months	1 year
4. Sweden-National Survey	4 months	6 months	6 months
5. Germany-Exposure Database	continuous	continuous	2 to 3 times a year
6. France-Accidents	continuous	3 months	3 months
7. Italy-Accidents & Diseases	continuous	continuous	18 months
8. Spain-Accidents & Diseases	continuous	continuous	9 months
9. Sweden-Work injury system	continuous	continuous	9 months
10. UK-Illnesses & Diseases	continuous	3 months	3 months
11. UK-Injuries & Diseases	continuous	--	9 months
12. Finland-Occupation & Cancer	continuous	1 month	only scientific papers
13. Denmark-Hospitalisation	continuous	1-2 months	12-24 months
14. Finland-Absenteeism	continuous	ongoing	yearly
15. Denmark-Prevention in Companies	10 months	12 months	5 months
16. Netherlands-OSH Balance Report	12 months	5 months	5 months
17. Germany-OSH Status report	---	---	12 months (data gathering and processing included)
18. UK-Costs of Accidents	9 months	2 months	2 months
19. Belgium-Safety index of companies	continuous	continuous	12 months
20. Ireland-Promotion & Campaigns	Na	Na	Na
21. Ireland-Accidents & Enforcements	ongoing	ongoing	5 months
22. Netherlands-OSH Inspection Monitor	6 months	4 months	4 months
23. Norway-Accidents & Inspections	ongoing	ongoing	Ongoing

Na= not applicable

In Table 4 some more details are presented with respect to the time required for data gathering, processing, publishing. In the right column of the Table the time required to publish the data is reported. The mean time required for the preparation of the publications is about 9 months.

#### **4.8 Reliability, validity and underreporting**

In the answers to the Questions 19 and 20 (see Annex 7 and Annex 8) information was given on the reliability and validity of the 23 systems.

For a few systems there was no or little information available on these subjects. With respect to others it was said that reliability and validity was 'good', 'sufficient', 'accurate' or 'complete' or that questions were tested beforehand.

With respect to the Spanish and Swedish accident systems special reliability checks and controls were mentioned, carried out during the gathering and processing period of the data.

For some other systems information was supplied on sampling errors and confidence ratios.

In the French 'Enquête Nationale' explicit attention is given to the 'translation' of the central concepts into the related questions and to analysis of trends in time, to see whether results show stability.

Other systems (e.g., the Spanish 'Encuesta Nacional') also mention analysis of time trends as a check on reliability and validity.

The Danish Hospitalisation System uses systematic comparisons with ad hoc studies to check the validity and reliability of the system. The Italian Accident system mentions comparison with accident data of other countries in the Eurostat statistics. Here Eurostat data are seen as a 'golden standard'.

In the Danish study of preventive activities of companies within the overall Surveillance system 10 percent of the companies interviewed by telephone are also visited by OSH-experts to check the quality of the information given by telephone.

In the Enquête SUMER a seasonal bias was discovered. Data-gathering the whole year round was the solution.

In three cases (UK Injuries & Diseases/RIDDOR, Germany Workplace Exposure Database, Finnish Occupation & Cancer system) quality management, quality assurance or quality control systems are used to monitor and guarantee the quality of the data.

Underreporting is reported to be a problem in at least the following six systems (see Annex 7, question 16 and 17):

09 Sweden–Work Injuries	14 Finland–Absenteeism
10 UK–Illnesses & Diseases	21 Ireland–Accidents & Enforcements
11 UK–Injuries & Diseases	23 Norway–Accidents & Inspections

Most of these systems use methods (such as weighting) to overcome these problems.

With respect to 13 of the 23 systems studies are available on the validity and reliability of the systems.

#### **4.9 Transferability of the systems to other countries**

The transferability of the 23 systems is reported in Annex 5 (question 30) and in more details in Annex 6.

With the exception of one system (# 9 the Swedish Work Injury system, because this system is said to be strongly connected to Swedish legislation) all systems are reported to be transferable to other countries. This is surprising, since actual comparison between EU-countries with respect to cost-benefit-analysis (see the UK-system, and the European Agency publication on costs & benefits of OSH) turned out to be problematic. Additionally, in several reports there was mention of legislative thresholds that may play a role in the transferability of systems from one country to another.

For some systems the answer with respect to transferability to other countries simply is 'yes' or positive. With respect to other systems additional arguments supporting the idea of transferability are presented. We report several of the arguments given why transferability is possible.

The French 'Enquête nationale' is very similar to the European Working Conditions Survey, and the Swedish Survey is similar to the so-called 'Nordic Questionnaire on Psychological and Social Factors at Work', used in the Nordic countries (see Dallner et al, 2000; Lindström, et al, 2000).

The German Exposure database is already used for risk assessment in the 'EU-existing-substances program', and similar systems are used in the UK and France.

With respect to the Accident and diseases notification systems it is argued that many countries have these kind of systems.

Similar calculations as are done for the Finnish Occupation & cancer-system are carried out in other Nordic countries, and even published jointly.

In connection with the Netherlands' 'OSH Balance Report' it is mentioned that European unifications gradually make it easier to compare data among countries, and transfer systems from one country to another.

#### **4.10 User group opinions**

Annex 9 presents the details on (internal and external) user group opinions.

For most systems there has not been actual contact with external user groups. In those cases estimations on what the general external opinion might be is reported. For a few systems no information at all is available on user group opinions.

For a minority of systems (the three French and the two Spanish systems, the Italian Accident system, the Danish Hospitalisation system), there has been actual contact by telephone or written contact with external users of the systems. With respect to other systems, such as the Danish Surveillance system, it was mentioned that the social partners are already involved in the design and development of the system. For other systems (the German Exposure Database, the Swedish accident system, the UK-RIDDOR system) earlier reviews or evaluations are used and described.

Almost all systems report on internal user group opinions.

We believe that the following general conclusions may be drawn.

1. On the basis of the system evaluations it is not possible to say that some systems are judged better than other systems. Neither is it possible to say that some external user groups have a more positive or a more negative opinion than other user groups
2. Many systems report continuous developments and improvements, both from a methodological and a content perspective
3. Only a few times the content of the systems is criticized, as lacking relevant elements (some accident systems would be valued higher including more information on the work environment)
4. The accident systems report the innovations recently recommended by Eurostat (inclusion of information on causes of accidents, etc.)
5. In larger countries, such as Spain, there is a need for more detailed regional working conditions survey-information, next to the national information.
6. There are indications that multi-source systems cause some special methodological problems (lack of clarity of comparative concepts, how to deals with contradictory results)
7. Though special studies have proven the validity and reliability of large-scale survey questionnaires, employers sometimes criticize the employee questionnaire methodology as being too subjective and not validated with employer opinions
8. ICT plays an important role in the renovation of systems; electronic notification or declaration of accidents, optical reading, interviewing via the internet and consultation of results on the internet is made possible and has an impact on many features of the systems
9. Clients, researchers, media and other interested people nowadays have a better access to the data than ever before and are better able to judge the quality and the accessibility of the data. Perhaps for this reason it is reported several times that the output of the systems needs to be published earlier or in a more client-friendly way

10. Inviting the social partners to participate in the scientific preparation and/or in advisory boards is suggested and also actually realized; these committees and boards play a role in the quality assurance process

#### **4.11 Costs of the systems**

For some systems parts of the costs information were available. However, for the majority of the 23 systems it was too difficult to make out what exactly the costs for data gathering, data processing and data publishing are. Therefore it is not possible to give any reliable picture of this part of the information.

Annex 7 (question 22) shows that the 'owner' of the system in all cases pays for data gathering, processing and publishing. In some cases they are financially supported by other organisations, which pay a part of the activities.

#### **4.12 Future plans of the systems**

When asked for future plans of the OSH Monitoring systems, several new developments are mentioned (see Annex 9, right column).

- The future French 'Enquête nationale' will probably contain more health elements than nowadays.
- New editions of the Spanish 'Encuesta nacional' will be published earlier and in a shorter form. It also will be tried to adapt the questionnaire so that branches which are now excluded (agriculture, fishing, mining) could be included.
- In the German Exposure Database further physical exposures will be included.
- The French Occupational Accidents system will be completely restructured within two years. It will contain more information on injuries and accidents (circumstances, costs, etc.).
- In Spain similar changes are planned. Also, electronic notification of accidents is in preparation.
- In Italy a complete restyling of the Accidents & Diseases Databank is planned, based on the new Eurostat/ESAW-needs (European Statistics on Accidents-2001 methodology).
- Also the Swedish ISA Work Injury Information system is being restructured. Eurostat recommendations have been and will be implemented. In addition, optical reading and electronic distribution play an important role.
- For HSE's SWI-ODIN-system on illnesses and diseases a programme of statistical developments are planned. Also HSE's RIDDOR-regulations will be reviewed.
- In the Finnish Occupation & Cancer system it is being considered whether to include non-cancer outcomes.
- The future aim of the Danish Hospitalisation Register is to establish it on a permanent basis.
- The Danish Surveillance system is still underway and data have not yet been published. The system will be evaluated and experiences will be used to improve the existing system.
- It is expected that future issues of the Netherlands' 'OSH Balance Report' will contain more information on interventions, effectiveness and the developments in the national preventive capacity.
- HSE in the UK is currently considering various options to provide an update of the 'Cost to Britain' study of Workplace accidents and work-related ill-health
- In Belgium the Labour Inspectorate will implement an improved system for the 'Safety Index of Companies'
- Since the Dutch 'OSH Monitor' nowadays focuses on the observation of legal requirements by companies and much less on OSH-risks or outcomes of the requirements, in the near future more attention will be given to preventive measures taken by companies, biological agents and vibrations.

## 5 General conclusions

### 5.1 The 23 systems summarized in headlines

- The 23 European OSH Monitoring systems that are described and reviewed in this report are not necessarily ‘the best’ but express in a representative way ‘the variety’ available in the European Union with respect to aim, use, content, and methodology of systems.
- The choice also should include systems from as many member states as possible.
- The list of systems includes worker surveys, databases, registers of accidents, diseases, and/or absenteeism, policy-directed systems and intervention- and OSH-management oriented systems.
- The variety in the 23 systems turned out to be high indeed, since there are systems which describe 30 to 40 ‘work’ and ‘health’ indicators, and systems which concentrate on one or two indicators.
- For OSH Monitoring it is important to have information available on ‘risk categories’, such as sex and age groups, professional groups, branches of industry, etc. Many systems indeed include employee- as well as company-characteristics. There are even 18 systems which include at least four of those indicators. Five systems may be described as typically non-employee oriented systems.
- Seven systems are used or could be used for cost-benefit-analysis of Occupational Safety & Health.
- In nine systems information on OSH-management (number of experts, coverage, inspectors, etc.) is available.
- There is a large variety in aims and uses of the 23 systems: for knowledge development, the identification of trends, development of policies, setting priorities of activities, evaluation of actions and measures, supporting labour inspectorates, demonstrating what the OSH-costs are, providing a basis for discussion with social partners and occupational physicians, reporting to European institutions, making compensations possible, etc.
- Priority setting is thought by the ‘owners’ to be possible with all the systems. Priority setting is aimed at branches of industry, enterprises, groups of workers, occupational groups, types of prevention, high and low risk groups, different diagnoses, OSH-costs of sectors or diseases, labour inspection activities/interventions.
- Ten of the 23 systems are used for the evaluation of policies, actions and/or campaigns.
- There are four types of data gathering used: surveys or questionnaires (14 systems), social security registers (9 systems), observations in the workplace (8 systems), national census data (5 systems).
- In additions, 10 systems use sample data and 8 systems use population data. The other 4 systems use both sample and population data.
- Validation processes have been applied to most of the systems.
- Almost all systems are said to be transferable to other countries, though in several reports there was mention of legislative thresholds that may play a role.
- External user group evaluations are available for only a part of the systems; internal user group opinions are available for almost all systems. Many systems report continuous developments and improvements, both from a methodological and a content perspective. Only a few times the content of the systems is criticized, as lacking relevant elements. One user group (the employers) seems to be critical towards the employee questionnaire methodology. Also, there are indications that multi-source systems cause problems with respect to the interpretation of results. More user groups seem to ask for faster publication of results, and in a more client-friendly way. Inviting the social partners to participate in the preparation and quality-assurance of systems is recommended.
- Future plans of the systems concern specifically broadening of the systems (inclusion of new work or health indicators), methodological improvements in data gathering, ICT-driven innovations in data gathering and processing, adaptation to methodological wishes of Eurostat.

## 5.2 Three groups of systems identified

Chapter 4 presented an analysis of the 23 systems in relative detail. It is time to come to a more summarized analysis and more concentrated conclusions.

The question we ask ourselves is twofold:

(1) are there systems among the 23 which resemble or have (almost) the same profile?

(2) and if so, what characteristics (content, method, use) do these grouped systems have in common?

Because a lot of structured information is available on the systems, in terms of 'yes' or 'no' or 'not known/not available', it is possible to analyse this information statistically, in order to answer the questions described above. All in all, 74 aspects of the content of the systems were available, 24 aspects of the methodology, and 18 aspects of the internal and external use. Of each of the 23 systems in total 116 aspects were available, and statistically analysed.

The results are shown in Table 5.

**Table 5: Statistical analysis on 116 aspects of 23 OSH-systems (with the help of factor analysis; the results of the 'rotated factor matrix' are shown below)**

	Group 1: Accidents, ill health, absenteeism; registers and multi-source information	Group 2: Work & working conditions; worker sample surveys	Group 3: Safety, substances, OSH-services; company and workplace observations by inspections
01 France-Working Conditions Survey		<b>0,73</b>	
02 France-Risks Survey SUMER		<b>0,76</b>	
03 Spain-Working Conditions Survey		<b>0,63</b>	
04 Sweden-Work Environment Statistics/Survey		<b>0,72</b>	
05 Germany-Workplace Expos. Database			<b>0,66</b>
06 France-Accidents	<b>0,59</b>		
07 Italy-Accidents	<b>0,77</b>		
08 Spain-Accidents	<b>0,67</b>		
09 Sweden-Work Injuries	0,37	0,38	
10 UK-Illnesses & Diseases	<b>0,65</b>		
11 UK-Injuries & Diseases	<b>0,65</b>		
12 Finland-Occupation & Cancer	0,34	0,40	
13 Denmark-Hospitalisation	<b>0,50</b>		0,33
14 Finland-Absenteeism	<b>0,53</b>		0,33
15 Denmark-Prevention in Companies			<b>0,58</b>
16 Netherlands-OSH Balance Report		0,32	0,27
17 Germany-OSH Status report	0,34	0,46	
18 UK-Accidents Costs	<b>0,60</b>		
19 Belgium-Safety index of companies			<b>0,70</b>
20 Ireland-Promotions & Campaigns			<b>0,47</b>
21 Ireland-Accidents & Enforcements	0,36	-0,36	<b>0,57</b>
22 Netherlands-Inspection Monitor			<b>0,66</b>
23 Norway-Accidents & Inspections	<b>0,53</b>		

Table 5 needs some additional explanation. The higher the 'loading' of a system on a factor (or group), the stronger this system correlates with that factor (or group). Loadings are minimally -1,00 and maximally 1,00; in the Table only loadings > .30 are shown, smaller loadings are omitted.

What are the conclusions from Table 5? It turns out that the 23 OSH Monitoring systems can be statistically grouped into three larger groups:

(1) systems with 'high loadings' on accidents, diseases, injuries and ill-health, and use of more sources of information (surveys, workplace observations and registers)

(2) systems with ‘high loadings’ on work or working conditions, and the use of surveys,  
 (3) systems with ‘high loadings’ on safety, substances, OSH, the work of labour inspectorates, safety-inspections, enforcement, surveillance, and based on company and workplace observations.  
 Table 5 also shows that there are four ‘in-between’ systems (systems that do not strongly belong to one of the three groups). These are: Sweden–Work Injuries, Finland–Occupation & Cancer, Netherlands–OSH Balance Report, Germany–OSH Status report. These four systems have aspects of at least two different groups.

This is the answer to the first question we have asked.

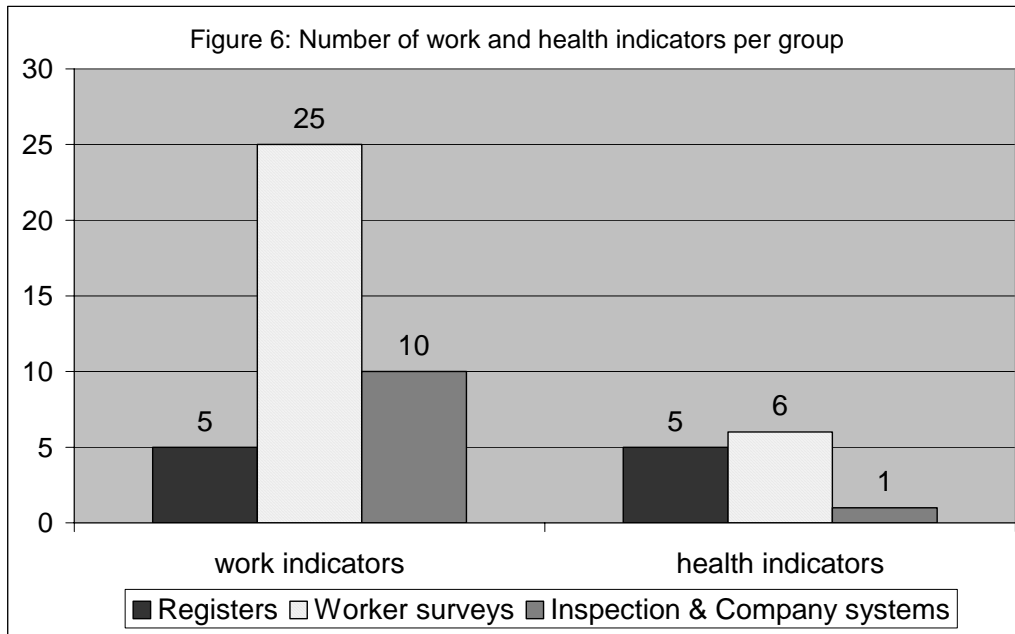
### 5.3 The main characteristics of the three groups of systems

Now what does each group of systems has in common? Table 6 provides this information.

**Table 6: Main characteristics of the three groups of OSH Monitoring systems**

Group 1: Accidents, ill health, absenteeism; registers and multi-source information	Group 2: Work & working conditions; worker sample surveys	Group 3: Safety, substances, OSH-services, policy-directed, company and workplace observations by inspections
<b>Relatively much information on:</b>		
<u>content:</u> 2. work activity 7. working hours 8. employment status	<u>content:</u> 1. safety situation 2. work activity 3. dangerous substances 4. physical work environment 5. mental work environment 6. psycho-social factors 7. working hours 8. employment status 9. training facilities	<u>content:</u> 1. safety situation 2. work activity 3. dangerous substances
10. accidents 11. ill-health 12. absenteeism, work disability 13. costs of accidents and diseases	10. accidents 11. ill-health	14. OSH-experts 15. OSH-coverage 16. OSH-interventions
17. employee characteristics 18. company characteristics	17. employee characteristics 18. company characteristics	18. company characteristics
<u>methodology:</u> 1. multi-source: surveys, observations, registers 2. population data 3. data gathering ongoing 4. some underreporting	<u>methodology:</u> 1. only questionnaires 2. sample data 3. data gathering every 2 years or less 4. no underreporting	<u>methodology:</u> 1. mainly workplace observations 2. sample data 3. data gathering ongoing 4. some underreporting
<u>use of data:</u> 1. used for cost-benefit analysis 2. not much used for the evaluation of policies, actions or campaigns	<u>use of data:</u> 1. not used for cost-benefit analysis 2. seldom used for the evaluation of policies, actions or campaigns	<u>use of data:</u> 1. not used for cost-benefit analysis 2. often used for the evaluation of policies, actions or campaigns

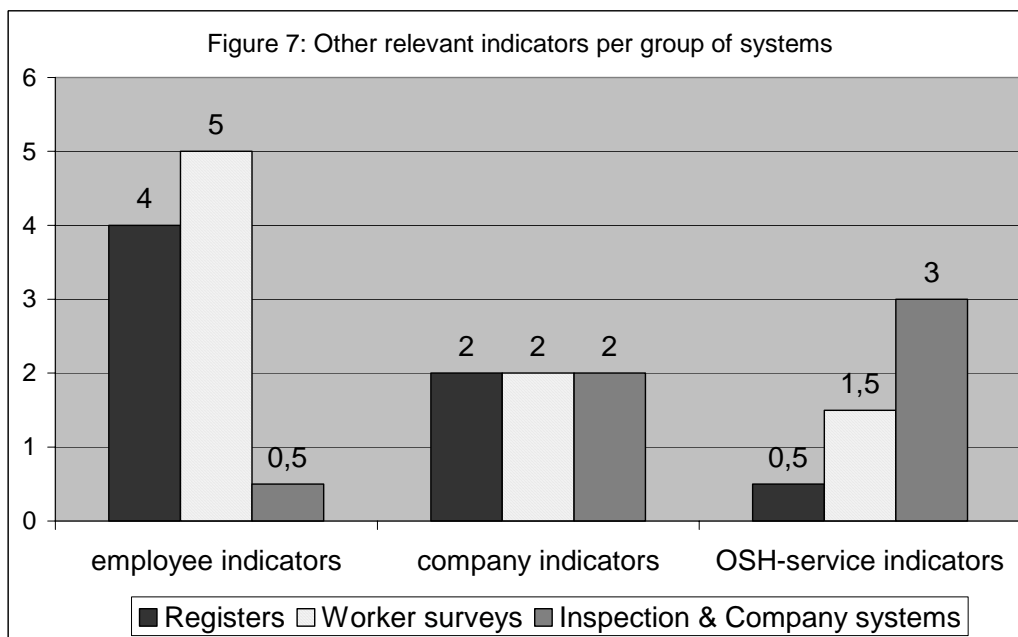
We may conclude that the three groups of systems have their strong and their less strong points. The general and averaged picture is shown in Table 6. Two things should be added. First, of course there are systems which fit very well in one of the three profiles and other systems which fit only partly. Second, the 23 systems in general and the systems in the three groups do not differ in characteristics **not mentioned** in Table 6. For example, the three groups do not differ significantly between each other in the use of data for priority setting, in the use of data for company and/or governmental action, and in the inclusion of company characteristics in the systems.



The general and averaged picture is as follows.

Registers (group 1 systems) are relatively weak on the number of work indicators included, but strong on health indicators (accidents, ill health, absenteeism, work disability) and the costs of work outcomes and cost-benefit relations, see Figure 6. Registers lacks information on OSH-experts, OSH-coverage and OSH-interventions, see Figure 7.

Worker surveys (group 2 systems) are very complete with respect to work and working conditions; this group of systems also include information on work accidents and ill-health, see Figure A. Surveys generally lack information on absenteeism, work disability and also on OSH-experts, OSH-coverage and OSH-interventions. Surveys are used more for the development of knowledge on working conditions and the health of workers, for the identification of risk groups and trends, and for the long-term preparation of governmental policies.





Inspection & company level systems (group 3 systems) include information on the safety situation, work activity, and dangerous substances, but no other work characteristics, see Figure 6. This group of systems also lacks information on accidents, ill-health, absenteeism, etc. but is strong with respect to OSH-experts, OSH-coverage and OSH-interventions. Finally, this third group of systems has another strong point: the data these systems collect are often used for the evaluation of the effectiveness of policies, actions or campaigns.

As Figure 7 shows, worker surveys and registers on the average include 4 to 5 employee indicators, whereas inspection & company level systems only include 0,5 employee indicators. The three types of systems do not differ with respect to the number of company indicators. Finally, the company-level systems are the best with respect to OSH-service indicators.

#### **5.4 A comparison between the a-priori typology and the empirical findings**

In Table 2 we presented the 23 systems on the final list, divided in 6 categories: 4 worker survey systems, 1 exposure database, 8 registers of accidents, diseases, and/or ill-health, 1 register of absenteeism, 4 multi-source and policy directed systems, 5 intervention- and OSH-management related systems.

In the reality of the empirical data (see Table 5 and 6) we found three big groups of systems: (1) multi-source systems focused on accidents, ill health, absenteeism; (2) worker sample surveys, strongly focused on work and working conditions, as well as accidents and ill-health, (3) systems focused on inspections, enforcement, and surveillance, strongly based on workplace observations.

For example, the profile of the German exposure database resembles more closely those of the Belgian Safety index of companies, the Dutch Inspection Monitor and the Irish Accidents and Enforcements system, than was supposed before.

Also, the four multi-source and policy-directed systems (#15-18: the Danish study of preventive activities of companies within the overall Surveillance system, the Netherlands' OSH Balance Report, the German OSH Status report, and the UK Costs of accidents system) differ more from each other than was supposed before.

For example, the Danish Prevention in Companies system (one of the three tracks of the overall Surveillance system) uses two sources (surveys and observations), but lacks information on the mental work environment and health and seems to fit more in the broader category 'safety inspection, substances, OSH-coverage, with workplace observation techniques'. The Danish Surveillance system as a whole, with its three tracks, resembles the Netherlands' OSH Balance Report and the German Status Report.

Both the Netherlands' OSH Balance Report and the German OSH Status report use three data sources (surveys, social security register, and census data), and are therefore typical multi-source systems. However, their other characteristics mean that they differ a lot from each other and from the Danish Prevention in Companies system. The German OSH Status report, for example, pays a lot of attention – next to the work environment - to accidents, ill-health, absenteeism, work disability, and to employee characteristics, and differs in that respect from the much more company-oriented Danish study of preventive activities of companies within the overall Surveillance system.

Finally, we distinguished a-priori five intervention- and OSH-management related systems (the Belgian Safety index of companies, the Irish Promotions & Campaigns system, the Irish Accidents & Enforcements system, the Dutch Inspection Monitor, and the Norwegian Accidents & Inspections system). As Table 5 and 6 show, four of these systems fit indeed in this category. The Norwegian system as a whole, however, fits better in the group with accident and ill-health registers.

#### **5.5 Discussion and recommendations**

What might be concluded now with respect to the actual situation and the future of OSH Monitoring in the European Union as a whole?

To start with, we should underline that the 23 OSH Monitoring systems we reviewed, are only a part of all the systems available in Europe. In an earlier inventory it was concluded that even more than

200 systems exist all over Europe. On the other hand, the systems reviewed in this report are central and important to the countries involved. And they also give a good picture of the variety in OSH Monitoring systems that exist in the EU and Norway, since all or almost all the different type of systems, we could think of, were included (with the exception of the Eurostat systems and the European Foundation surveys).

#### *The definition of 'Quality of work' and 'Health and safety'*

First, it is important to ask what the relation is between the results of this study and the EC-employment and social policies (COM, 2001, 313 final, 20 June 2001) and the EC-Strategy on Health and safety at work 2002-2006 (published in March 2002). With the help of its employment and social policy the European Commission wants to improve the 'Quality of work' in the EU. Health and safety at work is one of the ten areas distinguished by the EC within the concept 'Quality of work'. With respect to Health and safety the EC distinguishes three indicators, namely accidents at work, occupational diseases, and stress levels and other difficulties concerning working relationships. The other areas of the quality of work – according to the EC - are, for example, intrinsic job quality, development of skills, life-long learning, gender equality, work organisation, non-discrimination, etc. The EC adds the recommendation that the data from Eurostat and the European Foundation are used to monitor the development in the 'Quality of work'.

Our study indicates that many of the 23 European OSH Monitoring systems reviewed, include much more aspects than the 'health and safety' aspects, as defined in the narrow definition of the EC (accidents, diseases and stress). One could perhaps conclude that our group-1 systems are the real 'health and safety' monitoring systems. The group-2 systems (with their emphasis on different work and working conditions, as well as accidents and ill-health) seem to be much more 'quality of work' systems. The third group of systems (with their accent on safety, substances and OSH-management) seem to take an intermediate position.

One might conclude that it is important first to clarify the definition of OSH. Does OSH mainly include accidents and diseases, or does it also include relevant work characteristics and OSH-management? Without having this clear, it seems to be difficult to have a clear discussion on the future of OSH Monitoring.

#### *Broad versus more focused OSH Monitoring systems*

The second question we would like to raise, is: what systems are broadest or cover the widest range of aspects of the working environment, health outcomes and OSH-service and –expertise?

This turns out to be true for the four National Working Condition Surveys (from France, Spain and Sweden), and for the two OSH Balance or OSH Status reports (from the Netherlands and Germany). These six systems cover about 30-40 aspects of the work environment, health outcomes and OSH-service and –expertise information (see Figure A in this summary for a part of the information).

The Netherlands Inspection Monitor and the Norwegian Accidents & Inspection system also include more than 25 aspects of the work environment, health outcomes and OSH-service information.

It is also important to emphasize that these systems contain relatively much information on risk categories (sex, age, profession, number of working hours, branch of industry, etc., see Figure B in this summary).

All these systems use sample surveys or questionnaires as the (main) data gathering technique, sometimes supported by other techniques, such as workplace observations, registers, and census data. Thus, when broad coverage is the aim of future OSH Monitoring the sample survey technique should be recommended.

#### *OSH Monitoring systems and 'Work and Health Country Profiles'*

Thirdly, we would like to discuss the results of this study in relation to the 'Work and Health Country Profiles' report (Rantanen et al, 2001). This report has been written by the FIOH on the basis of an initiative of the WHO/Regional Office for Europe. It recommends core indicators for (1) an occupational health and safety system (such as human resources in labour safety inspection, in labour safety at workplaces, in occupational health services, coverage of occupational health services) (2) working conditions (noise, dangerous products or substances, asbestos and pesticide consumption, carrying or moving heavy loads, working at very high speed, working at least 50 hours per week), and

(3) occupational health and safety outcomes (fatal and non-fatal work accidents, occupational diseases, perceived work ability).

Though one could perhaps question these core indicators (not included are, for example, the safety situation, vibrations, radiation, job control, job support, violence and harassment at work, night and shift work, absenteeism, work disability, etc. and risk categories, such as sex, age, profession, and branch of industry), but the general idea of developing a Work and Health monitoring system per country, should be evaluated as very positive in a European context.

The results of our study show that there are almost no monitoring systems available that include all these 'core indicators'. The use of more than one monitoring system per country seems to be needed to gather the information for these 'Work & Health Country Profile Reports'. The multi-source reports prepared yearly in Germany and the Netherlands (the Status Report and OSH Balance Report) have a lot in common with the 'Work & Health Country Profile Reports' advocated by the FIOH and the WHO.

#### *The degree of coverage of OSH-aspects by the European systems*

The final and perhaps most important question we would like to discuss is: what are the best covered OSH-aspects at the European level, where might be gaps of information at that level, and what could be suggested in this respect from our analyses?

At the European level there are two important OSH data suppliers: Eurostat and the European Foundation for Living and Working Conditions in Dublin. Eurostat's Labour Force Survey (LFS) provides EU-wide information on the population, households, employment (rates, self-employment, employees, temporary and part-time employment, working time, etc.), unemployment and inactivity. Eurostat's European Statistics on Accidents and Work (ESAW) cover all accidents that result in absences of at least four days. Eurostat's ad hoc module of the 1999-LFS on Accidents at work and Occupational illnesses generated additional information on diseases, disabilities, other physical and psychological problems and accidental injuries at work.

The European Foundation's 1992-1996-2000 Surveys on Working Conditions provide information on the job, the physical, the organisational and the social work environment, work time, and health-related outcomes.

From this one might conclude that at the European level information coverage is relatively low with respect to OSH-services/-coverage, OSH-experts, OSH-interventions, costs and benefits of OSH, workplace and company-based information on policies, actions and interventions and on the evaluation of the effectiveness of these actions.

The so-called group-3 systems we identified (especially the Netherlands' Inspection Monitor, the Danish Prevention in Companies system, the Belgian Safety Index of companies, and the Irish Accidents & Enforcement system), meet this wish for information best. There are, however, also some survey and multi-source systems in which information on OSH-service indicators is gathered. This is true for the Spanish and Swedish Work Environment Statistics/Survey, the Netherlands' OSH Balance Report, the German OSH Status Report and the Norwegian Accidents & Inspections system. Most of these OSH-service and OSH-expertise oriented systems are also used for the monitoring or evaluation of the effectiveness of policies, actions or campaigns.

#### *Methodological perspectives*

Above we concluded that at the European level information coverage is relatively low with respect to OSH-management, workplace and company-based information on policies, actions and interventions, etc. We also concluded that several existing OSH Monitoring systems provide important information with respect to this field.

But are data from these systems comparable or is it possible to join them into a common European System? According to our study almost all systems are reported to be transferable to other countries. But this does not mean that the data from the different systems are comparable now?

In this respect we are not optimistic. There are publication, which show, that data even from very similar systems cannot be compared or joined (see the papers presented at the 13-th CEIES-seminar on 'Health and Safety at Work - EU Statistics' in Dublin 2001, especially Stamm's contribution 'Statistics on and indicators of accidents at work and work-related health hazards in Europe: a critical appraisal'). Similar conclusions are drawn in a study on five European databases containing

occupational air pollutant control measurements ('Exposure registers in Europe - Extractions of core information and possibilities for comparison between European databases for occupational air pollutant measurements', carried out by some EU institutes and supported by the European Foundation for the Improvement of Living and Working Conditions in 1994; Office for Official Publications of the European Communities, 1994). Finally, the European Agency in its 'State of OSH' (2000) also concluded that there was a need for systems at EU level with well structured questions and clear definitions to promote a common understanding and avoid ambiguity.

As long as no uniform data acquisition methodology is introduced the comparison of the data from different sources limps. This implies that a European Union system would have to be organised centrally. The data have to be gathered with a uniform method in a representative way. The collection of data through the method of questionnaires appears most fruitful, since this method is both repeatable and simply feasible. Additionally, the problem of underreporting is relatively small in this methodology. However, special attention should be paid to unambiguous formulation of questions and repeated testing of the questionnaires.

## 6 Literature on Monitoring of OSH

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## Annexes

### Annex 1 The Questionnaire for the OSH Monitoring Inventory in short form

#### Basic information

1. Name of the system (in original language and in English).
2. 'Owner' of the system (responsible for data gathering, processing and publication).
3. Please give titles of main publications wherein the system or the results of the system are described.

#### Contents of the system

4. Describe the 'theory' or model on which the system is based (if any).
5. What work environment or exposure indicators are included in the system?
  - Safety situation
  - Work activity
  - Handling dangerous substances
  - Physical work environment
  - Mental work environment
  - Other psychosocial factors
  - Work organization
  - Employment status, work security
  - Training facilities
- 6a. What 'outcome' indicators are included in the system?
  - Occupational accidents
  - Work-related ill-health
  - Absenteeism
  - Work disability
  - Other:
- 6b. Are data gathered on costs of outcomes?
  - yes
  - no
- 7a. What Occupational Safety and Health Services Indicators are included?
  - Number of OSH experts at company level
  - number of OSH experts in preventive services
  - activities/duties of Preventive Services
  - coverage of OSH services in the country as a whole
  - coverage of OSH services per branch
- 7b. What intervention indicators are included?
  - number /ratio of inspectors
  - number/ratio of inspections
  - activities/duties of companies (e.g. risk assessment)
  - other:
- 8a. What employee-indicators are used or included in the system?
  - sex
  - age
  - education
  - profession
  - number of working hours
  - other:
- 8b. Are these indicators used for qualitative evaluation of data?
  - yes
  - no

9. What employer or company indicators are used or included in the system?
- company size
  - branch of industry
  - others:

**Method**

10. How are the data gathered?
- by survey or questionnaire
  - by observations at the workplace
  - with the help of social security registers
  - national census data
  - others:
11. By what organization is the data gathering carried out?
- by the 'owner' of the system
  - by others:
12. What is the time required (estimation in months) for:
- (a) gathering the data
  - (b) processing the data
  - (c) publishing the data
13. Do the data refer to the population as a whole or to a sample of the population?
- population-data
  - sample-data
- Please indicate size of sample:
14. To what degree is the country covered?
- completely
  - partially
15. What is the periodicity (or frequency) of the data collection?
- ongoing
  - once a year
  - every two years
  - other:
16. Is underreporting - in the data gathered - a problem?
- yes
  - no
17. Are there methods used to overcome underreporting? (please explain)
- yes
  - no
18. If the system is based on sample-data: are they weighted with the help of nation-wide population data?
- yes
  - no
19. Please give some information on the reliability and/or validity of the data?
20. Are there studies available with respect to these issues (validity & reliability)?
- yes
  - no

**Costs of the system**

21. What are roughly the costs of gathering data, processing data and publishing reports (in EUROS)
- (1) data gathering:
  - (2) data processing:
  - (3) publishing:
22. Who pays for these activities?
- 'owner'
  - others:



**Internal use /aim and background of the system**

23. What is the aim/purpose of the system?
24. Please give additional background or context related to the aim of the system (if relevant)
25. Do the data make 'priority setting' in the field of 'Occupational health & safety' possible?  
If not, why not?  
 yes, because:  
 no, because:
26. Are company and/or governmental actions based on the data described (if so, give details)  
 yes  
 no
- 27a. Are the data used for cost-benefit-analyses of OSH or could they be used for this purpose?  
 yes  
 no
- 27b. Are there other aims of the system?  
 identifying the need for legislation  
 identifying information gaps  
 demonstrating the effectiveness of an OSH system  
 other:
- 27c. Has there been any evaluation of the effectiveness of policies, actions or campaigns linked to the system (e.g. monitoring of targets)?  
 yes  
 no

**External use of the system**

28. Are the data available for external use and/or secondary statistical re-analyses?  
 yes  
 no
29. What are the opinions of 2-3 major target groups or user groups (for example, government unions, employers, social security organisations) with respect to the use, the quality, and the effectiveness of the system? (to be gathered by telephone and/or e-mail)
30. Is transferability of the system to other countries possible? If not: why not? Are there legislative or social security thresholds?  
 yes  
 no, because:

**Future of the system**

31. Are there any plans for further development of the system? Or is termination an option?  
Elucidation:

**Final evaluation of the system**

32. Other general and evaluative comments?

**Who supplied the above information? Please give your name and address, etc.**

Name:

Organization:

Address (street or postbox):

Code and city:

Country:

e-mail:

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**Annex 2 Name and 'owner' of the 23 system**

Short name	Name of the system (in English)	'Owner' of the system
1. France-Enquête National	Working Conditions Survey (Enquête Nationale Conditions Travail)	Ministry of Labour; DARES/Direction of Research & Statistical studies
2. France-Risks Survey	Medical Monitoring Survey of Professional Risks (SUMER)	Ministry of Labour, DARES/Direction of Research & Statistical studies
3. Spain-National Survey	National Working Conditions Survey (ENCT)	National Institute for Safety and Hygiene at Work (INSHT)
4. Sweden-National Survey	The Work Environment Statistics/Survey	Swedish Work Environment Authority/ Statistics Sweden
5. Germany-Exposure Database	Measurement System of Workplace Exposures of the German 'Berufsgenossenschaften'	Central Organisation of the 'Berufsgenossenschaften' (Statutory Accident Prevention and Insurance Institutions in Industry); Institute for Occupational Safety of the Central Organisation of the 'Berufsgenossenschaften'.
6. France-Accidents	National Network for Occupational Accidents	National Social Security Fund against Worker Illnesses (Caisse Nationale de l' Assurance Maladie des Travailleurs Salariés; CNAMTS)
7. Italy-Accidents & Diseases	Data base of INAIL (on Work, accidents, diseases, absenteeism, work disability and inspections)	INAIL (National Institute of Insurance against Accidents at Work)
8. Spain-Accidents & Diseases	Occupational Accidents and Diseases Statistics	Ministry of Labour and Social Affairs
9. Sweden-Injury system	The Work Injury Information System (ISA)	The Swedish Work Environment Authority
10. UK-Illnesses & Diseases	Combined use of 'Self Reported Work Related Illness Survey' (SWI) and 'Occupational Disease Intelligence Network' (ODIN)	Health and Safety Executive (HSE)
11. UK-Injuries & Diseases	Combined use of 'Reporting of Injuries, Diseases and dangerous Occurrences Regulations' (RIDDOR) and 'Labour Force Survey' Occupation and Cancer Register (combined with census data)	Health and Safety Executive (HSE)
12. Finland-Occupation & Cancer	The Occupational Hospitalisation Register	Finnish Cancer Registry (FCR) in collaboration with the Finnish Institute for Occupational Health (FIOH)
13. Denmark-Hospitalisation	Sickness allowance statistics	National Institute of Occupational Health (AMI)
14. Finland-Absenteeism	Study of Preventive activities in companies, which is one of the three tracks of the 'Surveillance of the Progress in the Action Programme for a clean Working Environment in 2005'	Social Insurance Institution (Finland)
15. Denmark-Prevention in companies	OSH Balance Report 2001 (Arbobalans; a compilation of several data sources on OSH)	The surveillance system is 'owned' by the Danish Working Environment Authority and the development and data collection is lead by the National Institute of Occupational Health (AMI) and Centre for Alternative Social Analysis (CASA)
16. Netherlands-OSH Balance Report	Safety and Health at Work (based on statistics and survey reports)	Ministry of Social Affairs and Employment
17. Germany-OSH Status report	The Costs to Britain of Workplace accidents and work-related ill health in 1995/96	Federal Ministry of Labour and Social Affairs
18. UK-Costs of Accidents	Safety Index of Companies	Health and Safety Executive (HSE) in collaboration with others
19. Belgium-Safety Index	HSA Promotion and Campaign Activities	Federal Ministry of Employment and Labour, Work Safety administration
20. Ireland-Promotion & Campaigns	System for Accidents and Field Enforcement, combined with National Household Survey data	Health & Safety Authority, Ireland
21. Ireland-Accidents & Enforcements	Inspection/OSH Monitor(Arbomonitor)	Health & Safety Authority, Ireland
22. Netherlands-Inspection Monitor	Register for enterprises and working accidents	Labour Inspectorate/ Ministry of Social Affairs and Employment
23. Norway-Accidents & Inspections		Norwegian Labour Inspectorate

**Annex 3 Content of the systems**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Fr	Fr	Sp	Swe	Ger	Fr	It	Sp	Swe	UK	UK	Fin	Den	Fin	Den	NL	Ger	UK	Bel	Ire	Ire	NL	Nor
<b>5. Work environment indicators included</b>																							
<input type="checkbox"/> Safety situation	X	X	X	X	X				X						X				X			X	X
<input type="checkbox"/> machinery used	X	X	X	X	X		X	X	X						X				X			X	X
<input type="checkbox"/> technical measures (e.g. ventilation)			X		X				X													X	
<input type="checkbox"/> personal protective equipment			X	X	X				X						X	X	X		X			X	X
<input type="checkbox"/> other	X		X		X														X			X	
<input type="checkbox"/> Work activity	X	X	X	X	X		X	X	X	X					X		X					X	X
<input type="checkbox"/> Handling dangerous substances	X	X	X		X		X	X	X			X				X	X		X			X	
<input type="checkbox"/> chemicals used (e.g. pesticides)			X		X							X										X	X
<input type="checkbox"/> exposure to chemicals (measurements)			X	X	X							X										X	X
<input type="checkbox"/> other	X	X	X	X	X				X						X	X			X			X	
<input type="checkbox"/> Physical work environment	X	X	X	X	X				X			X			X	X	X		X			X	X
<input type="checkbox"/> heavy loads	X	X	X	X					X	X	X	X		X	X	X		X				X	
<input type="checkbox"/> noise	X	X	X	X	X				X			X			X	X	X		X			X	
<input type="checkbox"/> vibrations	X	X	X	X					X			X				X	X		X				
<input type="checkbox"/> radiation	X	X	X						X			X					X						X
<input type="checkbox"/> radioactive			X	X								X											
<input type="checkbox"/> non-radioactive			X	X					X			X											
<input type="checkbox"/> unfavourable work postures	X	X	X	X					X			X			X	X	X					X	
<input type="checkbox"/> other	X	X	X	X								X				X	X		X			X	
<input type="checkbox"/> Mental work environment	X	X	X	X					X			X				X	X					X	X
<input type="checkbox"/> stress in general			X	X					X			X					X						
<input type="checkbox"/> job control	X	X	X	X													X					X	
<input type="checkbox"/> time pressure	X	X	X	X					X			X				X	X					X	X
<input type="checkbox"/> job support	X	X		X					X														
<input type="checkbox"/> job complexity	X	X	X	X								X					X						
<input type="checkbox"/> other	X	X	X												X	X	X					X	
<input type="checkbox"/> Other psychosocial factors			X	X	X				X													X	X
<input type="checkbox"/> harassment at work			X		X				X													X	
<input type="checkbox"/> violence			X	X	X				X	X												X	X
<input type="checkbox"/> sexual intimidation			X		X				X													X	
<input type="checkbox"/> Work organization	X	X	X	X	X		X			X		X					X						X
<input type="checkbox"/> working hours	X	X	X	X			X			X	X						X	X					X
<input type="checkbox"/> night work	X	X	X	X			X			X	X						X						X
<input type="checkbox"/> shift-work	X	X	X	X			X			X	X						X						X





## **Annex 4 Aim, use and ‘theoretical’ context of system**

	<b>The aim/purpose of the system</b>	<b>The ‘theory’ or model on which the system is based (if any); additional context of the system</b>
1. France- Enquête National	<p>The aim of the Working Conditions Survey is to study</p> <p>(1) the working conditions and work organisation in France and</p> <p>(2) their evolution over the last decades.</p>	<p>The French Ministry of Labor/DARES is the leader of the project. The data collection is carried out by INSEE (National Institute for Statistics and Economic Studies). The Working Conditions Survey is submitted to the active working population in that employment survey, which is one third of the total sample or roughly 22,000 persons in 1998. The base of the INSEE-survey are the households - so if there are two working persons in the same household both are asked to answer the questions.</p>
2. France-Risks Survey	<p>The aim of the SUMER-Survey is to develop knowledge about exposures and constraints employees are subjected to (including their nature, the time they are exposed to, the number of employees affected, their skills and status, the industrial sectors affected, their evolution, etc.).</p>	<p>The data are collected, on a voluntary basis, by company doctors during their medical interviews. The results of the survey are described according to industrial sector, size of company, and personal and socio-professional characteristics of the employees.</p> <p>The survey includes organizational aspects, employee relationships, the physical work environment (noise, light, atmosphere, loads, etc.), exposure to biological and chemical risks.</p> <p>Part of the questionnaire is filled in by the employee and deals with his own view of his working conditions and the relationship between his work and his health.</p>
3. Spain-National Survey	<p>The aims of the Spanish Working Conditions Survey are:</p> <ul style="list-style-type: none"> <li>• To develop knowledge of work environment factors that are generating illness or discomfort in the working population.</li> <li>• To characterize the Spanish working population's most frequent working expositions.</li> <li>• To know the current preventive structures.</li> <li>• To estimate the preventive dynamism based upon the performed researches or intervention actions or training acts.</li> <li>• To define homogeneous population groups with respect to their working conditions</li> <li>• To develop knowledge of the evolution of the Spanish working population labour conditions.</li> </ul> <p>The strength of the ENCT is that it not only provides information on working conditions, risks, OSH management and preventive activities but also allows presentation of the data in terms of branch, company size, occupation, age and gender.</p>	<p>Prevention of risks is the central thought in the Survey. The information gathered should help to make decisions that can improve safety and health conditions at company level.</p> <p>In addition, the Survey considers the enterprise as a system under outside influences such as clients, new technologies, governmental bodies, trade unions. The enterprise also contains subsystems of workers, departments and hierarchical relationships. These aspects can affect the process of work, and the working conditions. For this reason the survey has two levels of data gathering: enterprise and employee, with two different questionnaires.</p> <p>The enterprise questionnaire is focused on collecting the data concerning the staff, management and OSH preventing actions, training and technological innovation. The workers questionnaire is mainly focused on employment and working conditions, OSH preventing actions, training, health related to working conditions, as well as employee variables.</p> <p>This double point of view makes it possible to locate workplace data in a wider organizational context, for a better knowledge of successful preventive strategies.</p>

Annex 4 Aim/purpose and ‘theoretical’ context of the systems

	<b>The aim/purpose of the system</b>	<b>The ‘theory’ or model on which the system is based (if any); additional context of the system</b>
4. Sweden-National Survey	The aim of this system is to give an overview of the changes over the years in different fields of work environment and to make it possible to carry out more in-depth analyses	The questionnaires give a broad picture of the work environment including much of what has been in focus in Sweden (and in other Nordic countries). Before the system started, extensive developmental work was carried out, including interviews with experts in the field, screening of relevant literature and data gathering on many different work places. The system was developed in coordination with activities in other Nordic countries.
5. Germany-Exposure Database	This Workplace Exposure System is based on information of labour inspections on exposure to hazardous substances as well as noise in individual workplaces. The aim of the system is (1) to support prevention, (2) to control the efficiency of exposure reducing measures, (3) to determine technical criteria for exposure limit values, (4) to contribute to the national and international existing substances programs, and (5) to make decisions possible on suspected cases of occupational diseases and epidemiological questions.	The system is not based on a specific model. It is based on the principle that the accident insurance institutes have to ensure the prevention of occupational diseases, accidents and work related health risks. They have to investigate the causes of work-conditioned risks of ill-health. In this context the labour inspectors are authorised to examine working procedures and operational sequences and in particular to determine the presence and the concentration of dangerous materials.
6. France-Accidents	Two goals: (1) to make possible the compensation of workers, (2) to develop knowledge on accidents and diseases for the decision making process.	The idea of the system was the compilation of statistical data with respect to occupational accidents and diseases.
7. Italy-Accidents & Diseases	The aim of the system is to develop a complete data bank about enterprises and workers with respect to occupational accidents and diseases.	There was no explicit theory behind the system. It was built little by little as an answer to upcoming needs. The general idea is to have a ‘user friendly’ system, useful for INAIL’s purposes of having a clear picture of the latest up-to-date situation on occupational accidents and diseases. The way the system is built changed in time. The newest system is the Data Warehouse, built with many different search tools, drilling tools, graphic tools, and analysing tools.
8. Spain-Accidents & Diseases	The main purpose of this system originally was to provide information needed in order to control payments and compensations to workers and enterprises due to accidents at work or occupational diseases. Nowadays, the system is used (1) for preventive purposes in order to study the	The measures in the system are based upon the recommendations of the X and XII International conferences of Labour Statistics of the ILO. There are some differences among Spain and other European countries concerning to the kind of accidents included in the system: the accidents with more than one day of absence are included and also the accident with non-traumatic cause (heart attacks, cardiovascular accidents) are included if the accident happens during the working hours or commuting.

Annex 4 Aim/purpose and 'theoretical' context of the systems

	<b>The aim/purpose of the system</b>	<b>The 'theory' or model on which the system is based (if any); additional context of the system</b>
	<p>evolution of accidents and diseases,                      (2) to have better knowledge of those groups of workers/enterprises with higher risks and                      (3) as a tool to establish preventive policies.</p>	
9. Sweden-Work injury system	<p>The statistical system is used by the Swedish Work Environment Authority                      (1) for prioritisation of its activities and                      (2) for following up the effects of provisions issued or effects of work environment policy measures.                      In the Inspectorate, the system is used                      (1) as a basis for planning and prioritising activities,                      (2) as supportive documentation for inspections and                      (3) as a means for monitoring the effects of actions taken.</p>	<p>Other users of the system are the Ministry of Industry, Employment and Communication, the social partners, business organisations, working life and labour market researchers, and occupational health services. These groups use the data for prioritising initiatives and for replying to inquiries on hazards of the work environment.                      ISA data are also used by the media when reporting on hazards of the work environment. Finally, Sweden is obliged to report data on occupational accidents and work related-diseases in accordance with a standardised list to Eurostat.                      Cases of work injury are defined by the 'Work Insurance Act'. According to this act an injury should be regarded as work-related when major reasons indicate that the injury was sustained as a result of an accident or other harmful influence at work. An injury resulting from an accident in the course of the ordinary, direct journey to or from work also counts as a work injury.</p>
10. UK-Illnesses & Diseases	<p>The aim of the SWI-ODIN-system is to inform HSE, the occupational health and safety 'world' and the general public of the extent and distribution of work-related illness in order to formulate appropriate preventive policies.</p>	<p>HSE takes the view that no single system of data collection can capture the policy relevant aspects of work-related illness. The two combined systems described here (SWI and ODIN) are the main sources relied on for health outcomes, though other systems also make a contribution for some types of occupational illness. For example, the compensation system, direct employer reporting and (for certain lung diseases), death certificates.</p>
11. UK-Injuries & Diseases	<p>The goal of RIDDOR/LFS is                      (1) to provide the relative numbers and risks between industries, and the commonest kinds of accident,                      (2) to support investigation of situations that require remedy,                      (3) to allow identification of priorities for programmes or other special inspection initiatives,                      (4) to demonstrate trends and progress in safety to the Government, media and the wider public.</p>	<p>Employers and self employed people make reports to HSE inspectorates and to local authorities (the coroner's system notifies HSE of deaths which supplements employer's reports). The reports include a textual account of the accident.                      LFS is based on a sample survey of 60,000 private households in GB. The Survey asks questions about people's jobs, industries and many working topics. HSE's questionnaires ask if respondents had an accident in past 12 months, if road related, when they returned to work.                      The statistics are available for inquiries made by the media, public, academics, business and others who work on health and safety matters.</p>
12. Finland-Occupation & Cancer	<p>The aim of the Cancer Register is to provide accurate, systematic, population-based, nationwide information of absolute and relative cancer risks related to occupational exposures.</p>	<p>Occupation-specific cancer incidence risk estimates from 1971 onwards (about 500,000 cancer cases) are calculated for the entire population of Finland (census-based occupation data, about 400 categories) and further linked to occupation-related risk factors (chemical agents etc.).                      The goal is to identify exposure patterns and develop methodological tools for analyses and interpretation of the relations of occupation-related factors and cancer.</p>



	<b>The aim/purpose of the system</b>	<b>The 'theory' or model on which the system is based (if any); additional context of the system</b>
13. Denmark-Hospitalisation	The goal of the Hospitalisation Register is (1) to provide an overview of the health situation of Danish workers and (2) to identify potential occupational risk factors.	The Occupational Hospitalisation Register is designed as consecutive cohorts, followed up for hospitalization during one to many years. The most important occupation and industry during the year before baseline serves as a proxy-measure of occupational exposure. For each person, 20-59 years at baseline, person years at risk are calculated and a Standardized Hospitalization Ratio and 95% confidence intervals are calculated with all economically active as the standard.
14. Finland-Absenteeism	The statistics producer, i.e. the Finnish Social Security Institute, is obliged to produce statistics on its activities. One of the goals is to monitor the costs of absenteeism.	Gathering of sickness allowance data for more than 9 days absences in respect to diagnosis, occupation, sector etc.
15. Denmark-Prevention in Companies	The aim of the overall Danish Monitoring system is the Surveillance of Progress in the Action Programme for a clean working environment in 2005. This action programme consists of three entities: (1) analysis of registered working conditions, exposure data, accidents and diseases, (2) a special study on preventive activities in companies, (3) analysis of campaigns, inspections, etc. The actual system – described here – is the second entity, wherein the preventive activities of companies, not the actual working environment, are monitored.	For the (second) part - concerning the preventive activities of companies - companies within the industries in focus are sampled. These companies are interviewed by telephone about the progress they make in their working environment. A sample of 10% of the companies is also visited by occupational health professional in order to validate the information given during the interviews.
16. Netherlands-OSH Balance Report	The aim of the Arbobalans is (1) to provide an overview of OSH in daily practice both per year as in trends over the years (2) to monitor OSH in practice. A number of key parameters is used to describe the population at risk, effects of work and effects of OSH-interventions.	The Arbobalans is a yearly compilation of several data sources on OSH in The Netherlands. The data gathered give information on OSH-risks, the resulting outcomes and the interventions taken. The results are presented yearly in a brochure that is widely spread under stakeholders. The publication is also available on the internet. The Arbobalans gives the rationale behind governmental OSH policy and can in that way be seen as a piece of public relations and justification to the Dutch Parliament, organisations of employers and employees. The Arbobalans stands next to the 'Sociale Nota' , a yearly publication of the Ministry with an analysis of trends and developments as well as new policy measures, including OSH.

Annex 4 Aim/purpose and ‘theoretical’ context of the systems

	<b>The aim/purpose of the system</b>	<b>The ‘theory’ or model on which the system is based (if any); additional context of the system</b>
17. Germany-OSH Status report	The aim is to describe the OSH situation and trends in Germany.	The report is a review of (1) yearly collected statistical data and (2) special survey reports in order to describe the OSH situation.
18. UK-Costs of Accidents	To aim of this OSH-Costs study was (1) to demonstrate that occupational health and safety has huge costs to society and employers, and (2) to be able to compare the costs of H&S policy measures with the likely benefits from them.	For non-injury accidents, cost estimates are based on a total loss approach. For injury and ill health, costs to society are a combination of cost of absence (where it is assumed that, on average, output is maintained), non financial costs (pain and suffering) and other costs (e.g., medical treatment, social security benefits). The costs are provided by regional, occupation and industry breakdown, and subsequent costs by disease have been derived. These have been used in promotional and awareness campaigns for guidance on work-related asthma, stress, MSD, and so on. The industry figures are often requested by health and safety managers to make the case for more action in their sectors.
19. Belgium-Safety index of companies	The Belgian Safety Index of companies has been developed in 1995 – 1996 as an element of a ranking system, which should make it possible to determine the inspection priority of companies with respect to safety at work. The other priority setting elements of this ranking system are: * the elapsed time since the last inspection; * the frequency and seriousness of the accidents compared to the average of the companies of the same size in the same risk sector; * the content of the annual report communicated to the inspectorate by the internal prevention service of each company.	The Safety Index is calculated on the basis of the scores given by the Labour inspector to 20 features during his visit to the enterprise. The maximum value that an enterprise can obtain for the index, is 100. The list covers 20 relevant aspects of Belgian safety legislation. Fifteen concern regulations, the other 5 the capacity of resourcefulness of the enterprise. For each feature, the score can vary from 0 to 4. The scores 0 and 1 are given to safety situations, which the inspectorate wants to see disappear in all the companies and which – of course – content serious violations of prescriptions. The score 2 is given when the regulation is observed for that feature. The scores 3 and 4 correspond to safety situations, that the inspectorate wishes to see appear gradually in all the companies. To avoid capriciousness by the inspector, each in advance defined situation is concretised by a precise question or description. The list of features, as well as the defined safety situations have been agreed upon by all inspectors. The system is only used for companies executing their activities on a fixed location. For employers on temporary or mobile construction sites, a similar system is used, but there the crediting of the scores is based on the individual appreciation of the risk by the inspector for each feature, according to general guidelines.
20. Ireland-Promotion & Campaigns	The aim of the system is to keep a record of promotion and campaign activities and use it for future development.	This is not a data collection system, so most of the questions are not relevant.
21. Ireland-Accidents & Enforcements	To monitor occupational health and safety management, intervention and outcome	The System for Accidents and Field Enforcement or SAFE System is an integrated database of information covering accidents, complaints, employers, workplaces and inspection activities. Data on accident report forms, submitted by employers under the notification regulations is coded and entered by clerical staff. Comprehensive data relating to inspection

	<b>The aim/purpose of the system</b>	<b>The ‘theory’ or model on which the system is based (if any); additional context of the system</b>
		<p>activities and workplace details is entered directly by inspectors. Classification and coding of accident variables follows the recommendations of Eurostat's report on the ESAW study 'Methodology for the Harmonisation of European Occupational Accident Statistics' (1992). It is currently revised to update the system according to 'European Statistics on Accident at Work (ESAW) Methodology - 2001 edition'. As well as providing overall statistics on accidents and enforcement activities the system supports enforcement action generally including workplace inspections and the investigation of accidents and complaints.</p>
22. Netherlands-OSH Inspection Monitor	Presenting on a yearly basis representative OSH data of Dutch companies	<p>The picture of OSH at the company level in the Netherlands is based on company visits of labour inspectors to a stratified random sample of 1725 Dutch companies. During these visits OSH-documents are studied, a questionnaire is being administered and the inspector walks through the company premisses. Compliance to legal OSH-requirements is studied, as well as a yearly changing number of specific OSH-risks. The analysed results are published in a brochure, which can be purchased from a national publisher. The Arbomonitor is also available on the Internet. The focus is more on compliance with and awareness of legal requirements than on the effects/outcomes of OSH-policy at company or national level.</p>
23. Norway-Accidents & Inspections	<p>To give an overview of the Labour Inspectorates inspection-activity, intervention regarding the working environment act, information on the working environment standard in the enterprises, priority setting.</p> <p>The data are published in an aggregate form, for example with respect to industrial branches. Data regarding inspections, etc. are not published on the internet but on the intranet.</p>	<p>There are three sources for the information collected in the system;</p> <ul style="list-style-type: none"> <li>• facts regarding the enterprises (size, address, NASE-code, company-groups, i.e.) are bought form ‘Statistics Norway’</li> <li>• information regarding inspections, interventions, working environment standard in the enterprises are collected by labour inspectors</li> <li>• working accidents are reported by the employers.</li> </ul>

**Annex 5 Internal and external use of the systems**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Fr	Fr	Sp	Sw	Ger	Fr	It	Sp	Sw	UK	UK	Fin	Den	Fin	Den	NL	Ger	UK	Bel	Ire	Ire	NL	Nor
Internal use /aim and background of the system																							
<b>25. Data make 'priority setting' possible?</b>																							
<input type="checkbox"/> yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	?	X	X	X
<input type="checkbox"/> no	X																			--			
<b>26. Are company and/or governmental actions based on the data described?</b>																							
<input type="checkbox"/> yes	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<input type="checkbox"/> no			X			X																	
<b>27a. Are the data used for cost-benefit-analyses of OSH or could they be used for this purpose?</b>																							
<input type="checkbox"/> yes							X		X	X	X			X				X		--			X
<input type="checkbox"/> no	X	X	X	X	X	X							X		X	X	X		X	--	X	X	
<b>27b. Are there other aims of the system?</b>																							
<input type="checkbox"/> identifying the need for legislation	X	X	--	X	X	X	X	--	X	X	X	X		--	X	X	X	--	X	--	--		X
<input type="checkbox"/> identifying information gaps	X		--		X	X	X	--		X	X	X		--		X	X	--	X	--	--	X	X
<input type="checkbox"/> demonstrating the effectiveness of OSH system			--		X	X	--		X	X	X		--	X	X			--	X	--	--		
<input type="checkbox"/> other		X	--	X	X		--	X				X	--		X		--		--	--	--	X	
<b>27c. Has there been any evaluation of the effectiveness of policies, actions or campaigns linked to the system (e.g. monitoring of targets)?</b>																							
<input type="checkbox"/> yes				X	X				X		X	X	X	--	--		X	--	X	--	X		X
<input type="checkbox"/> no	X	X	X			X	X	X		X				--	--	X		--		--		X	X
External use of the system																							
<b>28. Data available for external use?</b>																							
<input type="checkbox"/> yes	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	--		X	X
<input type="checkbox"/> no					X	X				X										--	X		X
<b>30. Transferability to other countries possible?</b>																							
<input type="checkbox"/> yes	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	--	X	X	X
<input type="checkbox"/> no								X												--			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Fr	Fr	Sp	Sw	Ger	Fr	It	Sp	Sw	UK	UK	Fin	Den	Fin	Den	NL	Ger	UK	Bel	Ire	Ire	NL	Nor

**Annex 6 Priority setting and transferability of the systems to other countries**

	<b>Do the data make 'priority setting' possible?</b>	<b>Is transferability of the system to other countries possible?</b>
1. France- Enquête National	Yes, the Survey makes it possible to make priorities between, for example, professional groups with respect to working conditions. And no: there are no questions about health in the questionnaire.	Yes, the survey undertaken by the European Foundation in Dublin is very close to the French Survey. This means that our scheme is transferable to other countries.
2. France-Risks Survey	Yes, SUMER helps to establish priorities for prevention.	Yes
3. Spain-National Survey	Yes, the Survey can be used to set priorities because it is the most important tool to get knowledge of working conditions related to safety and health in Spain, in terms of exposure, risks management, training. It also makes it possible to identify branches, enterprises or workers (due to age, sex, occupation, etc) more exposed to different risks or with less preventive activities.	Yes, basically, it can be applied to any country. There are some questions although that are specifically related to Spanish legislative demands and can only be applied in Spain, but only with a few changes it is transferable to any country.
4. Sweden-National Survey	Yes, it could point to important trends and facilitate the identifying of high risk groups	Yes, we have for example together with other Nordic countries developed a 'Nordic Questionnaire', based on roughly the same questions. This is used in different Nordic countries.
5. Germany-Exposure Database	Yes, workplaces with high exposures to chemical or biological agents as well as noise could be determined.	Yes, the system is already used for risk assessment in the existing EU-substances program. The 'owners' participated in a working group of European exposure databases which examines the comparability of measurement data, for example, in terms of the use of exposure data for discussion and establishing limit values of the European Union, and validation of exposure modelling for risk assessment. Similar systems are running in the UK (NEDB) and France (COLCHIC). In 1996 a report on 'Occupational Exposure Databases' was published by the European Foundation wherein core information for workplace exposure measurements on chemical agents based on existing databases (e.g. this system) was given (EF/96/25/EN).
6. France-Accidents	Yes, its aim is, among others, to support decision making.	Yes, there is no legal obligation to gather these statistics but there is an obvious technical need for the calculation of the victims' compensation and for the calculation of the premiums to be paid by the companies. The whole system is based on a declarative system.

Annex 6 Priority setting and transferability of the systems possible?

	<b>Do the data make 'priority setting' possible?</b>	<b>Is transferability of the system to other countries possible?</b>
7. Italy-Accidents & Diseases	Yes, data is complete enough to allow comparative analysis.	Yes
8. Spain-Accidents & Diseases	Yes, the system can be used to set priorities in the sense that it gives information on branches of activities, groups of workers, enterprises, etc., which have more accidents or occupational diseases ratios than others.	Yes, but the system is based on Spanish legislative dispositions. For that reason, it is not easy to transfer the system to other countries with the same levels of reliability. The Spanish system of statistics on occupational accidents and diseases is based upon the information gathered by the Social Security system (belonged to the Ministry of Labour and Social Affairs).
9. Sweden-Work injury system	Yes, the data give the possibility to compare risks between different groups on the labour market, e.g. different branches and different occupations. They may also be used for identifying specific work places with high risks.	No, the basis of the reporting system is the Swedish Work Injuries Insurance Act.
10. UK-Illnesses & Diseases	Yes, these data support a process of priority setting, but do not determine it. The uncertainties inherent in quantifying work-related illness mean that judgment (both political and professional) are also important.	Yes
11. UK-Injuries & Diseases	Yes	Yes, other countries have notification systems from employers to an authority. And at least one other supplements that with the LFS.
12. Finland-Occupation & Cancer	Yes, FINJEM includes quantitative estimates on prevalence and level of exposure by occupation which enables to identify occupations with heavy exposure. Cancer-FINJEM linkage enables to identify occupations at high risk of contracting occupational cancer. Priorities for the prevention and for further research may be set based on these datasets.	Yes, a similar system to calculate occupation-specific risks of cancer and other health outcomes could be created in any country with an information infrastructure allowing linkages of nationwide information on occupation, follow-up data for emigration and death (need for calculations of person-time at risk), and incidence of cancer (or/and other health outcome measure). Rather similar calculations have been done in the Nordic countries and even published jointly (Anderden A, Barlow L, Engeland A, Kjaerheim K, Lynge E, Pukkala E. Work-related cancer in the Nordic countries. Scandinavian Journal of Work Environment & Health 1999, 25, suppl 2). To create a job exposure matrix which fits completely with the categories of occupational cancer risk data, and also covers the entire population and has enough historical perspective to allow necessary latency estimations (FINJEM started in the 1940's) is a laborious task and requires extensive cooperation of experts of occupational hygiene of numerous specialities. Therefore this type of tool to link occupation-specific exposures systematically to cancer risk estimates has not been done elsewhere.

Annex 6 Priority setting and transferability of the systems possible?

	<b>Do the data make 'priority setting' possible?</b>	<b>Is transferability of the system to other countries possible?</b>
13. Denmark-Hospitalisation	Yes, it provides comparable measures for all occupations.	Yes, countries with a complete registration of occupations and industry for each person and a national and uniform patient registers will be able to implement the system in full but mortality register may also be valuable.
14. Finland-Absenteeism	Yes, because one can see, where, according to diagnosis, occupation and sector, workdays are lost due to, e.g. musculo-skeletal diseases. Labour Inspectorate may target its efforts in the field (occupations, branches, diseases) on the base of this system.	Yes, if similar social security systems exist.
15. Denmark-Prevention in Companies	When this track (Study of preventive activities in companies) is used in connection with the other two tracks in the Danish Surveillance system the answer is 'yes'. By measuring the progress within the 7 visions on different aspects (exposure, health, preventive activities etc.) it is possible to set priorities, for example amongst branches.	Yes
16. Netherlands-OSH Balance Report	Yes, the report gives an overview of a large number of relevant parameters and the possibility to study trends. Actual priorities and future plans are mentioned in the report. However, the data presented are rather global, i.e. at country-level. For interventions at 'lower levels' more specific data are needed.	Yes, each country must be able to gather relevant data on OSH and compile the data together in a comprehensive 'state of the art'. But the data available in each country will differ. Therefore it will not be easy to compare all results across countries. As a result of European unification some data can be compared, for instance on exposure to occupational risks.
17. Germany-OSH Status report	Yes, quality and covering of the data justify conclusions.	Yes, no thresholds.
18. UK-Costs of Accidents	Yes, because the data show which diseases/sectors, etc. cause or bear the largest costs. The costs have also been used to estimate the benefits of meeting health and safety targets for 2010 that have been set in GB in the context of the Revitalising Health and Safety Strategy Statement published by DETR/HSC in 2000.	Yes, indeed there are other cost estimates from other countries, but comparability is currently an issue (see the Bilbao Agency publication, Economic Impact of Occupational Safety and Health in the member states of the EU) and it would be useful to be able to compare costs which are derived with a consistent method as a proportion of GDP.
19. Belgium-Safety index of companies	Sure. It's was the reason why the system was developed.	Yes
20. Ireland-Promotion & Campaigns	Yes	Yes

Annex 6 Priority setting and transferability of the systems possible?

	<b>Do the data make 'priority setting' possible?</b>	<b>Is transferability of the system to other countries possible?</b>
21. Ireland-Accidents & Enforcements	Yes, the system indicates high-risk sectors, branches and occupations, and degree of health and safety compliance.	Yes.
22. Netherlands-OSH Inspection Monitor	Yes, the data are national and can be related to company size and branche. In addition, comparison with previous years is possible to detect trends.	Yes, but transferability depends on the legal OSH-requirements in other countries and the way these regulations are monitored and maintained. The presence of some sort of OSH-Inspectorate is necessary.
23. Norway-Accidents & Inspections	Yes, because the system makes it possible to give an overview of the Labour Inspection-activities, interventions regarding the working environment act, information on the working environment standard in the enterprises, and priority setting.	Yes, but the system is developed by ORACLE Norway and there are some formalities regarding transferability to other bodies than Labour Inspectorate.



**Annex 7 Methods used in the systems and payment for the systems**

Na= Not applicable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Fr	Fr	Sp	Sw	Ger	Fr	It	Sp	Sw	UK	UK	Fin	Den	Fin	Den	NL	Ger	UK	Bel	Ire	Ire	NL	Nor
<b>10. How are the data gathered?</b>																							
<input type="checkbox"/> by survey or questionnaire	X	X	X	X			X			X	X	X			X	X	X	X				X	X
<input type="checkbox"/> by observations at the workplace					X		X				X				X				X			X	X
<input type="checkbox"/> with social security registers						X	X	X	X					X		X	X					X	X
<input type="checkbox"/> national census data												X	X			X	X					X	X
<input type="checkbox"/> others:											X	X	X					X		X	X	X	X
<b>11. Who carries out data gathering?</b>																							
<input type="checkbox"/> the 'owner' of the system	X	X		X	X	X	X				X	X	X	X		X			X	X	X	X	X
<input type="checkbox"/> others		X	X		X		X	X	X	X	X	X	X		X	X	X	X					X
<b>13. Population or sample data?</b>																							
<input type="checkbox"/> population-data						X	X	X	X	X	X	X	X			X	X	X		Na	X		
<input type="checkbox"/> sample-data	X	X	X	X	X					X				X	X	X	X		X	Na	X	X	X
<b>14. Degree country covered?</b>																							
<input type="checkbox"/> completely	X	X		X	X				X	X	X	X	X	X		X			X			X	X
<input type="checkbox"/> partially			X			X	X	X							X		X	X		X	X		
<b>15. Periodicity of the data collection?</b>																							
<input type="checkbox"/> ongoing					X	X	X	X	X	X	X	X	X			X			X	?	X		X
<input type="checkbox"/> once a year											X					X	X					X	
<input type="checkbox"/> every two years				X											X								
<input type="checkbox"/> other (number of years)	7	7	4							2-5		3-5						5					
<b>16. Is underreporting a problem?</b>																							
<input type="checkbox"/> yes				X	X				X	X	X			X						Na	X		X
<input type="checkbox"/> no	X	X	X			X	X	X				X	X		X	X	X	X	X	Na		X	
<b>17. Methods against underreporting?</b>																							
<input type="checkbox"/> yes	X				X				X	X	X					X				Na	X		
<input type="checkbox"/> no		Na	Na	X		Na	Na	Na				Na	X	X	X		X	Na	X	Na		X	X
<b>18. If sample: are they weighted?</b>																							
<input type="checkbox"/> yes	X	X	X	X		Na	Na	Na	Na	X	Na	Na	Na	X	X	X	X	Na		Na		X	Na
<input type="checkbox"/> no					X	Na	Na	Na	Na	X	Na	Na	Na					Na	X	Na	X		Na
<b>20. Studies on validity &amp; reliability?</b>																							
<input type="checkbox"/> yes	X	X		X	X		X		X	X	?	X	X		X	X	X	X		Na		X	
<input type="checkbox"/> no			X			X		X			?			X					X	Na	X	X	X
<b>22. Who pays for the activities?</b>																							
<input type="checkbox"/> 'owner'	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<input type="checkbox"/> others		X			X			X			X	X			X		X						

## Annex 8 Reliability and validity of the systems

	Information on the reliability and/or validity of the data	Studies with respect to validity & reliability of the data
1. France- Enquête National	<p>The questionnaire is designed for all active persons in the work force. It is taking into account all the situations at work with simple and factual questions.</p> <p>In order to measure concepts, more questions are asked. For example, to measure 'mental strain', the 'Working Conditions survey' is asking several specific questions. In 1984, there was only one mental strain indicator used. Since 1991, several new questions have been introduced (ocular discomfort; discomfort caused by noise; attention to be given to visual or sound signals; relationships with customers; having to quit a task for a more urgent one; the consequences of an error and so on). In 1998, new questions were introduced on the existence of contradictory demands, the necessity to find a solution alone in difficult situations; having to work fast, tension with colleagues and the hierarchy.</p> <p>On the other hand, trends in data are sometimes difficult to explain. For example, in 1991, the survey showed, in comparison with the 1984 results, a clear worsening in the working conditions especially with respect to hardness and risks. Some questioning followed these findings. Was it a consequence of the methodological modifications in the Survey? Were it changes in the perception people have of their working conditions or was it a real worsening? After some thinking the first factor was considered as having little effect. The second one had more weight, especially for employees dealing with the public.</p>	<p>Gollac M., Donner un sens aux données, l'exemple des enquêtes statistiques sur les conditions de travail, Dossier n°3, nouvelle série, Centre d'études de l'emploi, 1994</p> <p>[To give a meaning to data, the example of the statistical studies on working conditions, Work Research Center].</p>
2. France-Risks Survey	<p>The data gathered is reliable considering the questions. But many questions concern exposure during the last workweek. This implies that in some occasions it is possible to see seasonal variation. Because of these seasonal bias the data gathering is spread over the whole year and results are averaged in 3-months periods. In each region interviewers/doctors are collecting data fulltime during 3 months (or: the actual data collecting period is three months per region).</p>	
3. Spain-National Survey	<p>In each survey, the sampling error for the whole sample and in each category is published. The sampling error for the whole sample is about 1.7% and for each branch category around 5%, and the ratio of confidence is 95.5%.</p> <p>Apart from these statistical aspects, it turned out that in the past four editions the results have been coherent. This gives confidence in the reliability and validity of the system.</p>	<p>During the first phase of the project the research-group carried out several cross-checks between the data gathered with the survey and the data that was already available from other systems (for example the ratio of men/women in the working population or the number of fixed/ temporary workers) confirming that the data gathered has the same distribution as the working population.</p>

## Annex 8 Reliability and validity of the systems

	<b>Information on the reliability and/or validity of the data</b>	<b>Studies with respect to validity &amp; reliability of the data</b>
4. Sweden-National Survey	Many questions were tested in validity studies.	They are reported in Wikman's dissertation 'Developing social indicators; an effort with the survey method illustrated with the example of working environment' (in swedish)
5. Germany-Exposure Database	A quality assurance system is installed to monitor reliability and validity of the data.	A quality report is provided annually.
6. France-Accidents	There is little information about this subject. Some work is presently being undertaken to improve the quality of the data produced by the existing method.	Not available for the moment, as a completely new system is going to be implemented soon.
7. Italy-Accidents & Diseases	Data is absolutely reliable if means over two years and more are taken. Data referred to the last two years are still temporary and need further evaluation. To reach a good quality of data, it is necessary to have the whole 'generation' of data processed.	The Eurostat survey on accidents showed that our data was absolutely in agreement with other European countries.
8. Spain-Accidents & Diseases	There is no underreporting in the system, the data gathered is 100% of the accidents of workers that are covered by the system. For the quality of the information, there are several controls carried out during the gathering and processing steps. First of all, the staff of the Mutual Societies for Industrial Accidents and Occupational Diseases codify and correct the form filled in by the employer. Second, the local labour authorities check and correct the form and reject those with lacks of information. Finally, during the processing step, there are electronic quality controls so that information on paper comes adequately in data files.	
9. Sweden-Work injury system	The statistics are complete in the sense of the register, including all incoming reports. Thus, in order for an injury to be included in the statistics, a report must have been made to the Social Insurance Administration Offices. This implies that the quality of the recorded data depends on the register's degree of coverage, i.e. on how large a part of the 'true' occurrence of work injuries it includes, and on the quality of the individual data. The degree of coverage hinges both on formal delimitations and on underreporting of work injuries. Detailed, correct encoding is rendered impossible by report forms not always being properly completed. Also, certain errors are liable to occur during the encoding process. Certain types of error are discovered in the course of checks and are then corrected. Difficulties discovered are also addressed by means of improvements to encoding instructions, training or suchlike. Comparability over time is very much dependent on willingness to report not having changed. There have been several changes in the insurance system, e.g. the sick pay	Further information on validity and reliability can be found in the report: ISA - The Swedish Information System - scope, content and quality. Report 2000, 16. The Swedish Work Environment Authority, Stockholm, Sweden, 2000. It can be found on <a href="http://www.av.se">http://www.av.se</a>

Annex 8 Reliability and validity of the systems

	<b>Information on the reliability and/or validity of the data</b>	<b>Studies with respect to validity &amp; reliability of the data</b>
	<p>period from 1992 onwards and the health insurance benefit waiting day, as a result of which the figures for different years are not fully comparable.</p> <p>The Swedish Work Environment Authority regularly tries to estimate the underreporting, mainly through the comparison (at the level of the individual) with the Work Related Health Problem study. The latter being a yearly survey study covering approximately 30,000 individuals.</p>	
10. UK-Illnesses & Diseases	<p>Yes for the SWI data, no for the ODIN data.</p> <p>We are looking to develop better methods for relating the ODIN data to the population as a whole.</p>	<p>We have addressed the issue of attribution in the 1995 SWI report by comparing individual responses with the views of their General Practitioners.</p> <p>A good level of concordance was found (see <a href="http://www.hse.gov.uk/statistics/2002/swi95.pdf">http://www.hse.gov.uk/statistics/2002/swi95.pdf</a>).</p> <p>There is still a good deal of work to be done in this area.</p>
11. UK-Injuries & Diseases	<p>This is a complex area. Both systems undergo quality management systems.</p> <p>HSE receives reports from the contracted company on the outputs of the quality system.</p>	
12. Finland-Occupation & Cancer	<p>Cancer registry over 99% complete and very accurate.</p> <p>Census about 98% complete, with high accuracy.</p> <p>Exposure data of varying accuracy depending on available data and the competence of the assessor.</p>	<p>There are specific studies on completeness and accuracy. There are also continuous quality control systems to guarantee the high level of the collected data. Validity of recent exposure data would require comprehensive and standardised field surveys which have so far not been carried out. The validity of retrospective exposure estimates can not be tested because there are no 'golden standards' available for past exposures.</p>
13. Denmark-Hospitalisation	<p>Systematic comparisons with ad hoc studies points to a very satisfactory reliability and validity of the data base. The validity of 'exposure' was assessed in a thesis through comparisons with company personel files and found satisfactory. Comparing mortality and hospitalization due to ischaemic heart disease, we found that only hospital staff had a referral bias. The validity of diagnosis was assessed in studies where two physicians reviewed the case sheets in university and general hospitals. Diagnosis related to surgery had a high validity but essential hypertension had a low validity.</p>	<p>Bach E. Validation of EIR – an epidemiologic surveillance system. [In Danish]. Copenhagen: Institute of Occupational Health and University of Roskilde, 1998. [Thesis]</p> <p>Tüchsen F, Bach E, Marmot M. Occupation and hospitalization with ischemic heart diseases: a new nationwide surveillance system based on hospital admissions. <i>International Journal of Epidemiology</i>, 1992, 21, 450-459.</p> <p>Jensen MV, Tüchsen F. Occupation and lumbar disc prolapse. [Erhverv og diskusprolaps i lænden]. <i>Ugeskr Laeger</i>, 1995, 157, 1519-23.</p> <p>Nielsen H-W, Tüchsen F, Jensen, MV. Validation of the use of the diagnosis 'Essential hypertension' in the National Inpatient Register. <i>Ugeskr Laeger</i>, 1996, 158, 163 - 167.</p>

Annex 8 Reliability and validity of the systems

<b>Information on the reliability and/or validity of the data</b>		<b>Studies with respect to validity &amp; reliability of the data</b>
		Tüchsen F, Andersen O, Olsen J. Referral bias in studies using hospitalization as a proxy measure of the underlying incidence rate. <i>Journal of Clinical Epidemiology</i> , 1996, 49, 791-794.
14. Finland-Absenteeism	No information available.	No information available.
15. Denmark-Prevention in Companies	A sample of 10% of the companies participating in the telephone interview are also visited by experts for reasons of reliability and validity of the data.	The analyses are ongoing. Reliability issues must be answered later.
16. Netherlands-OSH Balance Report	In the Arbobalans few information is given on the reliability and validity of the data underlying the Arbobalans. By presenting data from several sources it can be assumed that a more or less reliable and valid picture is given.	New parts of the Arbobalans are being evaluated. Some of the data sources used to compose the Arbobalans are studied with regard to validity and reliability. No mention is made of the outcome of these studies.
17. Germany-OSH Status report	In the report survey data are used from a sample N= 35000 from Germany; the results are valid and reliable.	-----
18. UK-Costs of Accidents	The injury/ill health data are pretty reliable. The non injury accidents information, on the other hand, is only based on a handful of case studies.	See: Self-reported work-related illness in 1995, HSE Books ISBN 0 7176 1509, 1998, and Health and Safety Statistics, <a href="http://www.hse.gov.uk/statistics/index.htm">http://www.hse.gov.uk/statistics/index.htm</a> .
19. Belgium-Safety index of companies	<ol style="list-style-type: none"> <li>1. Though the system produces a large amount of data, there are reasons (e.g., the non observance of all the rules for a non-selective sampling) that the results have to be used as indicators of tendencies, and that they have no scientific value in the strict sense of the word.</li> <li>2. In general, the degree of motivation and training of the labour inspectors completing the index could have some influence. For example, some inspectors could have the tendency to credit higher values for violations of prescriptions, in companies where the employer has done a lot of efforts to improve the safety level.</li> <li>3. The use of the list of safety features with in advance well defined situations, concretised by precise questions or descriptions and fixed on the common agreement of all inspectors, has to minimize the risk of non-reliability.</li> <li>4. The reliability problem of the data in the case of employers on temporary or mobile construction sites are real, because of the influence of the necessary individual appreciation of risk by the inspector. For this reason the labour inspectorate recently</li> </ol>	Not available.

Annex 8 Reliability and validity of the systems

	<b>Information on the reliability and/or validity of the data</b>	<b>Studies with respect to validity &amp; reliability of the data</b>
	developed a system identical to the one used for companies executing their activities on a fixed location. This new construction safety index is now in the phase of a pilot study.	
20. Ireland-Promotion & Campaigns	It is reliable as it is a list of own activities.	-----
21. Ireland-Accidents & Enforcements	Accident reports are validated by employers, social welfare data are validated by employers, doctors and government department. Workplace observations are done by inspectors.	-----
22. Netherlands-OSH Inspection Monitor	The 95% reliability intervals are small, approximately plus or minus 2 %.	No mention is made in the Arbomonitor of studies on validity or reliability of the data.
23. Norway-Accidents & Inspections	Except for the accident-part, both reliability and validity of the data are satisfactory. The survey on the covering-rate of the accidents is too old.	

**Annex 9 User group opinions, future plans, and evaluative comments**

	<b>Opinions of major user groups on the use, quality, and effectiveness of the system</b>	<b>Plans for further development of the system, other general and evaluative comments</b>
1. France- Enquête National	<p>The Ministry states that numerous people in the scientific community are using the survey and its results to conduct studies about work.</p> <p>The MEDEF and CGPME (two employer associations) consider the survey to be open to criticism, as it is based on a questionnaire filled out by a sample of employees without employers' validation. Thus, the survey may not be reliable because of its data collecting method. The results of the survey may, according to them, be uncertain. But the survey gives anyhow an idea of how the employees are feeling about their working conditions.</p> <p>CNAMTS, the Caisse Nationale, recognizes that the Conditions de Travail survey gives additional information on those produced by itself on some areas.</p> <p>Opinion of CFE-CGC (worker union): The Ministry of Labour/DARES survey is a little bit basic, but it has the interest of being available.</p>	<p>The next survey will take place in 2005. A 'health' emphasis could be given more to the questionnaire, in addition to the questions already in existence about working conditions.</p>
2. France-Risks Survey	<p>The survey data is used by (1) the government and other public sectors for prevention policies, (2) by national prevention bodies, and (3) by the scientific community.</p> <p>The MEDEF and CGPME (two employer associations) consider that this survey is very useful as its objective is to better describe the professional risks the employees are exposed to. But the methods used are open to criticism. In the SUMER Survey uncertain data are gathered under uncertain conditions by occupational physicians on a voluntary basis. This is why the MEDEF and CGPME are very cautious about the use of the data for professional risks prevention. The method should be modified in order to give more credibility to the results by associating the social partners to it in a scientific committee.</p> <p>CNAMTS recognizes that the SUMER survey gives additional information to those produced by itself.</p> <p>Opinion of CFE-CGC (worker union): The SUMER survey is an analysis of the working conditions factors gathered in interviews done by company doctors. This is an excellent survey, nevertheless insufficient with respect to psychological affective working conditions. Other social partners (CGT, CFDT, CGT-FO) have been asked for their opinion, without success.</p>	<p>Another survey will probably take place within 8 years from now.</p>
3. Spain-National Survey	<p>Before the data gathering process of each edition, there are meetings with trade unions representatives, employers unions and governmental bodies so that they can express their comments and suggestions for the next edition. University experts and other researchers, apart from the above mentioned unions representatives, are also invited to take part in the</p>	<p>Although the different editions of the Survey are kept similar as much as possible, each edition includes relevant and actual topics and excludes questions that have not provided relevant information.</p>

Opinions of major user groups on the use, quality, and effectiveness of the system	Plans for further development of the system, other general and evaluative comments
<p>official presentation of the results.                      We have only received opinions about the Survey from two Spanish regional governments. They pointed as the main use of this system its capacity to provide knowledge about working conditions at national level and as a tool to design specific preventive actions. In addition, its periodical edition permits to analyse trends and general evolutions. The main weak point is its global sampling design which does not provide statistical estimations and comparisons at a regional level.</p>	<p>It may be added, that some Spanish regions have adopted the ENCT model and are planning to perform regional versions of the survey.                      The survey has some possible weak points:                      1. It is based on the perceptions of employees and employers; this could create uncertainty about the reliability of the answers, but edition after edition the results are consistent which confirms the validity of the system.                      2. The final report is exhaustive and the time needed to prepare it is long. The new edition will try to shorten this period in order to provide less exhaustive results, but sooner.                      3. It has been discussed to adapt the existing questionnaire or to add an ad-hoc questionnaire so that the branches which are excluded nowadays (agriculture, fishing and mining) could be included in future editions.                      4. Also, the survey should be in permanent evolution to adapt itself to the changes in the working population (for example the inclusion of the variable nationality in future editions) and to the changes of working conditions. But the main structure has to be kept in order to allow the comparison among editions so the changes of the working conditions can be assessed.</p>
<p>4. Sweden-National Survey</p> <p>The data is widely used and appreciated</p>	<p>A continuous development is going on.                      Many aspects of the Survey are implemented in 'The European Survey' (European Foundation for the Improvement of Living and Working Conditions)</p>
<p>5. Germany-Exposure Database</p> <p>1) In 1991 the Head of the 'Health and Safety Directorate' of the European Commission wrote referring to 'BIA - Arbeitsumwelt-dossier on Benzol': '... it provides the technical data which the Commission might consider when elaborating its proposal for a limit value for benzene. Some of the data on occupational exposure listed in your dossier are referred to in the Draft Condensed Criteria Document on Benzene ... the structure of your dossier could be used as an example for a technical dossier to be used as documentation during our discussions with the social partners.'                      2) In 1994 the Federal Minister for Work and Social Order in Germany wrote, referring to the</p>	<p>There will be included further physical exposures, exposures to heavy loads and spinal strain.</p>



Opinions of major user groups on the use, quality, and effectiveness of the system	Plans for further development of the system, other general and evaluative comments
<p>conversion of the existing-substances-regulation in the EU: ‘... the Berufsgenossenschaften carried out a very successful and trend-setting work during the treatment of existing-substances. ... the global experiences and knowledge of the Berufsgenossenschaften concerning the practice in small and medium-sized enterprises were included into the evaluation of substances referring to the existing-substances program.’</p> <p>6. France-Accidents</p> <p>The Ministry of Labour/DARES declares that the statistical data of CNAMTS offer a relatively complete picture on work accidents and occupational diseases in France. The data make it possible, to some extent, to develop basic policies in the direction of safer and healthier working conditions.</p> <p>However, the Ministry of Labour/DARES underlines that the CNAMTS-data unfortunately lack company-information and information on the conditions under which the accidents and diseases developed, what makes it difficult to use them for the development of preventive measures.</p> <p>Secondly, the Ministry of Labour/DARES stresses that only ‘legally and financially recognised’ accidents and diseases are included in the system. Many studies have revealed this phenomenon of ‘under-declaration’. Thirdly, the Ministry points out that the CNAMTS-data do not include several sectors, such as the government and the health care sector.</p> <p>The Ministry believes that, for a better understanding of accidents and diseases, these points of view have to be taken into account.</p> <p>Opinion of Employer’s organisation’s MEDEF: It is detailed information issued by a reliable source. The results gathered to build these statistics are based on verifiable and exploitable data.</p> <p>This gives to the statistics an incontestable credibility. However, the delay in the publication of the final statistics is understandable, but deplored.</p> <p>In order to improve this statistical tool, it would be necessary to get more detailed information about commuting accidents. It would also be necessary to get more detailed information about the costs of the occupational injuries (accidents and diseases).</p> <p>Opinion of Employees’ organisation CFTC: The statistics about occupational injuries are very useful. However, it would be necessary to publish them in a more lively way. Also, a debate could be organised about the findings of these statistics. These evolutions could be undertaken when we shall be able to use effectively the present statistics.</p> <p>Opinion of CFE-CGC (workers union): The CNAMTS system about occupational injuries gives an excellent mark for the evaluation of the occupational injuries’ trends. However, the analysis of the accidents’ factors is obsolete and too imprecise to be useful. The data published on occupational diseases (cases recognised by the Social Security) do not reflect</p>	<p>Yes, a completely new system is currently under construction and should be implemented within the next two years.</p> <p>The main purpose of the future system is to allow further analysis of occupational injuries by giving more information on each accident or disease and on the victim (real cost, detailed circumstances of the accidents, etc.). CNAMTS also want to have greater possibilities of calculating relations between accidents, or diseases, and economic characteristics of the employees, etc.</p> <p>CNAMTS shall have to gather all data in only one place at an elementary level, using the data warehouse techniques.</p> <p>What makes the present system work and what justifies all this effort, is the compensation of the victims and the calculation of the premiums to be paid by the employers.</p>

Opinions of major user groups on the use, quality, and effectiveness of the system	Plans for further development of the system, other general and evaluative comments	
the reality of the professional pathology.		
7. Italy-Accidents & Diseases	<p>Employer unions and trade unions (both organisation who use quite often INAIL's data) were interviewed by telephone. Their answers refer to INAIL's Data Bank (a data base made of more than three millions tables and available on the INAIL-website, updated every six months and with a section dedicated to monthly data on accidents, offering data updated to the last previous month). The answers show that the Data Bank is well known and frequently used. Nobody thinks it is not sufficient. Some would like it better organized with a different structure, a more flexible system, adaptable to each user specific need, instead of pre-set tables.</p> <p>With respect to the ESAW/3 system, it is quite known that INAIL is the first European Institute what already started to put into practice the ESAW phase 3 and therefore in a short time will also face this problem with respect to the data bank. INAIL already planned a complete <i>restyling</i> of the Data Bank based on the new ESAW-needs.</p>	<p>The system is already developing towards a more dynamic data bank (Data Warehouse). This allows the users to build up their own frame/table for analysis, with multiple search functions. Data transfer to and from Regional Administration Offices is already underway.</p>
8. Spain-Accidents & Diseases	<p>We have received answers about this item from two Spanish regional governments. They declare that the main use of this system is to provide a surveillance system to compare incidence rates, trends and regional comparisons. Its capability to identify relationships between different factors and outcomes could provide a useful preventive tool.</p> <p>The capital weak point is the content and filling of the declaration form. The form and its content has not got a suitable design focused on preventive information. On the other hand, the filling procedure quality could be improved.</p> <p>The opinions about the future development of the system are focused on quality improvement, modernising and notification with the help of electronic procedures to guarantee quality and a faster system.</p>	<p>There are plans for the renovation of the Occupational accident form. Two changes are considered:</p> <ol style="list-style-type: none"> <li>1. To change the information included in the Form so that it can be used more efficiently to characterise the type of accident and the groups of workers/branches affected. By this the information could be more effective to set priorities in the activities of the labour/OSH authorities. There will be more information about nationality, self-employed, subcontracted enterprises, traffic accidents, preventive management and availability of risks assessment. The Eurostat-codes will also be used to describe the accidents.</li> <li>2. To establish a new system that permits the electronic declaration of occupational accidents. This will reduce the gathering period, make the data processing easier, and increase the data quality. This new system will also permit to the authorized users to have access to information sooner than nowadays. There are also future plans to implement an electronic notification of the occupational diseases. Future changes will improve the information gathered so that it can be use more effectively in setting preventives policies.</li> </ol>

Opinions of major user groups on the use, quality, and effectiveness of the system	Plans for further development of the system, other general and evaluative comments	
9. Sweden-Work injury system	<p>Opinions on ISA have been studied by an independent investigator (Swedish Work Environment Authority, Report 1999, 11, in Swedish). The opinions of researchers, unions, employers, OSH-services, media and the Social Insurance Administration were gathered through personal interviews with 27 representatives of these groups. The general conclusion was that ISA data is of great importance in order to follow time trends in occupational accidents and occupational diseases. ISA data is also of great importance in finding risk groups in the work environment. The data can also be used as information in research programs, etc. aimed at identifying where and how work related injuries arise. One problem is that the system is dependent on external factors that affect the motivation to report work related injuries, e.g. changes in the insurance system.</p>	<p>With the electronic declaration, the statistics will be available sooner and the overall quality will be improved.</p>
10. UK-Illnesses & Diseases	<p>There is wide agreement that a multi source approach (SWI-ODIN) is appropriate, but also quite a lot of frustration with the lack of clarity that this can generate. Although some have questioned the validity of self-reported illness levels, these data have been generally accepted as a valid, though imprecise, guide to the scale of problems such as stress and musculoskeletal disorders. Further development work is planned. HSE's statistical system is currently under review, and this will give a detailed picture of users' views.</p>	<p>A programme of statistical developments is planned building on these systems. These are outlined in the Statistical Note. It is intended that the HSE's current strategies, which have set targets for occupational health, will be monitored by reference to these systems, but the methodology for this is still under development. A description of the approach, and programme of methodological development has been published (Achieving the Revitalising Health and Safety targets: statistical note on progress measurement <a href="http://www.hse.gov.uk/statistics/statnote.pdf">http://www.hse.gov.uk/statistics/statnote.pdf</a>).</p>
11. UK-Injuries & Diseases	<p>A review in 2001 identified that HSE might get improved value for its statistical work and a Statistics review has been established to take forward a programme of projects to this effect. The review and programme is assisted by a user group which includes a number of external users. Recommendations:</p> <ol style="list-style-type: none"> <li>1. A new bulletin with key H&amp;S and enforcement statistics.</li> <li>2. More detailed statistics on HSE's web site, including a wider range of topics, for example, better identification of industries.</li> </ol>	<p>The RIDDOR regulations will be reviewed this year, in the course of quinquennial reviews.</p>

	<b>Opinions of major user groups on the use, quality, and effectiveness of the system</b>	<b>Plans for further development of the system, other general and evaluative comments</b>
<p>12. Finland- Occupation &amp; Cancer</p>	<p>3. More detail is generally required. 4. A new coding system for the call centre will lead to more detail on what happened, and with what equipment agents.</p> <p>International and national review committees and regulation officials have often ask for our results, even the unpublished ones. Media is keen on obtaining rapid numerical answers to their ‘burning’ questions on (or rumors on) occupation-related hazards.</p>	<p>Further periods of cancer data will be added and non-cancer outcomes considered. When time goes, newer exposure data become relevant and will then be utilised in the analyses. The high coverage and accuracy of cancer data and occupational data guarantee that the occupation-specific cancer risk estimates are unbiased.</p> <p>In advance, we suspected that group-specific estimates of proportions of persons exposed to certain work-related agent and average exposure levels of those exposed might dramatically dilute observed dose-response trends. However, tests have proven that even if the absolute risk estimates in occupational groups of highest exposure may be markedly lower than the risk among individuals with highest exposure, the trends of increasing risk by increasing exposure do not disappear.</p>
<p>13. Denmark- Hospitalisation</p>	<p>1. The Danish Working Environment Service declares that the Occupational Hospitalisation Register is a good source for knowledge about excess relative risks of hospitalisations by industries and occupations. OHR is therefore, in combination with other sources, a useful tool to point out industries and job characterized by ill health. The Danish Working Environment Service has used data from OHR since they were available in the beginning of the 1990’es, but the source was not easily accessible. That has changed after The National Institute of Occupational Health has published the data on their internet homepage. Those published overviews of excess relative risks are very user friendly and that may imply that OHR will become much more widely used.</p> <p>2. The Sectoral Working Environment Council in the Building and Construction says that the OHR is used to identify the incidence of hospitalisations by diagnosis and industries. In that perspective is it interesting to identify diseases, where the building and construction industry differs from other industries and/or which groups within the building and construction industry have particular health problems compared with the entire industry. Such results constitute, together with other data, the basis for health and safety measures.</p>	<p>The aim is to establish a permanent system. Many ad hoc studies indicates that a permanent Occupational Hospitalization Register would be a very valuable and valid instrument in priority setting and surveillance as well as a good basis for further research.</p> <p>We consider the OHR a unique source of valid information nationally and internationally. The value of the system increases as more and more information is stored.</p>

	<b>Opinions of major user groups on the use, quality, and effectiveness of the system</b>	<b>Plans for further development of the system, other general and evaluative comments</b>
	<p>The results from OHR used in our work originate from special analyses or from information published by NIOH on the Internet. It should be mentioned that the presentation of data from OHR on the Internet is very reader friendly. Data is presented in well-arranged tables. High and low risk and non-significance are illustrated with colours, which makes review of data more readable.</p> <p>3. As a researcher I am a 'regular user' of the register. I find the Registry very useful, and many relevant studies could be conducted with the data available. Information on lifestyle factors, specific work environment factors and other possible confounding factors are needed. I hope the proposed expansion of the Registry with data from the National Cohort at an aggregated level and suggested methodological work will be accomplished, as this should make the Registry even more useful. As the data on outcome are crucial, more validation studies on disease classification could be conducted to heighten the quality of information - but this is the work of the data suppliers at the National Board of Health and Statistics Denmark.</p> <p>In dealing with the staff at the Registry, I have always found them very enthusiastic and supporting, and have suggested other researchers to contact the Registry for discussing ideas. The data have always been supplied within a remarkable short time span and ideas for further analysis have been accepted without hesitation. [Henrik Bøggild, MD, PhD].</p>	
14. Finland-Absenteeism	The general opinion with respect to the social security statistics is that they are useful and reliable.	<p>Developments are mostly due to legislative changes. There is a general tendency to make statistics more available via the internet.</p> <p>Data may be refined using Statistics Finland data on working hours branch wise together with this data.</p>
15. Denmark-Prevention in Companies	Not yet known since the results have not yet been published. But the social partners are involved in the design and development of the Danish Surveillance system.	The system will be evaluated and experiences will be used to improve the existing system.
16. Netherlands-OSH Balance Report	<p>Of the 2000 edition of the Arbobalans 65,000 copies have been distributed, mainly on request. User groups are the management of high-risk companies, employee councils, OSH-services. Also the Arbobalans is freely available (in Dutch) on the Internet of the Ministry of Labour (<a href="http://www.minszw.nl">www.minszw.nl</a>). The Arbobalans is used as a basic document for national level consultations between government, unions and employers organisations on OSH-issues.</p> <p>From the side of the unions the Arbobalans is seen as important, helpful, reliable. More detail</p>	<p>New issues are identified each year. It is expected by the Ministry of Labour that future issues of the Arbobalans will contain more information on interventions, effectiveness and the developments in the national preventive capacity.</p> <p>This system is in fact a publication of a compilation of data from several systems run by several organisations.</p>

Opinions of major user groups on the use, quality, and effectiveness of the system	Plans for further development of the system, other general and evaluative comments	
17. Germany-OSH Status report	<p>is wanted (for example in the profession of the workers) as well as information on quality of OSH-services. The impact of the Arbobalans on branch- or companylevel is unknown. The national umbrella organisation of employers is actively involved in spreading information from the Arbobalans to branch organisations and employers of large companies. It also uses the information for policy development. In some cases more background information or more specific data are requested. These are not always available. Generally the issues presented are not new because they reflect the main OSH-issues at the moment.</p> <p>The annual preparation of the report is organised via an advisory board which is part of the quality assurance for the report. Members of the board are dateholder. The overall judgement of the system is positive.</p>	<p>Termination is not an option, major alteration are not to be expected.</p>
18. UK-Costs of Accidents	<p>The costs are mostly used by HSE, employers and unions. A survey on the use, the quality, and the effectiveness of the system has not been carried out, however we receive approximately 90 requests of information a year and users seem to be generally satisfied with the information provided.</p>	<p>We are currently considering various options to provide an update of the costs that is fit for purpose. At the moment termination is not an option, but there might be considerable changes in terms of the scope of the study (for example whether non-injury accidents should be included or whether costs need to be by region/ occupation/industry breakdown). Total cost estimates are needed by HSC/E to promote the case for more resources in the health and safety agenda. An evaluation of the impact that the knowledge of the costs of occupational health and safety failures may have on employers has not been done.</p>
19. Belgium-Safety index of companies	<p>The results have recently been discussed with the social partners inside the High Council for Prevention and Protection at work, at the occasion of the explanation, given by the director general of the Administration of safety at work, with regard to his view and policy for the next years. The social partners appreciated the results because, for the first time, they got a clear overview of the situation on some relevant features concerning safety at work, allowing them to understand which initiatives should have to be taken on sector level.</p>	<p>In 2002 the Labour inspectorate will implement an improved system with a better technique for awarding the scores. In the system in use, the employer who strictly observes the regulations on a certain feature, but no more, obtains a score of 2 on a maximum of 4. In the new system, employers who observe the prescription on a certain feature will obtain the score 3. If he is an example of good practice, he will obtain the score 4. The scores 0, 1 and 2 mean a violation of the prescriptions. At the same time the safety index system for temporary or mobile construction sites have been adapted in an identical way.</p>

Annex 9 User group opinions, and future plans and evaluative comments

Opinions of major user groups on the use, quality, and effectiveness of the system		Plans for further development of the system, other general and evaluative comments
20. Ireland-Promotion & Campaigns	-----	-----
21. Ireland-Accidents & Enforcements	-----	Database refining is ongoing and data cleaning is planned for further internal and potential external use
22. Netherlands-OSH Inspection Monitor	<p>The Ministry of Labour is heavily involved in the development and production of the Arbomonitor. The Arbomonitor - as well as the Arbobalans - is used as a basic document for national level consultations between government, unions and employers organisations on OSH-issues. From the side of the unions the Arbomonitor is seen as important, helpful, reliable.</p> <p>The national umbrella organisation of employers is actively involved in spreading information from the Arbomonitor to branch organisations and employers. It also uses the information for policy development. In some cases more background information or more specific data are requested. These are not always available. Generally the issues presented are not new because they reflect the main OSH-issues at the moment. Companies use information from the Arbomonitor to prepare for OSH-inspectorate visits.</p>	<p>The Arbomonitor 2001 is on its way to be published. Specific occupational risks included are working on height, machine safety, voluntary certification. In the future more attention will be given to preventive measures taken. Other specific issues for Arbomonitors to come are biological agents and vibrations. The Arbomonitor focusses mainly on legal requirements and much less on OSH-risks or the outcomes of the requirements. Therefore it is helpful for monitoring the proces of OSH interventions in The Netherlands, but not the effects in terms of risk reduction.</p>
23. Norway-Accidents & Inspections	<p>The information of the Labour Inspectorate website is very often used by 'own people'. Very often they want more disaggregate, more detailed information, for example on branches or professions, which is specially prepared for them.</p> <p>The Labour Inspectorate has the impression that the outside user are quite satisfied with the information provided.</p>	<p>Information regarding the enterprises (size, address, NACE-code, company-groups, i.e.) are bought form 'Statistics Norway'.</p> <p>Information regarding inspections, interventions, working environment standard in the enterprises are collected by labour inspectors.</p> <p>Working accidents are reported by the employers.</p>

## **Annex 10 Documents: reports and papers on the systems**

### **Titles of main publications wherein the system or the results of the system are described**

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| 1. France- Enquête National | <ul style="list-style-type: none"> <li>• Bué J. et Rougerie C. (août 1999), 'L'organisation du travail: entre contraintes et initiative (résultats de l'enquête sur les conditions de travail de 1998)', Premières Synthèses, n° 32-1, Dares. [Work organisation; between constraints and initiative].</li> <li>• Bué J. et Rougerie C. (juillet 1999), 'L'organisation des horaires de travail: un état des lieux en mars 1998', Premières Synthèses, n° 30-1, Dares. [Working time organisation: inventory in March 1998].</li> <li>• Cézard M. et Hamon-Cholet S. (avril 1999), 'Efforts et risques au travail en 1998', Premières Synthèses, n°16.1, Dares. [Efforts and risks at work in 1998].</li> <li>• Cézard M. et Hamon-Cholet S. (juillet 1999), 'Travail et charge mentale'. Premières Synthèses, n° 27.1, Dares. [Work and mental strain].</li> <li>• Cézard M. et Vinck L. (décembre 1998), 'Plus d'un salarié sur deux utilise l'informatique dans son travail'. Premières Synthèses, n° 53.2, Dares. [One out of two employees is using computers at work].</li> </ul>  |
| 2. France-Risks Survey      | <ul style="list-style-type: none"> <li>• Expositions aux contraintes et nuisances dans le travail - SUMER 1994 (Les Dossiers de la DARES - numéros 5 et 6 - Juillet 1999). [Exposures to constraints and nuisances at work - SUMER 1994].</li> </ul>   |
| 3. Spain-National Survey    | <p>Concerning the I National Working Conditions Survey (1987):</p> <ul style="list-style-type: none"> <li>• Ministerio de Trabajo y Asuntos Sociales, Encuesta Nacional de Condiciones de Trabajo 1987, Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), Madrid 1988.</li> </ul> <p>Concerning the II National Working Conditions Survey (1993):</p> <ul style="list-style-type: none"> <li>• Ministerio de Trabajo y Asuntos Sociales, Encuesta Nacional de Condiciones de Trabajo 1993, Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), Madrid 1995.</li> <li>• Monográfico en la revista del INSHT 'Salud y Trabajo' n° 107-108, 1995.</li> <li>• Zimmermann, M. et al., 'Encuesta Nacional de Condiciones de Trabajo: datos para la reflexión', en Revista Española de Salud Pública, Ministerio de Sanidad y Consumo, 1996, vol. 70, n° 4, pgs. 421-429.</li> </ul> <p>Concerning the III National working conditions survey (1997):</p> <ul style="list-style-type: none"> <li>• Ministerio de Trabajo y Asuntos Sociales, III Encuesta Nacional de Condiciones de Trabajo, Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), Madrid 1999.</li> <li>• Ministerio de Trabajo y Asuntos Sociales, 'III Encuesta Nacional de Condiciones de Trabajo. Avance de resultados'. Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), Madrid, 1998.</li> <li>• Ministerio de Trabajo y Asuntos Sociales, 'III Encuesta Nacional de Condiciones de Trabajo. Resumen de resultados'. Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), Madrid, 1998.</li> <li>• Almodóvar, A. et al. 'Análisis de las condiciones de trabajo: conocer para prevenir. III Encuesta Nacional de Condiciones de Trabajo' en la revista del INSHT 'Prevención. Trabajo y Salud', n° 0, pgs. 20-28 (Madrid 1999), y reproducido en la revista Cuadernos de Relaciones Laborales, n° 14, pgs. 33-48 (Madrid 1999).</li> <li>• Amuedo-Dorantes, C., 'Work Safety in the Midst of Increased Employment Flexibility: The Spanish Experience', San Diego State University,</li> </ul> |
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<b>Titles of main publications wherein the system or the results of the system are described</b>	
	<p>September 2000.</p> <ul style="list-style-type: none"> <li>• <a href="http://infoinsht/sst/statistics/enct_3.htm">http://infoinsht/sst/statistics/enct_3.htm</a></li> </ul> <p>Concerning the IV National Working Conditions Survey (1999):</p> <ul style="list-style-type: none"> <li>• Ministerio de Trabajo y Asuntos Sociales, IV Encuesta Nacional de Condiciones de Trabajo, Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), Madrid 2001.</li> <li>• Ministerio de Trabajo y Asuntos Sociales, 'IV Encuesta Nacional de Condiciones de Trabajo. Avance de resultados'. Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT), Madrid, 2000.</li> <li>• Pinilla, F.J., 'Flexibilidad contractual y accidente de trabajo: un enfoque sociológico' en Revista de Derecho Social. Separatas, nº 11, pgs. 223-231, 2000.</li> <li>• <a href="http://infoinsht/sst/statistics/enct_4.htm">http://infoinsht/sst/statistics/enct_4.htm</a></li> </ul>
4. Sweden-National Survey	<p>'Arbetsmiljön 2001' (etc.). 'Arbetsorsakade besvär 2001' (etc.)  Summaries in English, heads of tables in English, short version in English 1999 ('The Work Environment 1999').  All these publications could be found on internet - <a href="http://www.av.se">www.av.se</a>.</p>
5. Germany-Exposure Database	<p>Documents wherein the system is described:</p> <ul style="list-style-type: none"> <li>• Stamm, R.: BG Measurement System - Hazardous Substances and the Exposure Database MEGA. In: Safety Science Monitor. 1 (1997) Issue 2, Article 5</li> <li>• Stamm, R.: MEGA-Database - One Million Data Since 1972. In: Applied Occupational &amp; Environmental Hygiene. 16(2) (2000), page 159 - 163</li> </ul> <p>Documents wherein results of the system are described:</p> <ul style="list-style-type: none"> <li>• Bock, W.; Brock, T.H.; Stamm, R.; Wittneben, V.: Existing commercial chemicals - Exposure at the workplace. BGAA-Report 1/99. Published by Hauptverband der gewerblichen Berufsgenossenschaften (HVBG), Sankt Augustin 1998 (<a href="http://www.hvbg.de/d/bia/pub/rep/rep01/bgaa199e.htm">http://www.hvbg.de/d/bia/pub/rep/rep01/bgaa199e.htm</a>)</li> <li>• Various reports e.g. on carcinogenic substances, asbestos, quartz and welding published in German</li> </ul>
6. France-Accidents	<ul style="list-style-type: none"> <li>• Statistiques Financières et Technologiques des Accidents du Travail - Années 1998/99/00 - (Financial and Technological Statistics about Occupational Accidents - Years 1998/99/00). This publication also includes information about occupational diseases and commuting accidents).</li> <li>• Statistiques Technologiques des Accidents du Travail et des Maladies Professionnelles - Remarques - Année 2000. (Technological Statistics about Occupational Accidents and Diseases - Commentaries - Year 2000.</li> <li>• Statistiques Trimestrielles des Accidents du Travail - Occupational Accidents Quarterly Statistics - Published every three months, it gives estimations about the number of accidents for the eight past known quarters (5 months delay), refining the estimations at each publication.</li> </ul>
7. Italy-Accidents & Diseases	<p>Statistiche per la prevenzione, notiziario statistico</p>
8. Spain-Accidents & Diseases	<p>Anuario de estadísticas sociales y laborales. <a href="http://www.mtas.es/Estadisticas">www.mtas.es/Estadisticas</a></p>

<b>Titles of main publications wherein the system or the results of the system are described</b>	
9. Sweden-Work injury system	<p>Arbetsjukdomar och arbetsolyckor 1999 (etc), Arbetsskador 2000 (etc). These reports are published yearly and contain a summary in English. In English:</p> <ul style="list-style-type: none"> <li>• ISA - The Swedish Information System - scope, content and quality. Report 2000:16. The Swedish Work Environment Authority, Stockholm, Sweden, 2000.</li> <li>• Occupational Accidents and Work-related diseases in Sweden. Report 2000:15. The Swedish Work Environment Authority, Stockholm, Sweden, 2000. These publications can be found on <a href="http://www.av.se">http://www.av.se</a></li> </ul>
10. UK-Illnesses & Diseases	<p>Main results summarised annually in Health and Safety Statistics (<a href="http://www.hse.gov.uk/statistics/2001/hsspt2.pdf">http://www.hse.gov.uk/statistics/2001/hsspt2.pdf</a>). SWI surveys are also published as separate reports, the most recent being Self-reported work-related illness in 1998/99 (<a href="http://www.hse.gov.uk/hthdir/noframes/euro9899.htm">http://www.hse.gov.uk/hthdir/noframes/euro9899.htm</a>)</p>
11. UK-Injuries & Diseases	<p>Health and Safety Statistics volume 2000/01.</p>
12. Finland-Occupation & Cancer	<ul style="list-style-type: none"> <li>• Pukkala E. Cancer risk by social class and occupation. A survey of 109,000 cancer cases among Finns of working age. Contributions to Epidemiology and Biostatistics, vol 7. Basel, Karger 1995.</li> <li>• Plus numerous specific update articles in scientific journals.</li> <li>• Kauppinen T, Toikkanen J, Pukkala E. From cross-tabulations to multipurpose exposure information systems: a new job-exposure matrix. Amer J Ind Med 1998;33:409-17.</li> </ul>
13. Denmark-Hospitalisation	<ul style="list-style-type: none"> <li>• <a href="http://www.ami.dk/statistik">www.ami.dk/statistik</a></li> <li>• Tüchsen F, Bach E, Andersen O, Jørgensen J. Occupation and hospitalization 1980-84. All diagnoses. [Erhverv og hospitalsindlæggelse, 1980-84. Alle indlæggelser uanset diagnose]. The Work Environment Fund, Danish National Institute of Occupational Health and The Labour Inspection Services [Arbejds miljøfondet, Arbejds miljøinstituttet og Arbejdstilsynet], Copenhagen 1989.</li> <li>• Tüchsen F, Bach E. Occupation and hospitalization. Selected diagnosis. [Erhverv og hospitalsindlæggelse. Udvalgte diagnoser.] The Working Environment Fund [Arbejds miljøfondet], Copenhagen 1992.</li> <li>• Tüchsen F, Bach E, Marmot M. Occupation and hospitalization with ischemic heart Diseases: A new nationwide surveillance system based on hospital admissions. Int J Epidemiol 1992; 21: 450-459.</li> <li>• Tüchsen F. Working hours and ischaemic heart disease in Danish men. A 4-year cohort study of hospitalization. Int J Epidemiol 1993; 22: 215-221.</li> <li>• Tüchsen F, Jeppesen HJ, Bach E. Employment status, non-daytime work and gastric ulcer in men. Int J Epidemiol 1994; 23: 365-70.</li> <li>• Jensen MV, Tüchsen F, Bach E. Erhvervsindlæggelsesregistret, 1. Det nye register, 2. Erhverv og bevægeapparatssygdom. Copenhagen 1994: Arbejds miljøfondet.</li> <li>• Jensen MV, Tüchsen F. Occupation and lumbar disc prolapse. [Erhverv og diskusprolaps i lænden]. Ugeskr Laeger 1995; 157: 1519-23.</li> <li>• Bøggild H, Tüchsen F, Ørhede E. Occupation, social position and chronic inflammatory bowel disease in Denmark. Int J Epidemiol 1996; 25: 630-637.</li> <li>• Tüchsen F, Andersen O, Costa G, Filakti H, Marmot M. Occupation and ischaemic heart disease in some EC countries. A comparative study of occupations at potential high risk. Am J Ind Med 1996; 30: 407-414. (Appendix figures published on Job Stress Network:</li> </ul>

<b>Titles of main publications wherein the system or the results of the system are described</b>	
	<p>www.workhealth.org/whatsnew).</p> <ul style="list-style-type: none"> <li>• Jensen MV, Tüchsen F, Ørhede E. Prolapsed cervical intervertebral disc in Male drivers in Denmark 1981-90. A longitudinal study on hospitalization in Denmark. Spine 1996; 20: 2352-55.</li> <li>• Tüchsen F. Stroke in professional drivers in Denmark 1981-90. Int J Epidemiol 1997; 26: 989 - 994.</li> <li>• Tüchsen F, Endahl L. Increasing inequality in ischaemic heart morbidity among employed men in Denmark 1981-1993: the need for a new preventive policy. Int J Epidemiol 1999;28:640-644.</li> <li>• Tüchsen F, Hannerz H. Social and occupational differences in chronic obstructive lung disease in Denmark 1981-1993. Am J Ind Med 2000; 37: 300-306.</li> <li>• Tüchsen F, Jensen AA. Agricultural work and the risk of Parkinson's disease in Denmark, 1981-1993. Scand J Work Environ Health 2000;26: 359-62.</li> <li>• Tüchsen F, Krause N, Hannerz H, Burr H, Kristensen TS. A 3-year prospective study of standing at work and varicose veins. Scand J Work Environ Health 2000;26: 227-236.</li> <li>• Baarts C, Mikkelsen KL, Hannerz H, Tüchsen F. Use of a national hospitalization register to identify industrial sectors carrying high risk of severe accidents. A three-year cohort study of more than 900,000 Danish Men. Am J Ind Med 2000; 39: 619-27.</li> <li>• Hannerz H, Tüchsen F. Hospitalization among male drivers in Denmark. Occup Environ Health 2001; 58: 253-260.</li> <li>• Hannerz H, Tüchsen F. Hospitalization among female home-helpers in Denmark 1981-1997. Am J Ind Med 2002; 41: 1-10.</li> </ul>
14. Finland-Absenteeism	Sickness insurance and family benefits statistics 2000 (T 11:12; in Finnish)
15. Denmark-Prevention in Companies	Until now there are no publications available. Eight reports will be published (for internal use) from the survey - most of them will be published this year. The results will be published in the complete report of 'Surveillance of the progress in action programme for a clean working environment' in 2003.
16. Netherlands-OSH Balance Report	<ul style="list-style-type: none"> <li>• Arbobalans 2000, Ministerie van Sociale Zaken en Werkgelegenheid, Den Haag, November, 2000.</li> <li>• Arbobalans 2001, Ministerie van Sociale Zaken en Werkgelegenheid, Den Haag, November, 2001, Publication number B274.</li> </ul>
17. Germany-OSH Status report	<a href="http://de.osha.eu.int/index.cfm?FA2EDB51B82D4FB785F4FC03FA40E95F">http://de.osha.eu.int/index.cfm?FA2EDB51B82D4FB785F4FC03FA40E95F</a>
18. UK-Costs of Accidents	The costs to Britain of workplace accidents and work-related ill health in 1995/96, HSE Books, 1999, ISBN 0 7176 1709 2
19. Belgium-Safety index of companies	Jaarverslag 1999-2000 van de Administratie van de arbeidsveiligheid' (Annual report 1999-2000 of the Administration of safety at work)
20. Ireland-Promotion	Health & Safety Authority, Annual Reports

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<b>Titles of main publications wherein the system or the results of the system are described</b>	
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& Campaigns	
21. Ireland-Accidents & Enforcements	Health and safety Authority, Annual Reports
22. Netherlands-OSH Inspection Monitor	<ul style="list-style-type: none"><li>• Arbomonitor 1999, Arbeidsinspectie, July 2000, Elsevier Bedrijfsinformatie. 's-Gravenhage.</li><li>• Arbomonitor 2000, Arbeidsinspectie, October 2001, Elsevier Bedrijfsinformatie, Doetinchem.</li></ul>
23. Norway-Accidents & Inspections	Norwegian Labour Inspectorates web-site (arbeidstilsynet.no). Norway participate in the 'ESAW'-project carried out by Eurostat, and information regarding working accidents are published as a part of this project.

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## Annex 11 The group of system-information suppliers

system number	Information supplier
1	Eurogip (Jean-Loup Wannepain) with Ministry of Labour
2	Eurogip (Jean-Loup Wannepain) with Ministry of Labour
3	National Institute for Safety and Health at Work/INSHT (Mercedes Tejedor Aibar & Victoria de la Orden)
4	National Institute for Working Life/NIWL (Anders Wikman)
5	Institute for Occupational Safety of the Central Organisation of the Statutory Accident Prevention and Insurance Institutions in Industry/ BIA (Roger Stamm)
6	Eurogip (Jean-Loup Wannepain) with CNAMTS
7	National Institute of Insurance against Accidents at Work/INAIL (Gianfranco Ortolani & Annamaria Iotti)
8	INSHT (Mercedes Tejedor & Victoria de la Orden)
9	Work Environment Authority/AV (Jan Weiner)
10	Health & Safety Executive (John Hodgson)
11	Health & Safety Executive (Graham Stevens)
12	Finnish Cancer Registry (Eero Pukkala)
13	National Institute of Occupational Health/AMI (Finn Tüchsen)
14	Ministry of Social Affairs and Health (Asko Aalto)
15	National Institute of Occupational Health/AMI (Else Bach)
16	TNO Work & Employment (Anita Venema) with Ministry of Labour
17	Federal Institute for Occupational Safety and Health/BAuA (Karl Kuhn & Robert Säverin)
18	Health & Safety Executive (Fiammetta Gordon)
19	Ministry of Employment and Labour (Milles Raekelboom)
20	Health & Safety Authority (Yukiko Kobayashi)
21	Health & Safety Authority (Yukiko Kobayashi)
22	TNO Work & Employment (Anita Venema) with Ministry of Labour
23	Directorate of Labour Inspection (Kari Aamot)