European Agency for Safety and Health at Work

MONITORING
WORKING PAPER

A review and analysis of a selection of OSH monitoring systems

European Agency
for Safety and Health
at Work

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Report to the European Agency for Safety and Health at Work,
by Peter Smulders, TNO Work and Employment,
Hoofddorp, the Netherlands,
in collaboration with a group of partner organisations

European Agency
for Safety and Health
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Foreword

A pilot study carried out by the European Agency for Safety and Health at Work in 1998–2000 on the 'State of occupational safety and health in the European Union' ([1]) took a first step towards the development of a system for monitoring occupational safety and health (OSH) in the European Union.

As a follow-up to this work, the Agency commissioned TNO Work and Employment to carry out a review and assessment of current OSH monitoring systems in the Member States. The project explored the feasibility of a common European approach in monitoring OSH and formed the basis for discussions at a joint workshop with the Danish EU Presidency on the feasibility of a possible future monitoring system at European level.

The Agency wishes to thank the Focal Points, the Expert Group on OSH monitoring and all other individuals involved in this information project for their valuable contributions and comments.

European Agency for Safety and Health at Work
Bilbao, June 2003

([1]) The reports of the pilot study (main report and summary) are available on the European Agency's web site under http://agency.osha.eu.int/publications/reports/stateofosh/.

Introduction

This project set out to review and analyse a representative selection of occupational safety and health (OSH) monitoring systems currently used in the European Member States.

The first chapter of this report sets the background for the project by reviewing the major developments that have taken place in recent years in the field of OSH monitoring.

Subsequent chapters give an overall analysis of the monitoring systems, highlighting interesting elements and pointing out shortcomings in the existing schemes.

In addition to the analysis, the report makes suggestions about the content of a possible OSH monitoring system at European level. These suggestions especially take into account the new Community strategy on OSH, the outcome of work being 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 systems described and analysed are not necessarily 'the best' but have been chosen to represent the variety available in the European Union with respect to aim, use, content, and methodology. Therefore, the list includes worker surveys, databases, registers of accidents, diseases, and/or absenteeism, policy-directed systems and intervention- and OSH management-oriented systems. The choice also includes systems from as many Member States as possible.

Eurostat's labour force survey and the European Foundation's working conditions survey are not included in the assessment of systems, but are described in the following chapter on recent developments.

Table 1: Systems described

Country	Type of system	System name (in English)
1. France	Worker survey	Working conditions survey (enquête nationale sur les conditions de travail)
2. France	"	Medical monitoring survey of professional risks (SUMER)
3. Spain	"	National working conditions survey (ENCT)
4. Sweden	"	The work environment statistics/survey
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	"	Database of work, accidents, diseases, absenteeism, work disability and inspections
8. Spain	"	Occupational accidents and diseases statistics
9. Sweden	"	The work injury information system (ISA)
10. United Kingdom	"	Combined use of 'Self-reported work-related illness survey' (SWI) and 'Occupational disease intelligence network' (ODIN)
11. United Kingdom	"	Combined use of reporting of injuries, diseases and dangerous occurrences regulations 1995 (Riddor) and labour force survey (LFS)
12. Finland	"	Occupational 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, which is one of the three tracks, of the 'Surveillance of the progress in the action programme for a clean working environment in 2005'
16. Netherlands	"	OSH balance report (Arbobalans; 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. United Kingdom	"	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	"	HSA promotion and campaign activities
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

Recent developments

European OSH monitoring system studies

This chapter reviews three earlier studies on OSH monitoring in Europe and four important European OSH data systems from the European Foundation in Dublin and Eurostat in Luxembourg. It also describes the background to these initiatives through an examination of the European strategic goals, policies and guidelines in the field of employment and OSH.

Finally, a brief overview is given of three other relevant documents — from the International Labour Organisation (ILO), the World Health Organisation (WHO) and Eurostat.

Systems for the monitoring of working conditions relating to health and safety (European Foundation, 1991)

In 1991, the European Foundation summarised the monitoring systems on working conditions that were available in the 12 EU countries. The systems covered in the inquiry were classified into the following three types.

1. **Systems describing working conditions in a country, region, sector, etc.** The instruments falling into this category are surveys and (micro-)censuses.
2. **Systems describing health and safety 'outcomes' of work.** Consisting principally of reported occupational accidents and diseases, as well as work incapacity (sickness absence).
3. **Other systems, containing 'indirect data' on working conditions.** Comprising databases and registers as well as documentation systems on substances, exposures, tools, etc.

The European Foundation formulated the four recommendations below with respect to monitoring safety and health in the Member States.

1. Community-wide and periodically updated overviews of monitoring systems are essential.
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 EU countries is needed.
4. International cooperation and network integration should be stimulated so as to give insight into how others are dealing with similar problems and to benefit from foreign experiences.

The first recommendation — the production of an overview of monitoring systems in the EU — was put into practice in 1995.

The third recommendation was realised very soon after the publication of the report, with the first European working conditions survey in 1991/92 in 12 EU countries (see below).

European health and safety databases (European Foundation, 1995)

In 1995, the European Foundation published the *European health and safety database* (HASTE) with descriptive summaries of systems for monitoring health and safety at work.

The report included 212 OSH monitoring systems, classified into 15 types, from the 15 European countries, Norway, the Czech Republic, the European Union and the World Health Organisation. Table 1, below, lists the types of systems included in the HASTE report.

Table 2: 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 censuses	4
14.	Documentation centres	4
15.	Others	11
	Total number of systems described	212

The table shows that across Europe, registers of occupational accidents and diseases and exposure data, as well as quality of working life surveys, were most common with over 25 monitoring systems in each category.

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 OSH in the European Union.

This study was based on a questionnaire and presented information in the following areas:

- quantitative data from the second European survey of working conditions (European Foundation, Dublin, 1996) per risk factor or exposure indicator;
- a comparison of 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 per risk factor;
- evaluation of the present situation.

Information was gathered with the help of the Focal Points in the Member States (the Agency's principal information network). The report provided 'a comprehensive factual qualitative snapshot of the state of OSH in the EU' and 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 too 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).

In addition, the pilot project concluded the following:

- 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);

- 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;
- information on some risk areas (or exposure categories), such as stress and work pace, was scarce and needs to be improved;
- in future, special attention has to be given to the relative importance of risk areas or exposure indicators ('priority setting');
- information on risk areas was rarely available for important risk indicators, such as age, gender, employment status and company size;
- further clarifications are required of some special issues, especially with respect to preventive actions taken by Member States (type of action, broad or focused manner, etc.).

From these conclusions it was clear that the OSH monitoring systems to be described in the 2002 project should fit well into the model described by the European Agency, which means that the systems should allow:

- establishment of priorities between risk areas and/or risk categories;
- formulation of policies at government and branch level.

This implies that the systems should describe more than one risk area or health and safety effect.

European OSH data systems

European Foundation surveys on working conditions

In 1991/92, the first European survey on working conditions (ESWC) was carried out under the supervision of the European Foundation in Dublin with the participation of 12 EC countries. The questionnaire was limited to 19 questions and 12 819 workers interviewed in their home environment.

In 1995/96 and in 2000, Austria, Finland and Sweden also participated in the survey, and the questionnaire was extended so that it comprised questions on demography, job, company, physical work environment, time, organisational work environment, social work environment, and 'outcomes'. In 2000, the survey also included questions related to domestic work (unpaid work).

Almost 16 000 workers were interviewed face-to-face in 1995/96 and in March 2000 this figure reached 21 703. In 2000, around 1 500 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 12 candidate countries (CCs) 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 and Merlieé (2001).

Eurostat labour force surveys (LFS)

The labour force survey 2000 (whose results were published by the European Commission and Eurostat in 2001) includes data from all 15 Member States on:

- population and households;

- employment:
  - — employment rates,
  - — those in employment,
  - — self-employment,
  - — employees,
  - — temporary employees,
  - — part-time employment,
  - — those 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 ranged from 5 344 in Luxembourg, 11 608 in Belgium, 16 212 in Portugal, for example, up to 75 699 in France and 148 007 in Germany. In some countries, not households, but addresses or persons were the sample unit. The response rate varied from 55 to 60 % in the Netherlands to 98 % in Germany.

The results of the labour force survey 2000 were published in 2001.

European statistics on accidents at work (ESAW)

European statistics on accidents at work (ESAW) cover all accidents that result in an absence of at least four calendar days.

Some problems remain in comparing the number of accidents between Member States, even after standardising differences in the structure of economic activity. In some countries, self-employed and family workers are not included. Others exclude road accidents, even when they happen in the course of a person's work. The main problem, however, stems from differences in the healthcare 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 the Employment and Social Affairs DG, together with the Member States) to harmonise the criteria and the methodologies used to record data on accidents at work. 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 has been implemented progressively in the Member States since 2001, following national schedules taking into consideration the adaptations needed in the national reporting 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 — 1998–99* (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).

European occupational diseases statistics (EODS)

The second harmonised statistical tool, developed by Eurostat and the Employment and Social Affairs DG, 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, on 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.

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 work:

- number of health problems; with, if there is one or more, for the most serious of these:
- type of problem;
- number of day's absence from work (in the past 12 months);
- job which caused or aggravated the problem;
- 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.

Overall, between 544 000 and 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 — 1998–99* (EC, Eurostat, 2001) and in *Work-related health problems in the EU — 1998–99* (EC, Eurostat, 2001).

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'.

EC on 'Employment and social policies: a framework for investing in quality'

In this document (COM(2001) 313 final, 20.6.2001) the Commission 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 the following 10 different areas of 'Quality in work':

1. intrinsic job quality
2. skills, lifelong 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 using data from the EU labour force survey, the European statistics on accidents at work, and from the European Foundation, to monitor these quality indicators.

EC on 'Structural indicators'

This report (COM(2001) 619 final, 30.10.2001) represents the main outcome of the Commission's second year of work on structural indicators. Some new indicators were included and others had to be dropped. The new list includes 36 indicators in the following six fields for the *Synthesis report 2002*:

1. general economic background
2. employment

3. innovation and research
4. economic reform
5. social cohesion
6. environment.

Employment includes the following six indicators:

1. employment rate
2. employment rate of older workers
3. gender pay gap
4. tax rate on low-wage earners
5. lifelong learning
6. accidents at work.

'Accidents at work' was included as a new indicator and in addition, the Commission suggested that developmental work 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.

EC on 'A new Community strategy on health and safety at work 2002–06'

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 quality of work, and feature among the indicators recently adopted in the wake of the Commission's report of 20 June 2001 entitled 'Investing in quality'.

This document (COM(2002) 118 final, 11.3.2002) sets out the Community's strategy on health and safety at work 2002–06 which 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 psychosocial nature. As such it is geared to enhancing the quality of work, and regards a safe 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, 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 highlights 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 that weigh heavily on economics and societies.

The Commission 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 the second half of 2002, the Commission presented a communication assessing the work of the Agency, and spelling out the role the Agency should be playing. It should:

- set up a 'risk observatory' based on examples of good practice;
- organise exchange 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 database of best practices and information concerning ways of integrating disabled people and adapting equipment and the work environment to their needs.

EU Council on 'Guidelines for Member States' employment policies 2001'

This Council decision (EC/31 of 19 January 2001) states 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** by:

1. stepping up and strengthening enforcement;
2. providing guidance to help enterprises, especially SMEs, to comply with existing legislation;
3. improving training on OSH; and
4. promoting measures for the reduction of occupational accidents and diseases in traditional high-risk sectors'.

Other relevant documents

ILO InFocus programme on safety and health at work and the environment

The International Labour Organisation (ILO) was founded to ensure everyone the right to decent work. In recent decades, industrialised countries have seen a clear decrease in serious injuries, because of real advances in making the workplace healthier and safer. The challenge for the 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.

The major outputs of 'SafeWork' will include several monitoring-related products, such as:

- the *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 OSH to determine the action needed to update and possibly consolidate them, and to translate them into practical policy and programmatic tools;
- a databank on policies, programmes and good enterprise-level practices;
- a statistical programme to develop new survey tools to 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.

WHO/FIOH report entitled '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 the following.

- An OSH 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.
- OSH 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).

Eurostat/CEIES 2001 — Seminar on 'Health and safety at work: EU statistics'

In May 2001, the CEIES (European Advisory Committee on Statistical Information in the Economic and Social Spheres) organised the 13th seminar in Dublin on '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, the discussions easily broadened and connected to education, work and working conditions, labour market flexibility, productivity, labour intensity, training and health in general.

The seminar addressed the views of producers and users on measuring health and safety at work. The producers were, among others, Eurostat, the European Commission, the European Foundation, the European Agency, and representatives of national statistical and research organisations of Member States. Among the users there were representatives of the European trade unions 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 repetitive strain injury (RSI) and stress.

With respect to the available European data sources, it was concluded that three aspects need improvement: (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.

The conclusions underlined the important position of the labour force survey, European statistics on accidents at work, and European occupational diseases statistics. 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 with this suggestion.

Developments in OSH monitoring in Europe: summary and conclusions

The initiatives described above illustrate how activities in the field of OSH monitoring have intensified since the early 1990s.

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

Thus, one might conclude that monitoring 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 in which data collection and data publication are not yet well organised at European level; particularly, in our opinion, for:

1. OSH management (services, experts, country-coverage, etc.);
2. labour inspection activities;
3. best practices in the field of OSH; and
4. cost-benefit information.

Methodology

As described earlier, the objective of this project was to review and analyse OSH monitoring systems currently used in the Member States. An important basis of the project was 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' perspective, a typology of OSH monitoring systems was developed based on the HASTE report (European Foundation, 1995):

- workforce systems (labour force surveys, demographic and economic censuses);
- 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.

Furthermore, in 2000, a European Agency pilot study identified the following system types:

- 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 (musculoskeletal 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 focused manner, etc.).

From these options the OSH monitoring systems to be described, were ordered as follows:

- workforce systems (for example, the European labour force survey);
- worker surveys or questionnaires on work and health (these exist, for example, in the Nordic countries, Germany, the United Kingdom, the Netherlands, France, Spain);
- exposure databases (for example, the German exposure database);
- registers of substances (for example, the German register of substances and products);

- registers of accidents and diseases (existing in many European countries);
- sickness leave or absenteeism systems (also existing in many European countries);
- multi-source and explicitly policy-directed systems (e.g. the Dutch 'OSH balance', the German 'Status report on OSH', and the Danish 'Surveillance of progress' programme).

Following expert consultation, it was decided to add a further category of systems during that consultation period: 'intervention and OSH management-related systems'.

Annex 2 presents more details on the 23 systems, including descriptions of the 'owners'. In Annex 10, reports and papers are presented describing the systems and results of the systems.

Information was gathered by the contractor (TNO Work and Employment in the Netherlands) in close cooperation with a group of system-information suppliers across the European Member States and Norway.

The questionnaire used for data gathering covered the following items:

- 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 annexed to this report (see Annex 1).

Content of the 23 systems

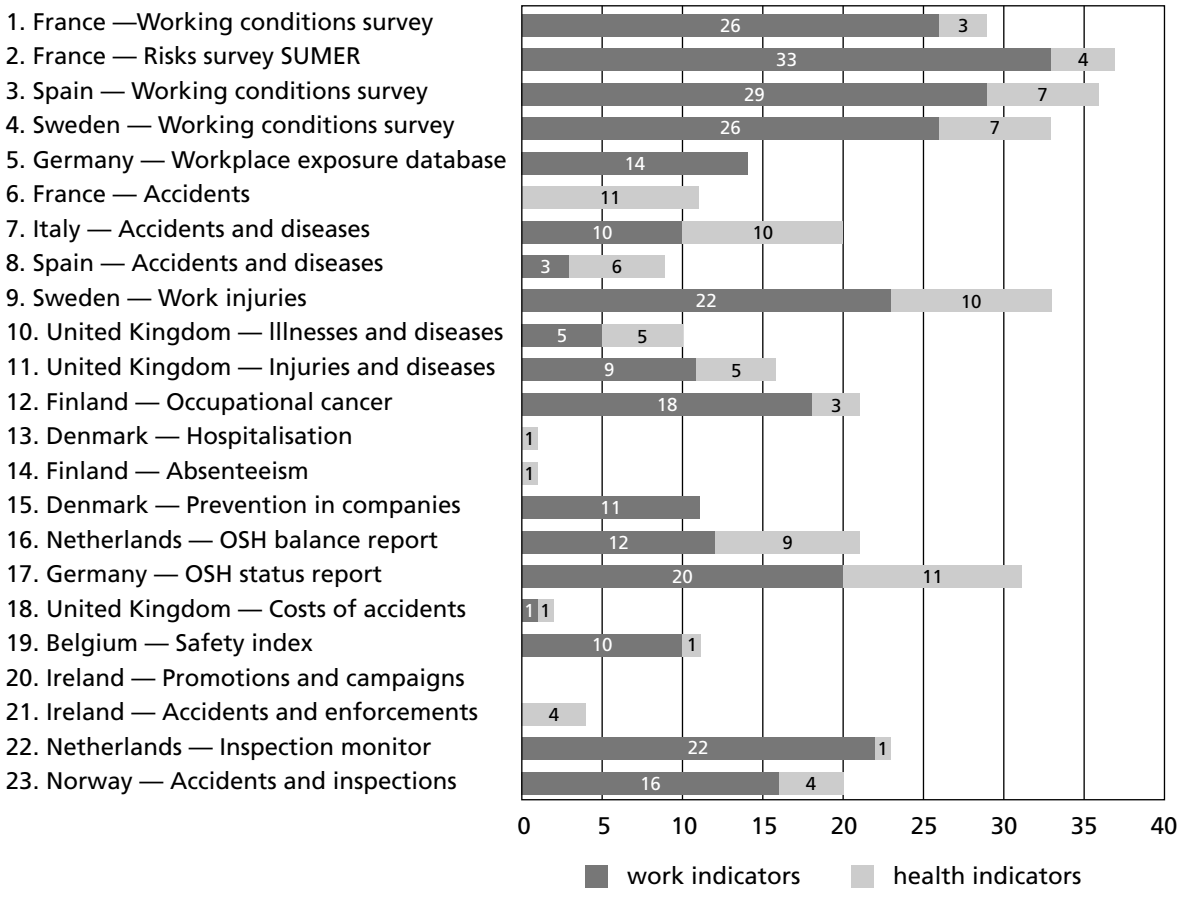
As shown in Figure A, below, nine systems provide the broadest description of the **work environment** (safety, substances, physical, mental and other psychosocial factors, work organisation, work security):

1. France — Working conditions survey
2. France — Risks survey SUMER
3. Spain — Working conditions survey
4. Sweden — Working conditions survey
9. Sweden — Work injuries
12. Finland — Occupational cancer
17. Germany — OSH status report
22. Netherlands — Inspection monitor
23. Norway — Accidents and inspections

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

In contrast, it may also be seen in Figure A that there are five systems that do not focus on the work environment: France — Accidents, Denmark — Hospitalisation, Finland — Absenteeism, Ireland — Promotions and campaigns, and Ireland — Accidents and enforcements. They are concentrated on 'health' or 'outcome' indicators.

Figure A: Number of work and health indicators included in each system



'Health' or 'outcome' indicators, i.e. accidents, ill-health, absenteeism, work disability, are most broadly described in the following eight systems (see also Figure A):

3. Spain — Working conditions survey
4. Sweden — Working conditions survey
6. France — Accidents
7. Italy — Accidents and diseases
8. Spain — Accidents and diseases
9. Sweden — Work injuries
16. Netherlands — OSH balance report
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 concentrate on only one specific work outcome:

13. Denmark — Hospitalisation;
14. Finland — Absenteeism;
18. United Kingdom — Costs of accidents (impact of OSH measured by costs);
19. Belgium — Safety index (safety performance of companies);
22. Netherlands — 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 and campaigns system. The German and the Danish systems (Numbers 5 and 15) focus on the work environment, whereas the Irish system (Number 20) is not a monitoring system in the context of this project

but rather a description of the Irish Health and 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:

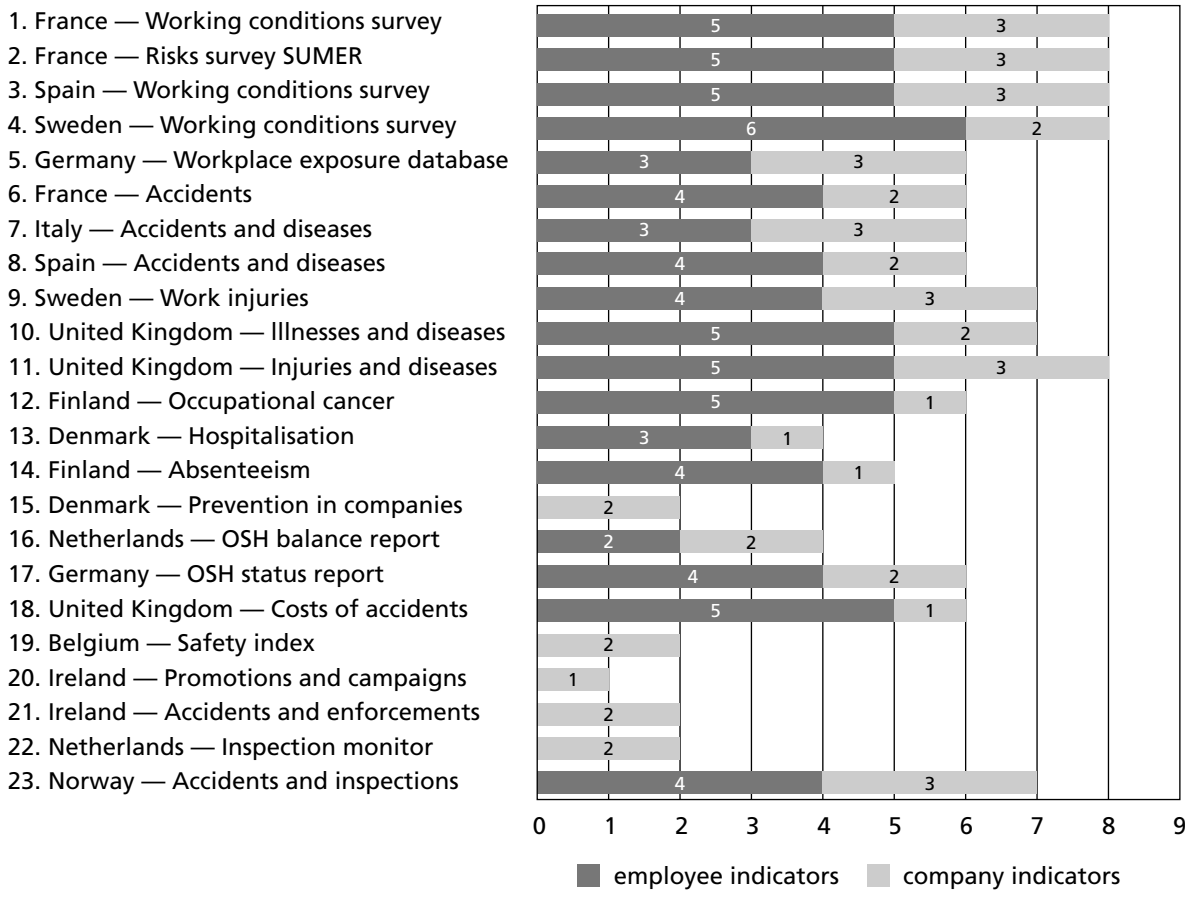
3. Spain — Working conditions survey
4. Sweden — Working conditions survey
15. Denmark — Prevention in companies
16. Netherlands — OSH balance report
17. Germany — OSH status report
19. Belgium — Safety index of companies
21. Ireland — Accidents and enforcements
22. Netherlands — Inspection monitor
23. Norway — Accidents and 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, below, shows that many systems include employee (gender, age, employment status, etc.) as well as company characteristics (size, sector, etc.). There are even 18 systems that include at least four of these indicators.

In addition, five systems may be described as typical non-employee-oriented systems (focusing instead on companies and/or Labour Inspectorates, see also Figure B):

15. Denmark — Prevention in companies
19. Belgium — Safety index (of companies)
20. Ireland — Promotions and campaigns
21. Ireland — Accidents and enforcements
22. Netherlands — Inspection monitor.

Figure B: Number of employee and company indicators included in each system



Aims and internal use of the systems

The 23 OSH monitoring systems reviewed are described as having the following goals:

- **developing knowledge** on OSH or studying 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;
- **supporting prevention**, developing preventive policies, identifying preventive structures;
- **setting priorities** for activities and supporting labour inspections, for example, in determining priorities in inspection;
- **evaluating** or controlling the effect or the efficiency of actions or measures, monitoring OSH management, interventions, outcomes, the progress of actions, costs of absenteeism;
- **benchmarking**, for example, comparing with other European countries;
- providing a **basis for discussions** between social partners, and presenting the yearly development of OSH to social partners, media and the wider public, providing a basis for actions of occupational physicians;
- making **additional studies** and research — often by external institutes — on specific topics (this is mentioned with respect to the French and the Swedish national working conditions survey, and the Danish occupational hospitalisation register);
- **reporting** to European institutions;
- **demonstrating the costs** of OSH;
- **facilitating compensations**.

Priority setting as a goal

Priority setting was generally declared to be possible with all the systems, with the exception of the Irish promotions and campaigns list (see Annex 6). It 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, or labour inspection activities/interventions.

Evaluation and monitoring as a goal

Ten of the 23 systems are reported as being used for evaluating or monitoring the effectiveness of policies, actions and/or campaigns:

4. Sweden — Working conditions survey
5. Germany — Workplace exposure database
9. Sweden — Work injuries
11. United Kingdom — Injuries and diseases
12. Finland — Occupational cancer
13. Denmark — Hospitalisation
17. Germany — OSH status report
19. Belgium — Safety index (of companies)
21. Ireland — Accidents and enforcements
23. Norway — Accidents and inspections.

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

Surveys are the least used in this respect to date, although new tendencies are emerging.

- The Swedish Work Environment Authority has used survey data for the evaluation of its own activities, and it also uses the work injury system for the same purpose.

- In the United Kingdom, the Health and Safety Executive (HSE) uses the Riddor ([2]) information and intends to use the SWI-ODIN ([3]) information for the evaluation of its activities. Their strategies entitled 'Revitalising health and safety' and 'Securing health together', which have set targets for occupational health, will be monitored by reference to these systems.
- Trends in occupational diseases and accidents described in the German OSH status report are checked against preventive actions and legislation.
- Data presented in the yearly Dutch 'OSH balance report' are related to policies, actions or campaigns, not in the sense of evaluation, but rather as the rationale behind the interventions. With respect to the Dutch OSH balance, some of the Labour Inspectorate data are used for evaluation of the effectiveness of the Ministry's OSH policy.

The Danish occupational hospitalisation register helped to evaluate one of the aims of the WHO programme 'Health for all' (on ischaemic heart morbidity).

Finally, none of the systems from France, Italy or Spain, are reported as being used for monitoring the effectiveness of policies, actions and/or campaigns. With respect to the two Spanish systems, it is remarked that while the data are not currently used for this purpose, they certainly could be.

The data from almost all systems are nevertheless used for the preparation of governmental and/or company actions in the field of OSH.

Governments use OSH monitoring data for:

- preparation of annual directives (France);
- definition of new exposure limit values (Germany);
- formulation of a programme of financial incentives with respect to accidents (Italy);
- 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);
- formulation of occupational health policies with respect to musculoskeletal diseases and stress (United Kingdom);
- preparation of a large national intervention programme with respect to the 10 most hazardous professions (Denmark);
- setting priorities for the Labour Inspectorate, for example, with respect to the right occupations, branches of industry and diagnoses (Finland).

Companies use the data, for example, for the preparation of additional exposure-reducing measures (Germany), for their OSH management with respect to accidents (Sweden), or for their safety improvement actions (Netherlands).

Systems used for cost-benefit analysis

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

6. France — Accidents
7. Italy — Accidents and diseases
14. Finland — Absenteeism
17. Germany — OSH status report
18. United Kingdom — Costs of accidents.

([2]) Reporting of injuries, diseases and dangerous occurrences regulations 1995.
([3]) Self-reported work-related illness survey and Occupational disease intelligence network.

Seven systems are used, or could be used, for cost-benefit analysis of OSH:

7. Italy — Accidents and diseases
9. Sweden — Work injuries
10. United Kingdom — Illnesses and diseases
11. United Kingdom — Injuries and diseases
14. Finland — Absenteeism
18. United Kingdom — Costs of accidents
23. Norway — Accidents and inspections.

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 do not seem to be used for cost-benefit analysis.

Methodologies used in the systems

Overall, there are three main types of data-gathering methods used, namely: surveys, registers, and workplace observation techniques:

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.

Five systems rely completely on **surveys**:

1. France — Working conditions survey
2. France — Risks survey SUMER
3. Spain — Working conditions survey
4. Sweden — Working conditions survey
10. United Kingdom — Illnesses and diseases.

Four systems rely completely on **social security registers**:

6. France — Accidents
8. Spain — Accidents and diseases
9. Sweden — Work injuries
14. Finland — Absenteeism.

Two systems rely on **observations in the workplace**:

5. Germany — Workplace exposure database
19. Belgium — Safety index (of companies).

The remaining 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 documentation, etc.).

As explained above, surveys and/or questionnaires are the most popular data-gathering method among the systems chosen for this project ([4]). However, 11 of the 23 systems selected are actually multi-source systems, since they use two or more data-gathering methods. There are even eight systems that use three or four methods.

([4]) The most frequently used monitoring systems in the EU Member States are accident and disease registers, not surveys, since these types of registers are compulsory. Because these registers are often rather similar, only a few of them were included in this study.

Table 3: 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 — Working conditions survey	X					X	
5. Germany — Workplace exposure database			X			X (**)	
6. France — Accidents		X					X
7. Italy — Accidents and diseases	X	X	X				X
8. Spain — Accidents and diseases		X					X
9. Sweden — Work injuries		X					X
10. United Kingdom — Illnesses and diseases	X					X	X
11. United Kingdom — Injuries and 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 report	X	X		X		X	X
17. Germany — OSH status report	X	X		X		X	X
18. United Kingdom — Costs of accidents	X				X		X
19. Belgium — Safety index			X			X	
20. Ireland — Promotions and campaigns					X		
21. Ireland — Accidents and enforcement		X	X		X	X	X
22. Netherlands — Inspection monitor	X		X	X	X	X	
23. Norway — Accidents and 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.
(**) Non-random sample.

Population or sample data?

Among the 23 systems, 10 of them are fully based on sample data:

1. France — Working conditions survey
2. France — Risks survey SUMER
3. Spain — Working conditions survey
4. Sweden — Working conditions survey
5. Germany — Workplace exposure database
14. Finland — Absenteeism
15. Denmark — Prevention in companies
19. Belgium — Safety index (of companies)
22. Netherlands — Inspection monitor
23. Norway — Accidents and inspections.

Eight systems rely fully on population data:

6. France — Accidents
7. Italy — Accidents and diseases
8. Spain — Accidents and diseases
9. Sweden — Work injuries
11. United Kingdom — Injuries and diseases
12. Finland — Occupational cancer
13. Denmark — Hospitalisation
18. United Kingdom — Costs of accidents.

Four systems rely both on population as well as sample data:

10. United Kingdom — Illnesses and diseases
16. Netherlands — OSH balance report
17. Germany — OSH status report
21. Ireland — Accidents and enforcement.

The UK system (Number 10) uses 'own' data together with labour force survey data. In the Irish system (Number 21) 'own' data are used as well as national household survey data. The typical multi-source publications of the Dutch (Number 16) and the German governments (Number 17), use data from sample surveys, accident and disease registers, as well as labour force survey data.

It may be added that representative population data are more precise and/or reliable than representative sample data. Population data often allow more sub-division into risk factors, health effects, and branches or occupations. In contrast, samples are used to gather data for cost-benefit reasons. When population and sample data are not representative, and/or under-report the work and health situation, both may have drawbacks.

Finally, among the 23 systems, there is one (Number 20, Ireland — Promotions and campaigns) that is not a data collection system as such, but a list of the 2001 promotion and campaign activities of the Health and Safety Authority in Ireland. The list includes, for example, educational programmes on OSH for future engineers, architects, students in secondary level schools, as well as 'partnerships' with local businesses, business organisations, employee groups and other key players in the working communities.

Table 4 presents more detailed information on the population and/or sample characteristics.

Table 4: Population or sample size (Question 13)

Short name of system	Size of population or sample
1. France — Working conditions survey	One active person out of 10 in the ENSEE employment survey: 22 000 workers in 1998
2. France — Risks survey SUMER	60 000 workers, interviewed by 1 500 occupational physicians, mostly from the private sector (2002); public sector employees are added
3. Spain — Working conditions survey	3 419 employers and 3 702 employees (1999); one employee was interviewed in the smaller companies, two employees interviewed in the larger companies (250 +)
4. Sweden — Working conditions survey	Sample of 15 000 employees and self-employed workers
5. Germany — Workplace exposure database	30 000 sample measurements (with 70 000 analyses) from 4 000 enterprises each year (a non-representative sample)
6. France — Accidents	17 000 000 wage-earners in the private sector
7. Italy — Accidents and diseases	Population covered by INAIL, no exact numbers given
8. Spain — Accidents and diseases	13 000 000 workers covered by the national social security system for accidents at work (2001)
9. Sweden — Work injuries	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. United Kingdom — Illnesses and 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)
11. United Kingdom — Injuries and diseases	Riddor: All employers and the 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 the United Kingdom (includes questions on accidents)
12. Finland — Occupational 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 % of working population in social security register
15. Denmark — Prevention in companies	3 300 companies (both employer and safety representative are interviewed); a sample of 10 % of the companies are also visited by occupational health professionals in order to validate the interviews
16. Netherlands — OSH balance report	Different sources: Census Bureau worker survey data (4 000 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. United Kingdom — Costs of accidents	Labour force survey, new earnings survey and case study information on accidents

Short name of system	Size of population or sample
19. Belgium — Safety index (of companies)	Safety data of 26 000 of all 170 000 employers in Belgium
20. Ireland — Promotions and campaigns	Not applicable; system is list of promotion and campaign activities
21. Ireland — Accidents and enforcement	Approximately 9 000 accidents and 13 000 workplace observations
22. Netherlands — Inspection monitor	OSH data from labour inspector visits of 1 725 companies a year
23. Norway — Accidents and inspections	Information on inspections, interventions, and work accidents of an unknown number of companies

What is the periodicity of data gathering?

For 13 of the 23 systems, 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 frequently.

Systems that rely on more methods (e.g. 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 nine months.

Reliability, validity and under-reporting

Information was also gathered on the reliability and validity of the 23 systems. However, for a few systems there was no or little information available in this respect. For others it was said that reliability and validity was 'good', 'sufficient', 'accurate', '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 to see whether results show stability.

Other systems (e.g. the Spanish 'encuesta nacional') mention analysis of trends as a check on reliability and validity. The Danish hospitalisation system uses systematic comparisons with ad hoc studies to check validity and reliability. The Italian accident system mentions comparison with accident data of other countries in the Eurostat statistics. Here Eurostat data are seen as a 'gold standard'. In the Danish study of preventive activities of companies, within the overall surveillance system, 10 %of the companies interviewed by telephone are also visited by OSH experts to check the quality of the information given. In the 'enquête SUMER', a seasonal bias was solved by gathering data the whole year round. Three cases (UK injuries and diseases/Riddor, German workplace exposure database, Finnish occupational cancer system) use quality management, quality assurance or quality control systems to monitor and guarantee the quality of the data.

A degree of under-reporting is said to be a problem in at least the following six systems:

9. Sweden — Work injuries
10. United Kingdom — Illnesses and diseases
11. United Kingdom — Injuries and diseases
14. Finland — Absenteeism
21. Ireland — Accidents and enforcement
23. Norway — Accidents and inspections.

Most of these systems use methods (such as weighting) to overcome these problems. Studies are available on the validity and reliability of 13 of the 23 systems (see Annex 8).

User group opinions and transferability of the systems

External and internal user group opinions

For most monitoring systems there has not been actual contact with external user groups. In these cases, estimates of likely external opinion are 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.

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.).
- Information and communication technology plays an important role in the update 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.
- Inviting the social partners to participate in the scientific preparation and/or in advisory boards is suggested and also actually realised; 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 to be better than other systems, however, neither is it possible to say that some external user groups have a more positive or a more negative opinion than other user groups.
- The content of the systems is criticised occasionally as lacking relevant elements (some accident systems would be valued more highly if they included 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).
- Although special studies have proven the validity and reliability of large-scale survey questionnaires, employers sometimes criticise the employee questionnaire methodology as being too subjective and not validated with employer opinions.
- Clients, researchers, media and other interested people nowadays have 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 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, e.g. with respect to cost-benefit analysis, is seen as problematic (see the UK system, and the European Agency publication on costs and benefits of OSH). Additionally, several reports mentioned legislative thresholds that may play a role in the transferability of systems from one country to another (e.g. survey questions are sometimes focused on typical country-related legislation).

For some systems, the answer given 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. There were several arguments given as to why transferability is possible, which mostly relate to similarities between systems.

Similarities 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 programme, and similar systems are used in the United Kingdom and France.

Similarities between Member States' systems:

- With respect to the accident and diseases notification systems, it is commented 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 to those made for the Finnish occupational cancer system are also carried out in other Nordic countries, and even published jointly.

In connection with the Dutch 'OSH balance report', it is mentioned that European unification gradually makes it easier to compare data among countries, and to transfer systems from one country to another.

Costs of the systems

For some systems, costs information was partly available. However, for the majority of the 23 systems it was too difficult to estimate precisely the costs for data gathering, data processing and data publishing. Therefore it is not possible to give a reliable picture of this part.

The information 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 finance 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 with the National Institute of Occupational Health and the Centre for Alternative Social Analysis for Project 15. In the Netherlands, the Ministry of Labour works together with the Labour Inspectorate and the Census Bureau for Projects 16 and 22. In Sweden, the Work Environment Authority works together with the National Institute for Working Life in Project 4.

Future plans for the systems

When asked for future plans, several new developments are mentioned.

(a) Inclusion of further health data

- The future French 'enquête nationale' will probably contain more health elements.
- Non-cancer outcomes are being considered for inclusion in the Finnish occupational cancer system.

(b) Inclusion of further branches/occupations

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

(c) Inclusion of supplementary risk factors

- In the German exposure database further physical exposures will be included.

(d) Complementing data on occupational accidents

- 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, as well as electronic notification of accidents.
- In Italy, a complete restyling of the accidents and 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 will play an important role.

(e) Combining complex data sources

- For the HSE's SWI-ODIN system on illnesses and diseases, a programme of statistical developments is planned. Also, the HSE's Riddor regulations will be reviewed.
- The Danish study of preventive activity of companies (within the overall surveillance system) is still under way 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 Dutch OSH balance report are likely to contain more information on interventions, effectiveness and the developments in the national preventive capacity.
- The Dutch 'OSH monitor' currently focuses on the observation of legal requirements by companies and much less on OSH risks or outcomes of the requirements. More attention will soon be given to companies' preventive measures, biological agents and vibrations.

(f) Other improvements

- The aim of the Danish hospitalisation register is to establish it on a permanent basis.
- The HSE in the United Kingdom 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 summarised in headlines

- The 23 European OSH monitoring systems described and reviewed in this report are not intended to represent 'the best' but to express, in a representative way 'the variety' available in the European Union with respect to aim, use, content, and methodology.
- As many Member States as possible are covered.
- The selection 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 (nine systems), observations in the workplace (eight systems), national census data (five systems).
- A high degree of variety was found in the 23 systems, ranging from systems which describe 30 to 40 'work' and 'health' indicators, to those that concentrate on only one or two.
- For OSH monitoring it is important to have information available on 'risk categories', such as gender and age groups, professional groups, branches of industry, etc. Many systems indeed include employee as well as company characteristics. There are even 18 systems that include at least four of those indicators. In addition, five systems may be described as typically non-employee-oriented systems.
- Seven systems gather data on costs and are, or could be, used for cost-benefit analysis of OSH.
- Information on OSH management (number of experts, coverage, inspectors, etc.) is available in nine of the systems.
- There is a large variety in aims and uses of the 23 systems, knowledge development, identification of trends, development of policies, setting priorities for 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 compensation possible, etc.
- Priority setting is thought by the 'owners' to be possible with all the systems and 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, and labour inspection activities/interventions.
- Ten of the 23 systems are reportedly used for the evaluation of policies, actions and/or campaigns.
- In addition, 10 systems use sample data and eight systems use population data. The other four systems use both sample and population data. Population systems may be more precise, but they are certainly much more costly 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 some 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. The content of the systems is criticised only occasionally as lacking relevant elements. One user group (the employers) seems 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 for the systems concern specifically broadening the systems (to include new work or health indicators), methodological improvements in data gathering, ICT-driven innovations in data gathering and processing, and adaptation to methodological improvements by Eurostat.

The 23 systems classified into three groups

The following questions need to be answered in order to draw more global and long-term conclusions with respect to OSH monitoring in the European Union.

• Are there systems among the 23 that resemble or have (almost) the same profile?

• If so, what characteristics (content, method, use) do these grouped systems have in common?

A lot of structured information is available on the systems in terms of 'yes' or 'no' or 'not known/not available' and it is possible to analyse this information statistically. All in all, 74 yes-no aspects (the so-called 'tick box' information) of the content of the systems were available, 24 of the methodology, and 18 of the internal and external use. In total, 116 aspects were available for each system and could be statistically analysed (see Annexes 3, 5, and 7).

Most of the 23 OSH monitoring systems can be classified into three larger groups (see Table 5, for the 'loadings' of the 23 systems on the three different factors or groups; the higher the loading, the more strongly the system is related to the factor or group).

These three groups are:

1. 'high loading' on accidents, diseases, injuries and ill-health, and use of more sources of information (surveys, workplace observations and registers);
2. 'high loading' on working conditions, and the use of surveys;
3. 'high loading' on safety, substances, OSH, the work of Labour Inspectorates, safety inspections, enforcement, surveillance, and based on company and workplace observations.

Table B also shows that there are four systems that cannot be attributed to one of the three groups. These are: Sweden — Work injuries, Finland — Occupational cancer, Netherlands — OSH balance report, Germany — OSH status report. These four systems have aspects of at least two different groups.

Table 5: Classifying the 23 OSH systems into three groups

	Group 1: Accidents, ill-health, absenteeism; multi-source information	Group 2: Work and working conditions; sample surveys	Group 3: Safety, substances, OSH service; company and workplace observations
1. France — Working conditions survey		**0.73**	
2. France — Risks survey SUMER		**0.76**	
3. Spain — Working conditions survey		**0.63**	
4. Sweden — Working conditions survey		**0.72**	
5. Germany — Workplace exposure database			**0.66**

	Group 1: Accidents, ill-health, absenteeism; multi-source information	Group 2: Work and working conditions; sample surveys	Group 3: Safety, substances, OSH service; company and workplace observations
6. France — Accidents	**0.59**		
7. Italy — Accidents and diseases	**0.77**		
8. Spain — Accidents and diseases	**0.67**		
9. Sweden — Work injuries	0.37	0.38	
10. United Kingdom — Illnesses and diseases	**0.65**		
11. United Kingdom — Injuries and diseases	**0.65**		
12. Finland — Occupational cancer	0.34	0.40	
13. Denmark — Hospitalisation	**0.50**		0.33
14. Finland — Absenteeism	**0.53**		0.33
15. Denmark — Prevention in companies			**0.58**
16. Netherlands — OSH balance report		0.32	0.27
17. Germany — OSH status report	0.34	0.46	
18. United Kingdom — Costs of accidents	**0.60**		
19. Belgium — Safety index (of companies)			**0.70**
20. Ireland — Promotions and campaigns			**0.47**
21. Ireland — Accidents and enforcements	0.36	– 0.36	**0.57**
22. Netherlands — Inspection monitor			**0.66**
23. Norway — Accidents and inspections	**0.53**		

The main characteristics of the three groups of systems

We may conclude that the three groups of systems each have their strong and weaker points. The general average profile is shown in Table 6.

There are systems that fit very well into just one of the three profiles and other systems that cannot be categorised so easily. It should be noted that the 23 systems do not differ significantly between each other in characteristics not mentioned in Table 6. For example, the systems and the three groups of systems do not differ significantly in their use of data for priority setting, or for company and/or governmental action, or 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, psychosocial 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 is often used for cost-benefit analysis, 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. It also includes information on work accidents and ill-health, but has little information on absenteeism, work disability or on OSH experts, OSH coverage and OSH interventions. The systems in this group are not, or are only seldom, used for cost-benefit analysis or for the evaluation of policies or actions, tending to be 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 government policies.
- The third group of systems includes specific information on the safety situation, work activity, and dangerous substances, but not on other work characteristics. It 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 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 cost-benefit analysis.

Table 6: 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 and 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:	
Content	**Content**	**Content**
Work activity, working hours, and employment status	All work characteristics (safety, substances, physical, mental and other psychosocial factors, work organisation, work security)	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
Methodology	**Methodology**	**Methodology**
Multi-source (surveys, observations, registers); population data; ongoing data gathering; some under-reporting	Only questionnaires; sample data; data gathering every two years or less; no under-reporting	Mainly workplace observations by inspections; sample data; ongoing data gathering; some under-reporting
Use of data	**Use of data**	**Use of data**
Used for cost-benefit analysis; seldom used for the evaluation of policies, actions or campaigns	Not used for cost-benefit analysis; seldom used for the evaluation of policies, actions or campaigns	Not used for cost-benefit analysis; often used for the evaluation of policies, actions or campaigns

Discussion and recommendations

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

Firstly, it should be underlined that the 23 OSH monitoring systems reviewed represent only a part of all the systems available in Europe, which according to an earlier inventory, number more than 200. On the other hand, the systems reviewed in this report are central and important to the countries involved, and give a good picture of the variety in OSH monitoring systems that exist in the EU Member States and Norway, since all or almost all the different types of systems used in practice were included.

The definition of 'quality of work' and 'health and safety'

It is important to define the relationship between the results of this study and the European Commission employment and social policies including the EC strategy on health and safety at work 2002–06 ([5]). With the help of its employment and social policy, the European Commission

([5]) Adapting to change in work and society: a new Community strategy on health and safety at work 2002–06: Communication from the Commission, COM(2002) 119 final, 11.3.2002.

wants to improve the quality of work in the EU. Health and safety at work is one of the 10 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, lifelong learning, gender equality, work organisation, non-discrimination, etc.

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

This study indicates that many of the 23 European OSH monitoring systems reviewed include many more aspects than the health and safety aspects, as defined in the narrow definition of the EC (accidents, diseases and stress). It might be concluded that the Group 1 systems represent the traditional 'health and safety' outcome monitoring systems, whereas Group 2 systems (with their emphasis on different work and working conditions, as well as accidents and ill-health) tend to be much more 'quality of work' systems, based on surveys and qualitative assessments. The third group of systems (with their emphasis on safety, substances and OSH management) seem to represent an intermediate position.

It is important firstly 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 a clear answer, it would be difficult to have a clear discussion on the future scope of OSH monitoring.

From broad to more focused OSH monitoring systems

The second question 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 to 40 aspects of the work environment, health outcomes and OSH service and expertise information (see Figure A for information).

The Dutch inspection monitor and the Norwegian accidents and 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 (Number 13), the Finnish absenteeism system (Number 14), the UK costs of accidents system (Number 18), and the two Irish Labour Inspectorate systems (Numbers 20 and 21).

It is important to emphasise that the six to eight broad systems, mentioned above, also contain relatively detailed information on risk categories (sex, age, profession, number of working hours, branch of industry, etc.; see Figure B).

All of 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 can be recommended.

OSH monitoring systems and work and health country profiles ([6])

Thirdly, the results of this study should be examined 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 OSH 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. OSH outcomes (fatal and non-fatal work accidents, occupational diseases, perceived work ability).

The general concept of developing a work and health monitoring system per country should be regarded as very positive in a European context.

The results of our study show that there are almost no monitoring systems available that include all the 'core indicators'. The use of more than one monitoring system per country seems to be needed to gather the information for these work and health country profile reports. The multi-source reports prepared yearly in Germany and the Netherlands (the status report and OSH balance report) have much in common with the work and health country profile reports advocated by the FIOH and the WHO. Note the similarity of the indicators used for (1) working conditions (2) OSH outcomes, and (3) the OSH system.

The degree of coverage of OSH aspects by the European systems

The final and perhaps most important questions to discuss are:

- the best covered OSH aspects at European level;
- possible gaps of information at that level; and
- suggested solutions in this respect from the analyses.

At 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 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 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 and 2000 surveys on working conditions provide information on the occupation, the physical, the organisational and the social work environment, work time, and health-related outcomes.

From this one might conclude that at European level information coverage is relatively low with respect to harmonised data on OSH services and 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.

([6]) J. Rantanen, 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 identified (especially the Dutch inspection monitor, the Danish prevention in companies system, the Belgian safety index of companies, and the Irish accidents and enforcement system) meet this need for information best. There are, however, also some survey and multi-source systems that gather information on OSH service indicators, namely the Spanish and Swedish working conditions survey, the Dutch OSH balance report, the German OSH status report and the Norwegian accidents and 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

Earlier it was concluded that coverage at European level is relatively low with respect to OSH management, workplace and company-based information on policies, actions and interventions, etc. It was 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 the study almost all systems are reported to be transferable to other countries. But does this mean that the data from the different systems are comparable?

There are publications ([7]) that show that data even from very similar systems cannot be compared or joined. Similar conclusions were drawn in a study on five European databases containing occupational air pollutant control measurements ([8]). Finally, the European Agency in its report on the 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.

So long as no uniform data acquisition methodology is introduced, the comparison of data from different sources will be difficult. This implies that an EU system would have to be organised centrally and the data gathered with a uniform method in a representative way. The collection of data using questionnaires appears most successful, since this method is both repeatable and feasible. Furthermore, the problem of under-reporting is relatively limited in this methodology. However, special attention should be paid to repeat testing of the questionnaires and avoiding ambiguous questions.

Table 7: Time required for gathering, processing and publishing data (Questions 12 and 13)

In Table 7, further details are presented with respect to the time required for data gathering, processing and publishing, including in the right hand column of the table, the time required to publish the data. The mean time required for the preparation of the publications is about nine months.

	Time required for data gathering	Time required for processing the data	Time required for publishing the data
1. France — Working conditions survey	1 year	3 months	6–9 months
2. France — Risks survey SUMER	1 year	6 months	6–9 months
3. Spain — Working conditions survey	3 months	2 months	1 year

([7]) For example, presented at the 13th CEIES seminar on 'Health and safety at work — EU statistics' in Dublin 2001. Especially Stamm's contribution entitled 'Statistics on and indicators of accidents at work and work-related health hazards in Europe: a critical appraisal'.

([8]) 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.

	Time required for data gathering	Time required for processing the data	Time required for publishing the data
4. Sweden — Working conditions survey	4 months	6 months	6 months
5. Germany — Workplace exposure database	continuous	continuous	2 to 3 times a year
6. France — Accidents	continuous	3 months	3 months
7. Italy — Accidents and diseases	continuous	continuous	18 months
8. Spain — Accidents and diseases	continuous	continuous	9 months
9. Sweden — Work injuries	continuous	continuous	9 months
10. United Kingdom — Illnesses and diseases	continuous	3 months	3 months
11. United Kingdom — Injuries and diseases	continuous	—	9 months
12. Finland — Occupational 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. United Kingdom — Costs of accidents	9 months	2 months	2 months
19. Belgium — Safety index (of companies)	continuous	continuous	12 months
20. Ireland — Promotion and campaigns	N/A	N/A	N/A
21. Ireland — Accidents and enforcements	ongoing	ongoing	5 months
22. Netherlands — Inspection monitor	6 months	4 months	4 months
23. Norway — Accidents and inspections	ongoing	ongoing	ongoing

N/A = not applicable.

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Annexes

Annex 1 — 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. 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 organisation
   - ☐ 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
- ☐ other:

Method

10. How are the data gathered?
- ☐ by survey or questionnaire
- ☐ through observations at the workplace
- ☐ with the help of social security registers
- ☐ national census data
- ☐ other:

11. By what organisation is the data gathering carried out?
- ☐ by the 'owner' of the system
- ☐ by others:

12. What is the time required (estimation in months) for the following:
- ☐ gathering the data
- ☐ processing the data
- ☐ 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 under-reporting — in the data gathered — a problem?
    - ☐ yes
    - ☐ no
17. Are there methods used to overcome under-reporting (please explain)?
    - ☐ yes
    - ☐ no
18. If the system is based on sample data, are they weighted with the help of nationwide 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 and reliability)?
    - ☐ yes
    - ☐ no

Costs of the system

21. What are roughly the costs of gathering data, processing data and publishing reports (in euro)?
    - ☐ data gathering:
    - ☐ data processing:
    - ☐ data 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. Is any additional background or context related to the aim of the system relevant?
25. Do the data make 'priority setting' in the field of 'occupational health and 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 analysis 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 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 two or three 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. Do you have other general and evaluative comments?

Who supplied the above information? Please give your details

Name:

Organisation:

Address (street or postbox):

Code and city:

Country:

E-mail:

Annex 2 — Name and 'owner' of the 23 systems

Short name	Name of the system (in English)	'Owner' of the system
1. France — Working conditions survey	Working conditions survey (enquête nationale sur les conditions de travail)	Ministry of Labour; DARES/Directorate of Research and Statistical Studies
2. France — Risks survey SUMER	Medical monitoring survey of professional risks (SUMER)	Ministry of Labour, DARES/Directorate of Research and Statistical Studies
3. Spain — Working conditions survey	National working conditions survey (ENCT)	National Institute for Safety and Hygiene at Work (INSHT)
4. Sweden — Working conditions survey	The work environment statistics/survey	Swedish Work Environment Authority/Statistics Sweden
5. Germany — Workplace exposure database	Measurement system of workplace exposures of the '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 and diseases	Database of INAIL (on work, accidents, diseases, absenteeism, work disability and inspections)	INAIL (National Institute of Insurance against Accidents at Work)
8. Spain — Accidents and diseases	Occupational accidents and diseases statistics	Ministry of Labour and Social Affairs
9. Sweden — Work injuries	The work injury information system (ISA)	The Swedish Work Environment Authority
10. United Kingdom — Illnesses and diseases	Combined use of 'Self-reported work-related illness survey' (SWI) and 'Occupational disease intelligence network' (ODIN)	Health and Safety Executive (HSE)
11. United Kingdom — Injuries and diseases	Combined use of reporting of injuries, diseases and dangerous occurrences regulations 1995 (Riddor) and labour force survey	Health and Safety Executive (HSE)
12. Finland — Occupational cancer	Occupation and cancer register (combined with census data)	Finnish Cancer Registry (FCR) in collaboration with the Finnish Institute for Occupational Health (FIOH)
13. Denmark — Hospitalisation	The occupational hospitalisation register	National Institute of Occupational Health (AMI)
14. Finland — Absenteeism	Sickness allowance register	Social Insurance Institution (Finland)
15. Denmark — Prevention in companies	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'	The surveillance system is 'owned' by the Danish Working Environment Authority and the development and data collection is led by the National Institute of Occupational Health (AMI) and Centre for Alternative Social Analysis (CASA)
16. Netherlands — OSH balance report	OSH balance report 2001 (Arbobalans; a compilation of several data sources on OSH)	Ministry of Social Affairs and Employment
17. Germany — OSH status report	Yearly 'Status report' on health and safety at work (based on statistics and special survey reports)	Federal Ministry of Labour and Social Affairs
18. United Kingdom — Costs of accidents	The costs to Britain of workplace accidents and work-related ill-health in 1995/96	Health and Safety Executive (HSE) in collaboration with others
19. Belgium — Safety index	Safety index of companies	Federal Ministry of Employment and Labour, Work Safety Administration

Short name	Name of the system (in English)	'Owner' of the system
20. Ireland — Promotions and campaigns	HSA promotion and campaign activities	Health and Safety Authority, Ireland
21. Ireland — Accidents and enforcements	System for accidents and field enforcement, combined with national household survey data	Health and Safety Authority, Ireland
22. Netherlands — Inspection monitor	Yearly inspection/OSH monitor (Arbomonitor)	Labour Inspectorate/Ministry of Social Affairs and Employment
23. Norway — Accidents and inspections	Register for enterprises and working accidents	Norwegian Labour Inspectorate

Annex 3 — Content of the systems

	1 FR	2 FR	3 ES	4 SE	5 DE	6 FR	7 IT	8 ES	9 SE	10 UK	11 UK	12 FI	13 DK	14 FI	15 DK	16 NL	17 DE	18 UK	19 BE	20 IE	21 IE	22 NL	23 NO
5. Work environment indicators included?																							
☐ Safety situation	X	X	X	X	X				X						X				X			X	X
☐ machinery used	X	X	X	X	X		X	X	X						X				X			X	X
☐ technical measures (e.g. ventilation)		X			X				X													X	
☐ personal protective equipment		X	X		X				X						X	X	X		X			X	X
☐ other	X		X		X														X			X	
☐ Work activity	X	X	X	X	X		X	X	X		X				X		X					X	X
☐ Handling dangerous substances	X	X	X		X		X	X	X			X				X	X		X			X	
☐ chemicals used (e.g. pesticides)		X			X																		
☐ exposure to chemicals (measurements)		X	X		X							X										X	X
☐ other	X	X	X	X	X				X						X	X			X			X	
☐ Physical work environment	X	X	X	X	X				X			X			X	X	X		X			X	X
☐ heavy loads	X	X	X	X					X		X	X			X	X	X		X			X	
☐ noise	X	X	X	X	X				X			X			X	X	X		X			X	
☐ vibrations	X	X	X	X					X			X				X	X		X				
☐ radiation	X	X	X						X			X					X						X
☐ radioactive		X	X									X											
☐ non-radioactive		X	X						X			X											
☐ unfavourable work postures	X	X	X	X					X			X			X	X	X					X	
☐ other	X	X	X	X								X				X	X		X			X	
☐ Mental work environment	X	X	X	X					X			X				X	X					X	X
☐ stress in general			X	X					X			X					X						
☐ job control	X	X	X	X													X					X	
☐ time pressure	X	X	X	X					X			X				X	X					X	X
☐ job support	X	X		X					X														
☐ job complexity	X	X	X	X								X					X						
☐ other	X	X	X												X	X	X					X	
☐ Other psychosocial factors		X	X	X					X													X	X
☐ harassment at work		X		X					X													X	
☐ violence		X	X	X					X		X											X	X
☐ sexual intimidation		X		X					X													X	
☐ Work organisation	X	X	X	X	X		X			X		X					X						X
☐ working hours	X	X	X	X			X			X	X						X	X					X
☐ night work	X	X	X	X			X				X	X					X						X
☐ shift-work	X	X	X	X			X			X	X	X					X						X

	1 FR	2 FR	3 ES	4 SE	5 DE	6 FR	7 IT	8 ES	9 SE	10 UK	11 UK	12 FI	13 DK	14 FI	15 DK	16 NL	17 DE	18 UK	19 BE	20 IE	21 IE	22 NL	23 NO
☐ part-time work	X	X	X	X			X			X	X												X
☐ work at home	X			X			X			X	X												
☐ telework							X																
☐ other	X		X		X						X				X								
☐ Employment status	X	X	X	X			X	X	X	X		X	X				X		X				X
☐ employees	X	X	X	X			X	X	X	X	X	X	X				X						X
☐ self-employed	X		X	X			X	X	X	X	X	X	X										X
☐ unemployed										X		X	X										
☐ disabled persons							X			X		X	X										
☐ temporary workers	X	X	X	X			X	X	X	X	X		X				X		X				
☐ precarious workers	X	X		X					X				X				X						
☐ other			X												X		X						
☐ Training facilities			X	X												X	X						
6a. 'Outcome' indicators included?																							
☐ Occupational accidents	X	X	X	X		X	X	X	X		X					X	X				X		X
☐ fatal work accidents						X	X	X	X		X					X	X				X		X
☐ work accidents with 3 days or more absence	X	X	X	X		X	X	X	X		X						X				X		X
☐ other work accidents	X	X	X	X		X	X	X	X		X					X	X				X		X
☐ Work-related ill-health			X	X		X	X	X	X	X	X	X				X	X						
☐ occupational diseases			X	X		X	X	X	X	X						X	X						
☐ mental health			X	X		X	X		X	X						X	X						
☐ physical health			X	X		X	X		X	X		X				X	X						
☐ Absenteeism		X		X		X	X		X	X				X		X	X	X					
☐ Work disability						X	X	X	X							X	X						
☐ Other			X			X						X	X				X		X			X	
6b. Are data gathered on costs of outcomes?																							
☐ yes						X	X							X			X	X					
☐ no	X	X	X	X	X			X	X	X	X	X	X		X	X			X	X	X	X	X
7a. OSH services indicators included?																							
☐ Number of OSH experts at company level			X												X				X				X
☐ safety representatives and managers			X												X						X		X
☐ workers with OSH training (3 days or more)			X												X								X
☐ other		X	X																X		X		
☐ Number of OSH experts in preventive services				X													X						
☐ Activities/duties of preventive services			X												X							X	
☐ Coverage of OSH services in the country				X												X						X	
☐ Coverage of OSH services per branch				X												X						X	
7b. Intervention indicators included?																							
☐ Number/ratio of inspectors ([9])																X	X						
☐ Number/ratio of inspections ([10])							X									X	X						X
☐ Activities/duties of companies															X	X					X	X	X
☐ Other																X	X				X	X	
8a. Employee indicators included?																							
☐ Sex	X	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X					X
☐ Age	X	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X					X

([9]) Who only carry out OSH inspections.
([10]) Restricted to occupational safety and health issues.

	1 FR	2 FR	3 ES	4 SE	5 DE	6 FR	7 IT	8 ES	9 SE	10 UK	11 UK	12 FI	13 DK	14 FI	15 DK	16 NL	17 DE	18 UK	19 BE	20 IE	21 IE	22 NL	23 NO
☐ Education	X		X	X						X	X	X											
☐ Profession	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X					X
☐ Number of working hours	X	X	X	X	X	X				X	X						X	X					X
☐ Other		X	X	X	X			X				X		X				X					
8b. Indicators used for qualitative evaluation of data ([11])?																							
☐ yes	X	X	X			X	X	X	X	X	X	X	X	X		X	X					X	X
☐ no			X	X																			
9. Employer or company indicators included?																							
☐ company size	X	X	X	X	X	X	X	X	X	X	X				X	X	X		X		X	X	X
☐ branch of industry	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
☐ others	X	X	X		X		X		X		X									X			X

Annex 4 — Aim, use and 'theoretical' context of system

	The aim/purpose of the system	The 'theory' or model on which the system is based (if any); additional context of the system
1. France — Working conditions survey		
2. France — Risks survey SUMER		
3. Spain — Working conditions survey		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. 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. 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. This double point of view makes it possible to locate workplace data in a wider organisational context, for a better knowledge of successful preventive strategies.

([11]) For example, for young or ageing workers, differences according to gender, etc.

	The aim/purpose of the system	The 'theory' or model on which the system is based (if any); additional context of the system
4. Sweden — Working conditions survey		
5. Germany — Workplace exposure database		
6. France — Accidents		
7. Italy — Accidents and diseases	The aim of the system is to develop a complete databank 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 and diseases		
9. Sweden — Work injuries		
10. United Kingdom — Illnesses and diseases		
11. United Kingdom — Injuries and diseases		
12. Finland — Occupational cancer		
13. Denmark — Hospitalisation		
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 nine days' absence 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 professionals in order to validate the information given during the interviews.
16. Netherlands — OSH balance report		
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.

	The aim/purpose of the system	The 'theory' or model on which the system is based (if any); additional context of the system
18. United Kingdom — Costs of accidents	The 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 OSH 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)		
20. Ireland — Promotions and campaigns		
21. Ireland — Accidents and enforcements		The system for accidents and field enforcement (SAFE) 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 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 being revised to update the system according to *European statistics on accidents 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.
22. Netherlands — Inspection monitor		
23. Norway — Accidents and inspections	To give an overview of the Labour Inspectorate's inspection activity, intervention regarding the working environment act, information on the working environment standard in the enterprises, priority setting. 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.	There are three sources for the information collected in the system: • facts regarding the enterprises (size, address, NASE code, company groups, etc.) are from 'Statistics Norway'; • information regarding inspections, interventions, working environment standards in the enterprises are collected by labour inspectors; • working accidents are reported by the employers.

Annex 5 — Internal and external use of the systems

	1 FR	2 FR	3 ES	4 SE	5 DE	6 FR	7 IT	8 ES	9 SE	10 UK	11 UK	12 FI	13 DK	14 FI	15 DK	16 NL	17 DE	18 UK	19 BE	20 IE	21 IE	22 NL	23 NO
Internal use/aim and background of the system																							
25. Data make 'priority setting' possible?																							
☐ yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	?	X	X	X
☐ no	X																			—			
26. Are company and/or governmental actions based on the data described?																							
☐ yes	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
☐ no			X			X																	
27a. Are the data used for cost-benefit analysis of OSH or could they be used for this purpose?																							
☐ yes							X		X	X	X			X				X		—			X
☐ no	X	X	X	X	X	X							X		X	X	X		X	—	X	X	
27b. Are there other aims of the system?																							
☐ identifying the need for legislation	X	X	—	X	X	X	X	—	X	X	X	X		—	X	X	X	—	X	—	—		X
☐ identifying information gaps	X		—		X	X	X	—		X	X	X		—		X	X	—	X	—	—	X	X
☐ demonstrating the effectiveness of OSH system			—			X	X	—		X	X	X		—	X	X		—	X	—	—		
☐ other		X	—	X	X			—	X				X	—		X		—		—	—	X	
27c. Has there been any evaluation of the effectiveness of policies, actions or campaigns linked to the system (e.g. monitoring targets)?																							
☐ yes				X	X			X		X	X	X	—	—		X	—	X	—	X			X
☐ no	X	X	X			X	X	X		X			—	—	X			—		—		X	
External use of the system																							
28. Data available for external use?																							
☐ yes	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	—		X	X
☐ no					X	X				X										—	X		X
30. Transferability to other countries possible?																							
☐ yes	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	—	X	X	X
☐ no									X											—			

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

	Do the data make 'priority setting' possible?	Is transferability of the system to other countries possible?
1. France — Working conditions survey		
2. France — Risks survey SUMER	Yes	
3. Spain — Working conditions survey		
4. Sweden — Working conditions survey		
5. Germany — Workplace exposure database		
6. France — Accidents		
7. Italy — Accidents and diseases	Yes	
8. Spain — Accidents and diseases		

	Do the data make 'priority setting' possible?	Is transferability of the system to other countries possible?
9. Sweden — Work injuries		
10. United Kingdom — Illnesses and diseases		Yes
11. United Kingdom — Injuries and diseases	Yes	
12. Finland — Occupational cancer		
13. Denmark — Hospitalisation		
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 measurering the progress within the seven 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		
17. Germany — OSH status report		
18. United Kingdom — 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 the United Kingdom 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		Yes
20. Ireland — Promotions and campaigns	Yes	Yes
21. Ireland — Accidents and enforcements		
22. Netherlands — Inspection monitor		
23. Norway — Accidents and 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 the Labour Inspectorate.

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

		1 FR	2 FR	3 ES	4 SE	5 DE	6 FR	7 IT	8 ES	9 SE	10 UK	11 UK	12 FI	13 DK	14 FI	15 DK	16 NL	17 DE	18 UK	19 BE	20 IE	21 IE	22 NL	23 NO
10.	**How are the data gathered?**																							
☐	by survey or questionnaire	X	X	X	X			X			X	X	X			X	X	X	X				X	X
☐	through observations at the workplace					X		X				X				X				X		X	X	X
☐	with social security registers						X	X	X	X					X		X	X				X		X
☐	national census data												X	X			X	X					X	
☐	other:											X	X	X					X		X	X	X	
11.	**Who carries out data gathering?**																							
☐	the 'owner' of the system	X	X		X	X	X	X				X	X	X	X		X			X	X	X	X	X
☐	others:		X	X		X		X	X	X	X	X	X	X		X	X	X	X					X
13.	**Population or sample data?**																							
☐	population data						X	X	X	X	X	X	X	X			X	X	X		N/A	X		
☐	sample data	X	X	X	X	X					X				X	X	X	X		X	N/A	X	X	X
14.	**Degree country covered?**																							
☐	completely	X	X		X	X				X	X	X	X	X	X		X			X			X	X
☐	partially			X			X	X	X							X		X	X		X	X		
15.	**Periodicity of the data collection?**																							
☐	ongoing					X	X	X	X	X	X	X	X	X	X		X			X	?	X		X
☐	once a year											X					X	X					X	
☐	every two years				X											X								
☐	other (number of years):	7	7	4							2–5		3–5						5					
16.	**Is under-reporting a problem?**																							
☐	yes				X	X				X	X	X			X						N/A	X		X
☐	no	X	X	X			X	X	X				X	X		X	X	X	X	X	N/A		X	
17.	**Methods against under-reporting?**																							
☐	yes	X				X				X	X	X					X				N/A	X		
☐	no		N/A	N/A	X		N/A	N/A	N/A				N/A	X	X	X		X	N/A	X	N/A		X	X
18.	**If sample, are they weighted?**																							
☐	yes	X	X	X	X		N/A	N/A	N/A	N/A	X	N/A	N/A	N/A	X	X	X	X	N/A		N/A		X	N/A
☐	no					X	N/A	N/A	N/A	N/A	X	N/A	N/A	N/A					N/A	X	N/A	X		N/A
20.	**Studies on validity and reliability?**																							
☐	yes	X	X		X	X		X		X	X	?	X	X		X	X	X	X		N/A			
☐	no			X			X		X			?			X					X	N/A	X	X	X
22.	**Who pays for the activities?**																							
☐	'owner'	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
☐	others:		X			X			X				X	X		X		X						

N/A = Not applicable

Annex 8 — Reliability and validity of the systems

	Information on the reliability and/or validity of the data	Studies with respect to validity and reliability of the data
1. France — Working conditions survey		
2. France — Risks survey SUMER		
3. Spain — Working conditions survey		
4. Sweden — Working conditions survey		
5. Germany — Workplace exposure database		
6. France — Accidents		
7. Italy — Accidents and diseases		
8. Spain — Accidents and diseases		
9. Sweden — Work injuries	The Swedish Work Environment Authority regularly tries to estimate the under-reporting, 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.	
10. United Kingdom — Illnesses and diseases		
11. United Kingdom — Injuries and diseases		
12. Finland — Occupational cancer	Cancer registry over 99 % complete and very accurate. Census about 98 % complete, with high accuracy. Exposure data of varying accuracy depending on available data and the competence of the assessor.	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 cannot be tested because there are no 'golden standards' available for past exposures.
13. Denmark — Hospitalisation	Systematic comparisons with ad hoc studies point to a very satisfactory reliability and validity of the database. The validity of 'exposure' was assessed in a thesis through comparisons with company personnel files and found satisfactory. Comparing mortality and hospitalisation 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 universities and general hospitals. Diagnosis related to surgery had a high validity but essential hypertension had a low validity.	Bach E. *Validation of EIR — an epidemiologic surveillance system* (in Danish) Copenhagen, Institute of Occupational Health and University of Roskilde, 1998 (Thesis). Tüchsen F., Bach E., Marmot M. 'Occupation and hospitalisation with ischaemic heart diseases: a new nationwide surveillance system based on hospital admissions'. *International journal of epidemiology*, 1992, 21, pp. 450–459. Jensen M. V., Tüchsen F. 'Occupation and lumbar disc prolapse' (Erhverv og diskusprolaps i lænden). *Ugeskr Laeger*, 1995, 157, 1519-23. Nielsen H.-W., Tüchsen F., Jensen, M. V. 'Validation of the use of the diagnosis 'Essential hypertension' in the national inpatient register'. *Ugeskr Laeger*, 1996, 158, pp.163–167.

	Information on the reliability and/or validity of the data	Studies with respect to validity and reliability of the data
		Tüchsen F., Andersen O., Olsen J. 'Referral bias in studies using hospitalisation as a proxy measure of the underlying incidence rate'. *Journal of clinical epidemiology*, 1996, 49, pp. 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 little 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 = 35 000 from Germany; the results are valid and reliable.	—
18. United Kingdom — 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', http://www.hse.gov.uk/statistics/index.htm.
19. Belgium — Safety index	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. 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 made a lot of effort to improve the safety level. 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 minimise the risk of non-reliability. 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 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.	Not available.
20. Ireland — Promotions and campaigns	It is reliable as it is a list of own activities.	—

	Information on the reliability and/or validity of the data	Studies with respect to validity and reliability of the data
21. Ireland — Accidents and enforcements	Accident reports are validated by employers; social welfare data are validated by employers, doctors and goverment departments. Workplace observations are made by inspectors.	—
22. Netherlands — 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 and 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

	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
1. France — Working conditions survey	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.	
2. France — Risks survey SUMER	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.	
3. Spain — Working conditions survey	Before the data-gathering process of each edition, there are meetings with trade union 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 abovementioned union representatives, are also invited to take part in the 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, to 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 the analysis of 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.	

	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
4. Sweden — Working conditions survey		
5. Germany — Workplace exposure database		
6. France — Accidents	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. 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, which makes it difficult to use them for the development of preventive measures. 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 healthcare sector. The Ministry believes that, for a better understanding of accidents and diseases, these points of view have to be taken into account. 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 the reality of the professional pathology.	
7. Italy — Accidents and diseases	Employer unions and trade unions (both being organisations who quite often use INAIL's data) were interviewed by telephone. Their answers refer to INAIL's databank (a database made of more than three million tables and available on the INAIL web site, updated every six months and with a section dedicated to monthly data on accidents, offering data updated to the previous month). The answers show that the databank is well known and frequently used. Nobody thinks it is insufficient. Some would like it better organised with a different structure, a more flexible system, adaptable to each user-specific need, instead of pre-set tables.	The system is already developing towards a more dynamic databank (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 under way.

	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
	With respect to the ESAW phase 3 system, it is quite well known that INAIL is the first European institute to already have started to put it into practice and therefore in a short time will also face this problem with respect to the databank. INAIL has already planned a complete restyling of the databank based on the new ESAW needs.	
8. Spain — Accidents and diseases	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. The capital weak point is the content and filling in 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 in procedure quality could be improved. 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.	
9. Sweden — Work injuries		
10. United Kingdom — Illnesses and diseases		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* http://www.hse.gov.uk/statistics/statnote.pdf).
11. United Kingdom — Injuries and diseases		
12. Finland — Occupational cancer		
13. Denmark — Hospitalisation		
14. Finland — Absenteeism	The general opinion with respect to the social security statistics is that they are useful and reliable.	Developments are mostly due to legislative changes. There is a general tendency to make statistics more available via the Internet. Data may be refined using Statistics Finland data on working hours branch-wise together with this data.

	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
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		
17. Germany — OSH status report	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 dateholders. The overall judgement of the system is positive.	Termination is not an option, major alterations are not to be expected.
18. United Kingdom — Costs of accidents	The costs are mostly used by the 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 for information a year and users seem to be generally satisfied with the information provided.	We are currently considering various options to provide an update of the costs that fit the 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 the HSE 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 made.
19. Belgium — Safety index (of companies)		
20. Ireland — Promotions and campaigns	—	—
21. Ireland — Accidents and enforcements	—	—
22. Netherlands — Inspection monitor		
23. Norway — Accidents and inspections	The information of the Labour Inspectorate web site is very often used by 'own people'. Very often they want more disaggregate, more detailed information, for example on branches or professions, which are specially prepared for them. The Labour Inspectorate has the impression that the outside users are quite satisfied with the information provided.	Information regarding the enterprises (size, address, NACE code, company groups, etc.) are from Statistics Norway. Information regarding inspections, interventions, working environment standards in the enterprises are collected by labour inspectors. Working accidents are reported by the employers.

Annex 10 — Documents: reports and papers on the systems

	Titles of main publications wherein the system or the results of the system are described
1. France — Working conditions survey	
2. France — Risks survey SUMER	
3. Spain — Working conditions survey	
4. Sweden — Working conditions survey	
5. Germany — Workplace exposure database	Documents wherein the system is described: • R. Stamm. 'BG Measurement system — Hazardous substances and the exposure database MEGA'. *Safety science monitor*. 1 (1997) Issue 2, Article 5. • R. Stamm. 'MEGA database — One million data since 1972'. *Applied occupational and environmental hygiene*. 16(2) (2000), pp. 159–163. Documents wherein results of the system are described: • W. Bock, T. H. Brock, R. Stamm, V. Wittneben. *Existing commercial chemicals — Exposure at the workplace*. BGAA Report 1/99. Published by Hauptverband der gewerblichen Berufsgenossenschaften (HVBG), Sankt Augustin 1998 (http://www.hvbg.de/d/bia/pub/rep/rep01/bgaa199e.htm). • Various reports, for example, on carcinogenic substances, asbestos, quartz and welding published in German.
6. France — Accidents	• *Statistiques financières et technologiques des accidents du travail* — Années 1998–2000 (Financial and technological statistics about occupational accidents — Years 1998–2000). This publication also includes information about occupational diseases and commuting accidents. • *Statistiques technologiques des accidents du travail et des maladies professionnelles* — Remarques — Année 2000 (Technological statistics about occupational accidents and diseases — Commentaries — Year 2000). • *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 (five-month delay), refining the estimations at each publication.
7. Italy — Accidents and diseases	Statistiche per la prevenzione, notiziario statistico.
8. Spain — Accidents and diseases	Anuario de estadisticas sociales y laborales. www.mtas.es/Estadisticas
9. Sweden — Work injuries	*Arbetssjukdomar och arbetsolyckor 1999* (etc.), *Arbetsskador 2000* (etc.). These reports are published yearly and contain a summary in English. In English: • *ISA — The Swedish information system — scope, content and quality*. Report 2000:16. The Swedish Work Environment Authority, Stockholm, Sweden, 2000. • *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 http://www.av.se
10. United Kingdom — Illnesses and diseases	Main results summarised annually in health and safety statistics (http://www.hse.gov.uk/statistics/2001/hsspt2.pdf). SWI surveys are also published as separate reports, the most recent being *Self-reported work-related illness in 1998/99* (http://www.hse.gov.uk/hthdir/noframes/euro9899.htm).
11. United Kingdom — Injuries and diseases	*Health and safety statistics* — volume 2000/01.
12. Finland — Occupational cancer	• E. Pukkala. '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. Basle, Karger, 1995. • Plus numerous specific update articles in scientific journals. • T. Kauppinen, J. Toikkanen, E. Pukkala. *From cross-tabulations to multipurpose exposure information systems: a new job-exposure matrix*. Amer J Ind Med 1998; 33:409-17.

	Titles of main publications wherein the system or the results of the system are described
13. Denmark — Hospitalisation	• www.ami.dk/statistik • F. Tüchsen, E. Bach, O. Andersen, J. Jørgensen. *Occupation and hospitalisation 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 (Arbejdsmiljøfondet, Arbejdsmiljøinstituttet og Arbejdstilsynet), Copenhagen, 1989. • F. Tüchsen, E. Bach. *Occupation and hospitalisation*. Selected diagnoses. (Erhverv og hospitalsindlæggelse. Udvalgte diagnoser.) The Working Environment Fund (Arbejdsmiljøfondet), Copenhagen, 1992. • F. Tüchsen, E. Bach, M. Marmot. *Occupation and hospitalisation with ischaemic heart diseases: A new nationwide surveillance system based on hospital admissions*. Int J Epidemiol 1992; 21: 450–459. • F. Tüchsen. *Working hours and ischaemic heart disease in Danish men. A four-year cohort study of hospitalisation*. Int J Epidemiol 1993; 22: 215–221. • F. Tüchsen, H. J. Jeppesen, E. Bach. *Employment status, non-daytime work and gastric ulcer in men*. Int J Epidemiol 1994; 23: 365–70. • M. V. Jensen, F. Tüchsen, E. Bach. Erhvervsindlæggelsesregistret, 1. Det nye register, 2. Erhverv og bevægeapparatssygdom. Copenhagen, 1994: Arbejdsmiljøfondet. • M. V. Jensen, F. Tüchsen. *Occupation and lumbar disc prolapse*. (Erhverv og diskusprolaps i lænden). Ugeskr Laeger 1995; 157: 1519-23. • H. Bøggild, F. Tüchsen, E. Ørhede. *Occupation, social position and chronic inflammatory bowel disease in Denmark*. Int J Epidemiol 1996; 25: 630–637. • F. Tüchsen, O. Andersen, G. Costa, H. Filakti, M. Marmot. *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: www.workhealth.org/whatsnew). • M. V. Jensen, F. Tüchsen, E. Ørhede. *Prolapsed cervical intervertebral disc in male drivers in Denmark 1981–90*. A longitudinal study on hospitalisation in Denmark. Spine 1996; 20: 2352-55. • F. Tüchsen. *Stroke in professional drivers in Denmark 1981–90*. Int J Epidemiol 1997; 26: 989–994. • F. Tüchsen, L. Endahl. *Increasing inequality in ischaemic heart morbidity among employed men in Denmark 1981–93: the need for a new preventive policy*. Int J Epidemiol 1999, 28: 640–644. • F. Tüchsen, H. Hannerz. *Social and occupational differences in chronic obstructive lung disease in Denmark 1981–93*. Am J Ind Med 2000; 37: 300–306. • F. Tüchsen, A. A. Jensen. *Agricultural work and the risk of Parkinson's disease in Denmark*, 1981–93. Scand J Work Environ Health 2000;26: 359-62. • F. Tüchsen, N. Krause, H. Hannerz, H. Burr, T. S. Kristensen. *A three-year prospective study of standing at work and varicose veins*. Scand J Work Environ Health 2000;26: 227–236. • C. Baarts, K. L. Mikkelsen, H. Hannerz, F. Tüchsen. *Use of a national hospitalisation 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. • H. Hannerz, F. Tüchsen. *Hospitalisation among male drivers in Denmark*. Occup Environ Health 2001; 58: 253–260. • H. Hannerz, f. Tüchsen. *Hospitalisation among female home-helpers in Denmark 1981–97*. Am J Ind Med 2002; 41: 1-10.
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 programmes for a clean working environment' in 2003.
16. Netherlands — OSH balance report	• Arbobalans 2000, Ministerie van Sociale Zaken en Werkgelegenheid, Den Haag, November, 2000. • Arbobalans 2001, Ministerie van Sociale Zaken en Werkgelegenheid, Den Haag, November, 2001, Publication number B274.

	Titles of main publications wherein the system or the results of the system are described
17. Germany — OSH status report	http://de.osha.eu.int/index.cfm?FA2EDB51B82D4FB785F4FC03FA40E95F
18. United Kingdom — 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	*Jaarverslag 1999–2000 van de Administratie van de arbeidsveiligheid* (Annual report 1999–2000 of the Administration of Safety at Work).
20. Ireland — Promotions and campaigns	Health and Safety Authority, Annual Reports.
21. Ireland — Accidents and enforcements	Health and Safety Authority, Annual Reports.
22. Netherlands — OSH inspection monitor	• Arbomonitor 1999, Arbeidsinspectie, July 2000, Elsevier Bedrijfsinformatie. 's-Gravenhage. • Arbomonitor 2000, Arbeidsinspectie, October 2001, Elsevier Bedrijfsinformatie, Doetinchem.
23. Norway — Accidents and inspections	Norwegian Labour Inspectorate's web site (arbeidstilsynet.no). Norway participates in the ESAW project carried out by Eurostat, and information regarding working accidents are published as a part of this project.

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 and 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 and Annamaria Iotti)
8.	INSHT (Mercedes Tejedor and Victoria de la Orden)
9.	Work Environment Authority/AV (Jan Weiner)
10.	Health and Safety Executive (John Hodgson)
11.	Health and 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 and Employment (Anita Venema) with Ministry of Labour
17.	Federal Institute for Occupational Safety and Health/BAuA (Karl Kuhn and Robert Säverin)
18.	Health and Safety Executive (Fiammetta Gordon)
19.	Ministry of Employment and Labour (Milles Raekelboom)
20.	Health and Safety Authority (Yukiko Kobayashi)
21.	Health and Safety Authority (Yukiko Kobayashi)
22.	TNO Work and Employment (Anita Venema) with Ministry of Labour
23.	Directorate of Labour Inspection (Kari Aamot)

European Agency for Safety and Health at Work

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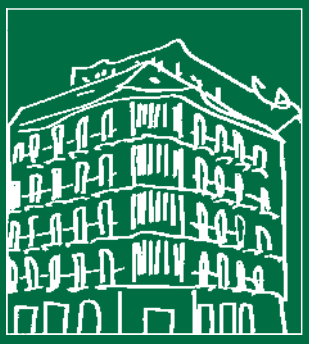

In order to encourage improvements, especially in the working environment, as regards the protection of the health and safety of workers as provided for in the Treaty and successive action programmes concerning health and safety at the workplace, the aim of the Agency shall be to provide the Community bodies, the Member States and those involved in the field with the technical, scientific and economic information of use in the field of safety and health at work.

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