



# Causes and circumstances of accidents at work in the EU





# Causes and circumstances of accidents at work in the EU

**European Commission**

Directorate-General for Employment, Social Affairs and Equal Opportunities  
F4 unit

Manuscript completed in November 2008

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Luxembourg: Office for Official Publications of the European Communities, 2009

ISBN 978-92-79-11806-7  
doi 10.2767/39711

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*Printed in Belgium*

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## Foreword

Health and safety at work, in particular issues relating to accidents at work in the European Union (EU), are one of the most important areas of action of the European Union's social policy. The commitment to improve working conditions for European workers began over half a century ago, in 1951, with the signing of the treaty establishing the European Coal and Steel Community (ECSC); this was later extended to all workers with the signing of the Treaty of Rome. In 1987, the Single European Act opened a new chapter in the protection of health and safety at work by providing a legal basis on which wide-ranging legislation for the protection of workers could be built.

*"Creating more and better jobs"* is one of the strategic goals established by the Lisbon European Council of March 2000. There is no doubt that health and safety are fundamental elements in assessing the quality of jobs, and were therefore included among the indicators chosen by the Commission in its communication entitled *"Employment and social policies: a framework for investing in quality"*<sup>1</sup>.

A sustainable and durable reduction in the number of accidents at work and occupational diseases is the prime objective of EU policies in the field of health and safety at work. In its communication entitled *"Improving quality and productivity at work: Community strategy 2007–2012 on health and safety at work"*<sup>2</sup> the Commission has proposed the ambitious goal of achieving, by 2012, a 25 % reduction in the total incidence rate of accidents at work (number of accidents at work per 100 000 workers) in the EU-27. This is to be achieved through the creation of national strategies targeting the most common risks and the most vulnerable sectors of activity, enterprises and workers.

On 2 July 2008, the European Commission adopted a renewed social agenda on *"Opportunities, access and solidarity in 21st century Europe"*, highlighting the need to help people remain in employment for longer. To this effect, improving the protection of workers against risks on the workplace has a fundamental role to play.

Although legislative action is essential to promote better working conditions, other instruments are also required to monitor progress and to make sure that objectives have been attained. In this respect, statistical indicators have been developed to enable a more detailed analysis of the causes and circumstances of accidents at work so as to implement targeted preventive measures.

European efforts towards the harmonisation of criteria and methodologies used for data collection began in 1990. It should also be noted that on several occasions the Council specifically requested the Commission to develop and submit proposals for the harmonisation of statistics on accidents at work<sup>3</sup>.

Phases I and II of the ESAW<sup>4</sup> methodology were implemented in 1993 and 1996 respectively. Phase I includes variables such as the sector of economic activity of the employer; the occupation, age and sex of the victim; the type of injury and part of the body injured and the place, date and time of the accident. Phase II complements the above information by providing details on the size of the enterprise, the victim's nationality and employment status, and consequences of the accident in terms of number of work days lost, permanent incapacity or death.

All these variables aim to provide details on the enterprise, the victim, the injury and its consequences and on the date and location of the accident. Building on this, and in order to promote a more dynamic EU policy on the prevention of accidents at work, Phase III of the ESAW methodology covers additional variables and harmonised classifications relating to the causes and circumstances of accidents at work, which will enable to establish the exact conditions under which accidents occur. The results gained from these analyses will make it possible to clearly define the new policies to be developed in the prevention of accidents at work.

Phase III, relating to the causes and circumstances of accidents at work, was gradually implemented in the Member States from 2001 onwards, according to national schedules and taking account of the necessary adaptations of national systems for the reporting and codification of accidents at work. Initial results on data for 2001 were obtained for one group of Member States in 2003. The most recent data are compiled with data from 2005 and already include Phase III variables for 23 Member States.

The analysis of ESAW data and related conclusions can serve as a basis in the development of appropriate prevention policies overall, both at sectoral and enterprise level. Providing these data to enterprises will enable them to have a broader perspective on the causes and circumstances of accidents at work in relation to various factors associated to a specific occupation and activity.

At national level, these data can serve as appropriate indicators in the definition and implementation of targeted strategies for the prevention and control of risks and in monitoring progress made in improving well-being at work for EU citizens.

<sup>1</sup> COM (2001) 313 final, 20.6.2001

<sup>2</sup> COM (2007) 62 final, 21.2.2007

<sup>3</sup> Council Resolution of 21 December 1987, OJ C 028, 3.2.1988

Council Resolution of 27 March 1995, OJ C 168, 4.7.1985

Council Resolution of 3 June 2002, OJ C 161, 5.7.2002

<sup>4</sup> ESAW: European Statistics on Accidents at Work





## Table of contents

<b>Introduction</b> .....	<b>7</b>
<b>Acknowledgements</b> .....	<b>8</b>
<b>Abbreviations, symbols, country codes and classifications</b> .....	<b>9</b>
<b>Part I: Statistical analysis of ESAW Phase III data</b> .....	<b>15</b>
<b>Chapter 1 - Trend of accidents at work in the EU</b> .....	<b>17</b>
1.1 Overview from 1995 to 2005 .....	19
1.2 Focus on 2005 .....	24
<b>Chapter 2 - Introductory analysis of causes and circumstances</b> .....	<b>29</b>
2.1 Description and availability of ESAW Phase III variables .....	31
2.2 Main characteristics of the 'Deviation' and 'Contact' variables .....	35
<b>Chapter 3 - Detailed analysis of Deviations</b> .....	<b>49</b>
3.1 Deviations at two-digit level .....	51
3.2 Distribution of specific physical activities by deviation .....	54
3.3 Distribution of working processes by deviation .....	57
3.4 Distribution of working environments by deviation .....	60
<b>Chapter 4 - Detailed analysis of Contacts – Modes of Injury</b> .....	<b>63</b>
4.1 Contacts – modes of injury at two-digit level .....	65
4.2 Distribution of deviations by contact – mode of injury .....	68
4.3 Distribution of specific physical activities by contact – mode of injury .....	71
4.4 Distribution of working processes by contact – mode of injury .....	74
4.5 Distribution of working environments by contact – mode of injury .....	77
<b>Chapter 5 - Detailed analysis of Material Agents</b> .....	<b>81</b>
5.1 Introduction to Material Agents .....	83
5.2 Material Agents of the deviation .....	84
5.3 Material Agents of the contact – mode of injury .....	92
<b>Chapter 6 - Absences caused by accidents at work</b> .....	<b>99</b>
6.1 Number of days of absence from work .....	101
6.2 Distribution of absence days by type of injury .....	105
6.3 Distribution of absence days by deviation .....	106
6.4 Distribution of absence days by contact – mode of injury .....	107
6.5 Distribution of absence days by Material Agent of the contact – mode of injury .....	108
6.6 Age of victims involved in serious accidents at work .....	110
<b>Chapter 7 - Methodological notes</b> .....	<b>113</b>
<b>Annex tables</b> .....	<b>121</b>



<b>Part II: Implications on preventive measures</b> .....	<b>185</b>
<b>Chapter 1 - Using ESAW data in the development of preventive measures</b> .....	<b>187</b>
1.1 Introduction .....	189
1.2 General priorities .....	190
1.3 Specific priorities .....	191
<b>Chapter 2 - Observations on the development and implementation of a prevention policy</b> .....	<b>195</b>
2.1 The need for preventive measures .....	197
2.2 Development and implementation of preventive measures .....	197
2.3 Development and implementation phases .....	198
<b>Chapter 3 - Examples of preventive measures</b> .....	<b>201</b>
3.1 Falls on the same level .....	203
3.2 Falls from height .....	206
3.3 Machinery .....	209
3.4 Using hand tools .....	213
3.5 Handling of loads .....	215
3.6 Occupational road traffic risks .....	218
3.7 Psychosocial risk factors .....	222
<b>Chapter 4 - Conclusion</b> .....	<b>229</b>



## Introduction

This report presents the first detailed analysis of causes and circumstances of accidents at work in the European Union. The publication consists of two parts: "Statistical analysis of ESAW Phase III data" and "Implications on preventive measures". The aim of the first part is to describe the situation regarding accidents at work in statistical terms using available ESAW data, and in particular ESAW Phase III data related to the causes and circumstances of accidents at work. On the basis of conclusions drawn from the statistical analysis, the second part provides considerations and suggestions on possible measures that could be implemented in the prevention of accidents at work. In the analysis and description of ESAW variables, a general approach was preferred to a systematic analysis by sector of economic activity. This affords a broader than just sectoral perspective, so as to emphasise the most relevant causal links, also taking account of the various sectors of economic activity as well as the occupation, age and sex of victims. Detailed data tables are also included in the Annex so that more detailed analyses and cross-tabulations may be carried out, for example by sector of economic activity.

The report begins with an analysis based on the ESAW Phase I and Phase II data covering the period 1995–2005. This overview is followed by a detailed study of cross-tabulations between ESAW Phase III data and the most relevant ESAW Phase I and II variables.

As Member States may choose which Phase III variables to report, the number of available observations differs from one variable to another. For non-fatal accidents, the data available for one year (2005 being the latest available data at the time of the study) for each of the variables can be considered representative enough to be used in the statistical analysis.

Since the number of cases of fatal accidents available per year is relatively low, data from 2003 to 2005 were accumulated for the analysis in order to increase the accuracy of results relating to fatal accidents.

The variables introduced in ESAW Phase III on the causes and circumstances of accidents at work provide additional information to identify where, and especially how, accidents occur, with the aim of establishing a prevention policy.

It should be noted that this publication is the first effort to present the potential use of the ESAW data, in particular Phase III data relating to "causes and circumstances of accidents at work", to be used as basis on which to define preventive measures. It is beyond the scope and possibilities of this report to provide an exhaustive list of preventive applications of this study. However, this report could provide useful added value in the identification of needs in terms of accident prevention.



## Acknowledgments

Statistical Office of the European Communities, Unit F5 "Statistics on Health and Food Safety" has provided remarkable technical support in the development of this publication.

This publication has been managed by Unit EMPL F/4 responsible for "Health, safety and hygiene at work", Head of Unit Mr J.R. Biosca de Sagastuy.

Unit ESTAT F/5 responsible for "Statistics on Health and Food Safety", Head of Unit Ms Marleen De Smedt, has provided technical support.

The opinions expressed are those of the individual authors alone and do not necessary reflect the position of the European Commission.

### Co-ordinators:

<p>Angel Fuente-Martin (EMPL Unit F/4) Principal Administrator DG Employment, Social Affairs and Equal Opportunities Bâtiment "EUFO" 10, rue Robert Stumper L-2176 Luxembourg empl-f4-secretariat@ec.europa.eu</p>	<p>More information concerning Health and safety at work issues is available on the Directorate-General for "Employment, Social Affairs and Equal Opportunities" website at: <a href="http://ec.europa.eu/social/">http://ec.europa.eu/social/</a></p>
<p>Antti Karjalainen (ESTAT Unit F/5) Administrator Statistical Office of the European Communities Bâtiment "Joseph Bech" L-2721 Luxembourg</p>	<p>A great deal of additional information on statistics relating to the European Union is available on the Internet. It can be accessed through the Europa server at: <a href="http://ec.europa.eu/eurostat/">http://ec.europa.eu/eurostat/</a></p>

### Production:

<p>Data processing, statistical analysis, prevention measures, design and desk-top publishing: SOGETI LUXEMBOURG SA Laurent Jacquet laurent.jacquet@sogeti.lu Jean-Pierre Cazeneuve, Sebastien Evans, Raphaëlle Méot, Guillaume Osier</p>	
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## Abbreviations

EODS	European Occupational Disease Statistics
ESAW	European Statistics on Accidents at Work
ISCO	The International Standard Classification of Occupations
LFS	Labour Force Survey
NACE	Nomenclature statistique des activités économiques dans la Communauté européenne (Statistical Classification of Economic Activities in the European Community)

## Symbols

:	Not available (or breakdown containing fewer than 4 occurrences)
-	Not applicable
%	Per cent
0	Real zero or close to zero (i.e. zero to the first significant figure or decimal place)

## Country codes

### Country aggregates

EU	European Union
EU-15	Fifteen Member States of the European Union: Austria, Belgium, Denmark, Germany, Greece, Finland, France, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom
EU-27	Twenty-seven Member States of the European Union: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Germany, Greece, Finland, France, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden, United Kingdom
Euro-zone	Member States of the European Union having adopted the Euro currency by 2005: Austria, Belgium, Germany, Greece, Finland, France, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain
EU-15+NO	An abbreviation used in some ESAW data (EU-15 and Norway)
EU_V	European Union - aggregate which varies according to countries available (see table 2.1 in Chapter 2 of Part I for the list of countries).



**EU Member States**

BE	Belgium
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
IT	Italy
CY	Cyprus
LV	Latvia
LT	Lithuania
LU	Luxembourg
HU	Hungary
MT	Malta
NL	Netherlands
AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden
UK	United Kingdom

**EFTA countries**

NO	Norway
CH	Switzerland
IS	Iceland
LI	Liechtenstein

**Candidate countries**

TR	Turkey
HR	Croatia
FYROM	The former Yugoslav Republic of Macedonia

**Other countries**

US	United States of America
JP	Japan

The EU Members States codes are used in table 2.1 (Part I - Chapter 2) and in the Part I - Annex table A1.8 with other countries codes.

## Classifications

**ESAW variables**

***ESAW Phase I***

- Case number
- Economic activity of the employer
- Occupation of the victim
- Age of the victim
- Sex of the victim
- Type of injury
- Part of body injured
- Geographical location
- Date of the accident
- Time of the accident

***ESAW Phase II***

- Size of the enterprise
- Nationality
- Employment status
- Days lost

***ESAW Phase III***

- Workstation
- Working environment
- Working process
- Specific physical activity
- Material Agent of Specific physical activity
- Deviation
- Material Agent of Deviation
- Contact – Mode of injury
- Material Agent of Contact – Mode of injury



**Statistical Classification of Economic Activities (NACE Rev. 1)**

<b>Code</b>	<b><i>Economic activity</i></b>
<b>Section A Agriculture, hunting and forestry</b>	
01	Agriculture, hunting and related service activities
02	Forestry, logging and related service activities
<b>Section B Fishing</b>	
05	Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing
<b>Section C Mining and quarrying</b>	
10	Mining of coal and lignite; extraction of peat
11	Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying
12	Mining of uranium and thorium ores
13	Mining of metal ores
14	Other mining and quarrying
<b>Section D Manufacturing</b>	
15	Manufacture of food products and beverages
16	Manufacture of tobacco products
17	Manufacture of textiles
18	Manufacture of wearing apparel; dressing and dyeing of fur
19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
20	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
21	Manufacture of pulp, paper and paper products
22	Publishing, printing and reproduction of recorded media
23	Manufacture of coke, refined petroleum products and nuclear fuel
24	Manufacture of chemicals and chemical products
25	Manufacture of rubber and plastic products
26	Manufacture of other non-metallic mineral products
27	Manufacture of basic metals
28	Manufacture of fabricated metal products, except machinery and equipment
29	Manufacture of machinery and equipment not elsewhere classified (n.e.c.)
30	Manufacture of electrical and optical equipment
31	Manufacture of electrical machinery and apparatus n.e.c.
32	Manufacture of radio, television and communication equipment and apparatus
33	Manufacture of medical, precision and optical instruments, watches and clocks
34	Manufacture of motor vehicles, trailers and semi-trailers
35	Manufacture of other transport equipment
36	Manufacture of furniture; manufacturing n.e.c.
37	Recycling
<b>Section E Electricity, gas and water supply</b>	
40	Electricity, gas, steam and hot water supply
41	Collection, purification and distribution of water
<b>Section F Construction</b>	
45	Construction
<b>Section G Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods</b>	
50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles
52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods
<b>Section H Hotels and restaurants</b>	
55	Hotels and restaurants
<b>Section I Transport, storage and communication</b>	
60	Land transport; transport via pipelines
61	Water transport
62	Air transport
63	Supporting and auxiliary transport activities; activities of travel agencies
64	Post and telecommunications



**Section J Financial intermediation**

- 65 Financial intermediation, except insurance and pension funding
- 66 Insurance and pension funding, except compulsory social security
- 67 Activities auxiliary to financial intermediation

**Section K Real estate, renting and business activities**

- 70 Real estate activities
- 71 Renting of machinery and equipment without operator and of personal and house
- 72 Computer and related activities
- 73 Research and development
- 74 Other business activities

**Section L Public administration and defence; compulsory social security**

- 75 Public administration and defence; compulsory social security

**Section M Education**

- 80 Education

**Section N Health and social work**

- 85 Health and social work

**Section O Other community, social and personal service activities**

- 90 Sewage and refuse disposal, sanitation and similar activities
- 91 Activities of membership organisations n.e.c.
- 92 Recreational, cultural and sporting activities
- 93 Other service activities

**Section P Private households with employed persons**

- 95 Private households with employed persons

**Section Q Extra-territorial organisations and bodies**

- 99 Extra-territorial organisations and bodies

**International Standard Classification of Occupations [ISCO-88 (COM)]**

<b>Code</b>	<b><i>Economic activity</i></b>
<b>10</b>	<b>Legislators, senior officials and managers without specification</b>
11	Legislators and senior officials
12	Corporate managers
13	General managers
<b>20</b>	<b>Professionals without specification</b>
21	Physical, mathematical and engineering science professionals
22	Life science and health professionals
23	Teaching professionals
24	Other professionals
<b>30</b>	<b>Technicians and associate professionals without specification</b>
31	Physical and engineering science associate professionals
32	Life science and health associate professionals
33	Teaching associate professionals
34	Other associate professionals
<b>40</b>	<b>Clerks without specification</b>
41	Office clerks
42	Customer service clerks
<b>50</b>	<b>Service workers and shop and market sales workers without specification</b>
51	Personal and protective services workers
52	Models, salespersons and demonstrators
<b>60</b>	<b>Skilled agricultural and fishery workers without specification</b>
61	Skilled agricultural and fishery workers
<b>70</b>	<b>Craft and related trades workers without specification</b>
71	Extraction and building trades workers
72	Metal, machinery and related trades workers
73	Precision, handicraft, printing and related trades workers
74	Other craft and related trades workers
<b>80</b>	<b>Plant and machine operators and assemblers without specification</b>
81	Stationary-plant and related operators
82	Machine operators and assemblers
83	Drivers and mobile-plant operators
<b>90</b>	<b>Elementary occupations without specification</b>
91	Sales and services elementary occupations
92	Agricultural, fishery and related labourers
93	Labourers in mining, construction, manufacturing and transport
<b>00</b>	<b>Armed forces without specification</b>
01	Armed forces







**Part I: Statistical analysis of  
ESAW Phase III data**





# Chapter 1 - Trend of accidents at work in the EU





## 1.1 Overview from 1995 to 2005

*Over the past ten years, the incidence rate of non-fatal accidents at work in the EU-15 dropped by 27.4%, against 42.4% for fatal accidents.*

According to the European Statistics on Accidents at Work (ESAW) methodology, around 4 million accidents at work resulting in more than three days of absence from work occurred in the EU-15 in 2005. In absolute terms, this corresponds to a 17.4% decrease compared to 1995. For fatal accidents, this trend is more marked with a reduction of 35.6% over the same period. In terms of incidence rate (per 100 000 workers) for accidents in the nine main branches of economic activity of the employer (NACE), non-fatal accidents at work were down by 27.4%, against 42.4% for fatal accidents. In 2005, the incidence rate for these branches fell for the first time below the threshold of 3 100 non-fatal accidents per 100 000 workers, and below 3.5 fatal accidents per 100 000 workers. In 2000, this downward trend gained momentum, with incidence rates for non-fatal accidents falling by 5.9% from 1995 to 2000, against 22.9% from 2000 to 2005 (see Table A1.3 in the Annex).

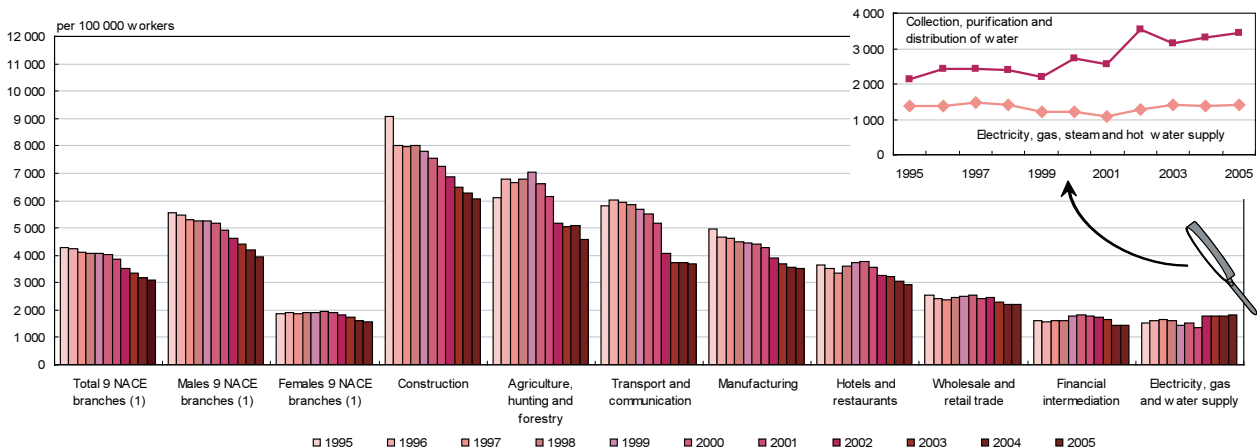
### Sector of economic activity of the employer

*Accident risks increased in the subsector of 'collection, purification and distribution of water'.*

This significant decreasing trend in accidents at work was consistent for a large majority of sectors. Over the ten-year period, the strongest reductions in incidence rates concerning non-fatal accidents were observed for the sectors of 'transport, storage and communication' (-36.2%) and 'construction' (-33.2%).

The 'electricity, gas and water supply' sector is remarkable as it features a reversed trend compared to other NACE branches. Accident risks for this sector rose by of 18.4% from 1995 to 2005, with risks multiplied by 2.4 for women (see Table A1.3 in the Annex). Within this sector, the most exposed subsector was 'collection, purification and distribution of water', with accident risks multiplied by 1.6 in the course of the past ten years.

**Figure 1.1**  
Incidence rate of non-fatal accidents at work, EU-15, 1995-2005



(1) 9 NACE branches: A, D to K

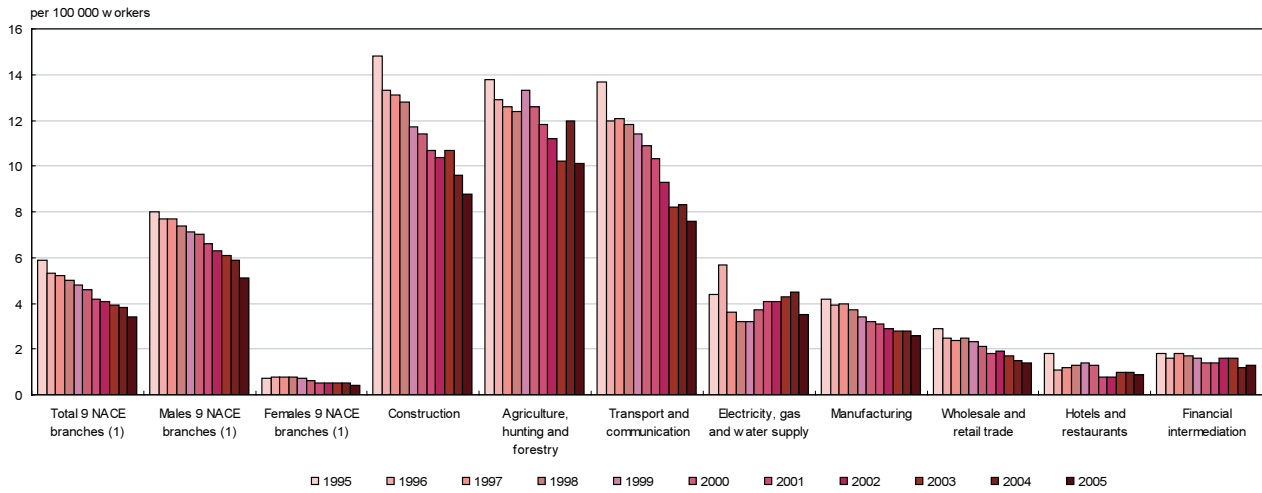
NACE means Statistical Classification of Economic Activities in the European Community

Source: Eurostat – ESAW

Concerning fatal accidents, the same decreasing trend of risks was observed in all sectors. With an incidence rate significantly higher than the total nine NACE branches, the sectors of 'construction', 'agriculture' and 'transport' registered the highest risks for accidents resulting in death over the ten-year period. In terms of non-fatal accidents, the incidence rate of the 'construction' sector was twice as high as the average of the nine main NACE branches considered, and more than four times higher than in the 'financial' sector.



**Figure 1.2**  
Incidence rates of fatal accidents at work, EU-15, 1995-2005



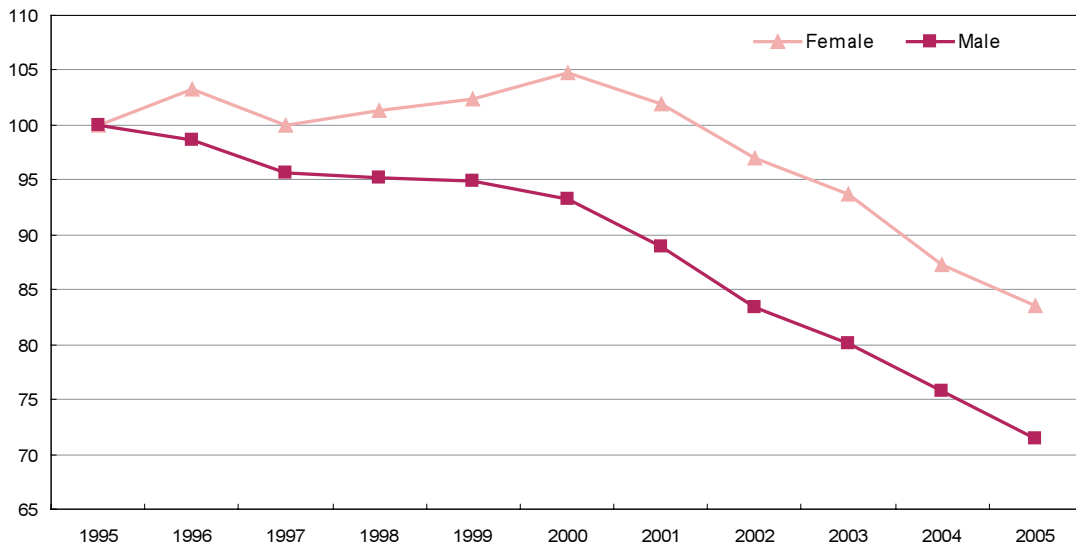
(<sup>1</sup>) 9 NACE branches: A, D to K  
Source: Eurostat – ESAW

### Sex of the victim

In spite of the downward trend observed for both sexes, the reduction of the incidence rate for non-fatal accidents was more important for male workers (28.5%) than for female workers (16.4%). This could be due to the fact that the workforce in sectors with traditionally recognised high risks is predominantly male, and preventive measures may have been more focused on these sectors. Compared to 1995, the female incidence rate for non-fatal accidents at work grew from 1997 to 2000. This increase can chiefly be ascribed to the sectors of ‘electricity, gas and water supply’ and ‘transport, storage and communication’ (see Table A1.3 in the Annex). After reaching a peak in 2000, the incidence of non-fatal accidents fell in all sectors except ‘electricity, gas and water supply’ (NACE E).

*The incidence rate of non-fatal accidents at work declined faster for male workers over the period considered.*

**Figure 1.3**  
Incidence rate of non-fatal accidents at work by sex, EU-15, base 1995=100 (<sup>1</sup>)



(<sup>1</sup>) Workers in 9 Naces branches: A, D to K  
NB: Accidents at work with more than 3 days lost (4 days' absence or more)  
Source: Eurostat – ESAW

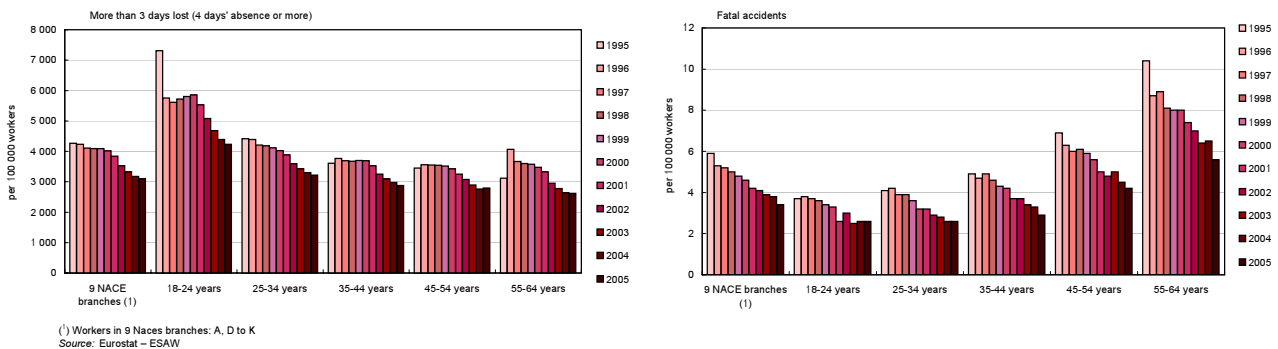
## Age of the victim

*Older workers (aged 55 to 64) were overrepresented in terms of fatal accidents at work. Between 1995 and 2005, the risk of having a fatal accident at work was up to 2.8 times higher for older workers than for workers aged 18 to 24.*

There is a direct correlation between accidents at work and experience. This can be seen in the decrease of the incidence rate for non-fatal accidents concurrent with the ageing of workers. In 1995, workers aged 18 to 24 were indeed twice as likely to be involved in a work-related accident than the other age groups. However, after a sharp drop in 1996, this gap was progressively reduced over the period. Moreover, following a period of stability, and even of slight increase for the youngest workers, the decrease in incidence rates picked up pace after 2000 in all age groups considered.

In contrast, the reverse trend was observed for fatal accidents at work, with an increase of incidence rates proportionally to the age of workers. In the absence of preventive measures specifically designed for older workers, this situation could get worse in the coming years due to the ageing of the European population.

**Figure 1.4** Incidence rate of accidents at work by age and severity, EU-15, 1995-2005

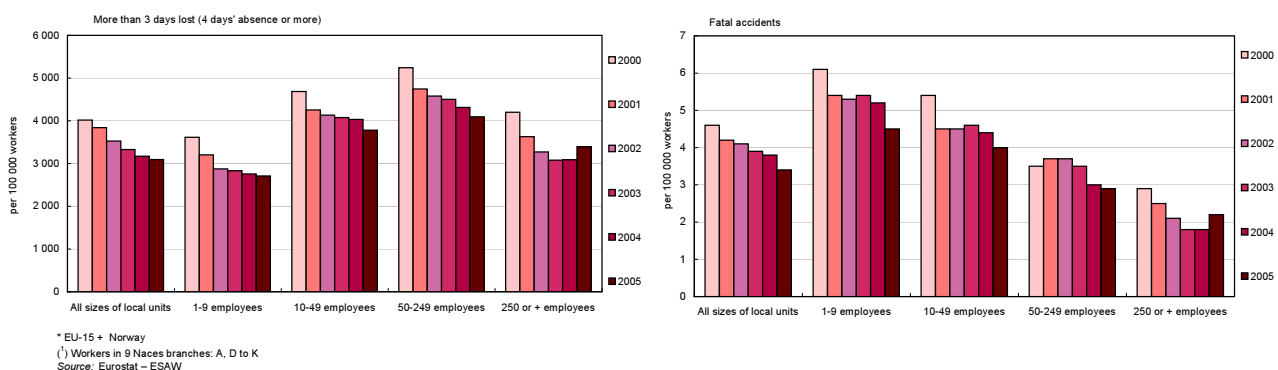


## Size of local unit

*Incidence rates for non-fatal accidents were highest in local units with 50 to 249 employees, while the incidence of fatal accidents was greater in local units with fewer than 10 employees.*

In terms of non-fatal accidents at work, local units with 50 to 249 employees registered the highest incidence rates between 2000 and 2005. Although in large companies resources are generally more readily available to prevent such accidents, the lowest incidence rates overall were registered in local units with fewer than 10 employees. However, this trend can vary according to the sector of activity, where accidents can be more concentrated in smaller local units. This is particularly relevant for fatal accidents at work (see Table A1.5 in the Annex).

**Figure 1.5** Incidence rate of accidents at work by size of local unit and severity, EU-15\*, 2000-2005 (<sup>1</sup>)



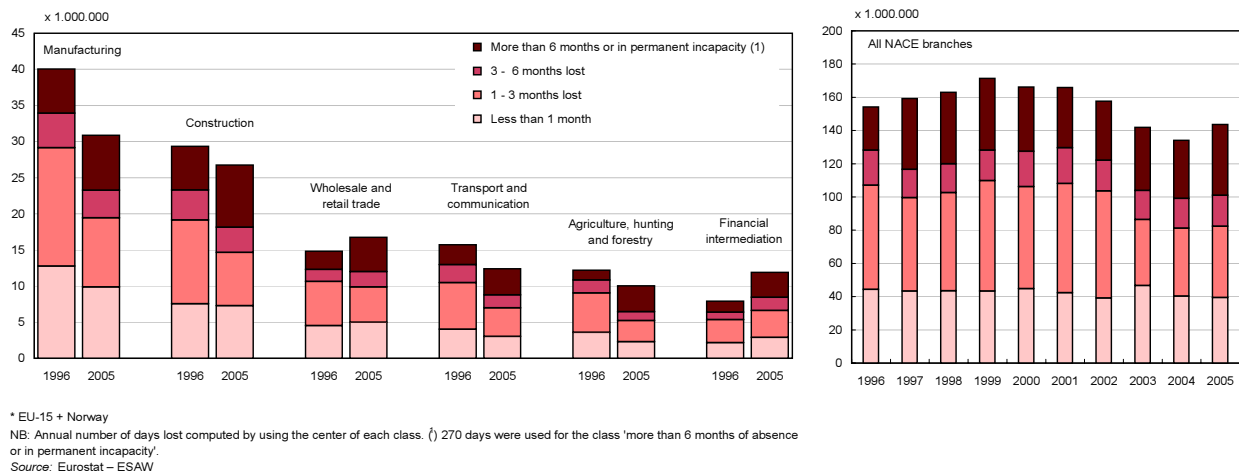
## Consequences of accidents at work

As a direct consequence of accidents at work, the number of days where the victim is unfit for work provides an indication on the severity of the injury. The total number of accidents leading to more than 3 days of absence has fallen significantly since 1996 (16.2%) (see Table A1.6 in the Annex). However, based on ESAW data, 143 million annual days lost were recorded for all NACE branches at EU-15 level in 2005. For non-fatal accidents at work resulting in more than three days of absence, the average duration of absence was 35 days in 2005, against 32 days in 1996. This average varies from 30 days in 'hotels and restaurants' to 43 in 'agriculture, hunting and forestry'. The proportion of accidents at work with 'permanent incapacity or more than six months of absence' was 3.9% in 2005, varying from 2.7% in 'hotels and restaurants' to 5.7% in 'agriculture, hunting and forestry'.

*Overall, fewer working days were lost to work-related injuries, however individual accidents tended to result in longer periods of absence.*

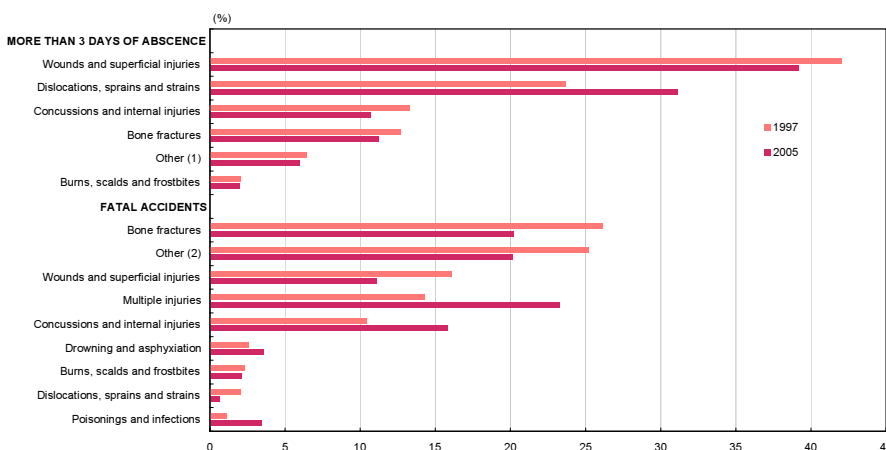
Among the sectors with the highest number of days lost, a decrease was observed over the nine-year period, except in 'wholesale and retail trade' and 'financial intermediation'. However, 'manufacturing', 'agriculture' and 'construction' remain the sectors with the highest number of absence days.

**Figure 1.6** Total number of annual days of absence by sector of economic activity, EU-15\*, 1996-2005



From 1997 to 2005, 'wounds and superficial injuries' were the most frequent physical consequences of non-fatal accidents (see Table A1.7 in the Annex). Although the number of accidents leading to 'wounds and superficial injuries' dropped, 'dislocations, sprains and strains' increased by 20.3%. Furthermore, the number of cases of 'multiples injuries' and 'concussions and internal injuries' resulting in death rose substantially during the period considered.

**Figure 1.7** Distribution of accidents at work by type of injury in 1997 and 2005, EU-15\*



\* EU-15 + Norway  
 (1) Sum of categories Poisonings, Amputations, Multiple, Drownings, Temperature, Sound, Shocks and Other specified injuries not included in other sections  
 (2) Sum of categories Amputations, Shocks, Temperature, Sound and Other specified injuries not included in other sections  
 Source: Eurostat – ESAW



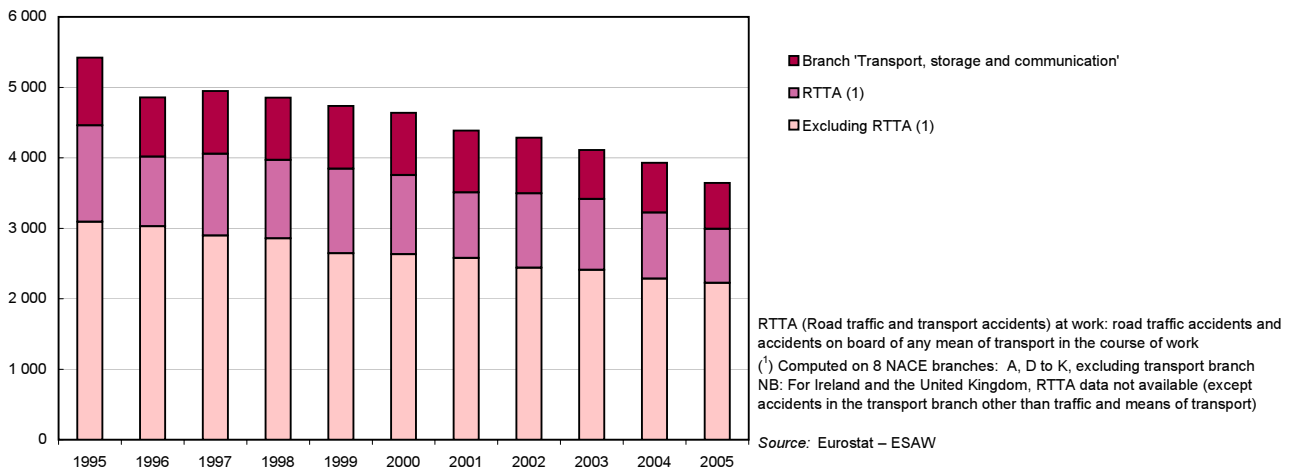
## Fatal Road Traffic and Transport Accidents (RTTA)

*Proportionally, road traffic and transport accidents accounted for fewer fatalities at work.*

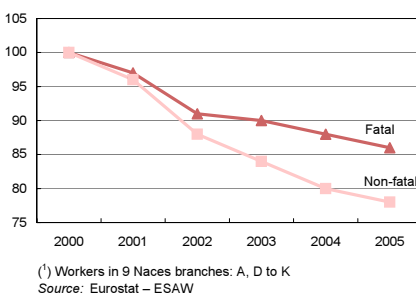
It would be useful to divide fatal accidents at work into three separate categories, namely fatal accidents within the 'transport' sector as a whole (NACE I: 'transport, storage and communication'), fatal road traffic accidents excluding the 'transport' sector (fatal RTTA in the remaining 8 NACE branches) and the rest of fatal accidents. It should be noted that accidents occurring while commuting to work are not included in the ESAW data.

Although road traffic accidents ('transport' branch + fatal RTTA in the remaining eight NACE branches) still accounted for more than 39% of fatal accidents in 2005, this was slightly less than in 1995 (43%). In addition, the decline is more marked for fatal RTTA in the remaining eight NACE branches, representing 21% of fatal accidents in 2005, compared with 25% in 1995. Fatal accidents in the transport branch accounted for close to 18% of work-related fatalities both in 1995 and 2005. The remaining fatal accidents (excluding RTTA in the eight NACE branches and NACE I) represented 61% of the total in 2005, compared with 57% in 1995 (see Table A1.2 in the Annex).

**Figure 1.8** Number of fatal accidents at work taking into account road traffic and transport accidents, EU-15



**Figure 1.9** Evolution of the standardised incidence rate of accidents at work excluding RTTA in the course of work (1), EU-27, index 2000=100



Structural indicators for the EU-27 were developed by Eurostat. These statistics exclude RTTA in the computation of the incidence rate of fatal accidents at work (see Table A1.8 in the Annex). For Ireland and the United Kingdom data on road traffic and transport accidents at work were not available. This has a significant impact on the national numbers of fatalities.

Between 2000 and 2005, the EU-27 registered a 14% reduction in fatal accident risks (excluding RTTA), while non-fatal accidents were down by 22% over the same period.



## 1.2 Focus on 2005

Having analysed the trend of accidents at work between 1995 and 2005, it would now be interesting to focus on the latest ESAW data available (2005).

Framework Directive 89/391/EEC<sup>1</sup> sets out that employers are required to keep a record of occupational accidents. The ESAW methodology's aim is to collect and process statistics relating to these declarations. This methodology is based on harmonised criteria developed by the Commission (EUROSTAT and DG Employment), and in close collaboration with the EU Member States since 1990. The ESAW sources are the declarations of accidents at work at national level, either to public (Social Security) or private insurance services for accidents at work (insurance-based systems), or to other relevant national authorities (Labour Inspection, etc.) for Member States with a universal Social Security system. However, non-fatal accidents may be underreported; to compensate for this, Member States provide information on the estimated reporting levels, which is then used to adjust the reported numbers. Such information on reporting levels is not yet available for all EU-27 countries. Therefore, ESAW data on non-fatal accidents at work are published only for the EU-15 Member States. For fatal accidents at work, the reporting is considered complete and EU-27 figures are available for 2005 (see Annex table A1.9).

<sup>1</sup> Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (OJ L-183 of 26.06.1989, page 1).

### Sector of economic activity of the employer and sex of the victim

With more than 73% at EU-15 level, fatal accidents at work were largely concentrated in the sectors of 'agriculture', 'manufacturing', 'construction' and 'transport' (see Table A1.9 in the Annex). Overall, 95% of fatal accidents at work occurred among men. This reflects the relatively low proportion of women in the sectors affected by the highest numbers of fatal accidents at work.

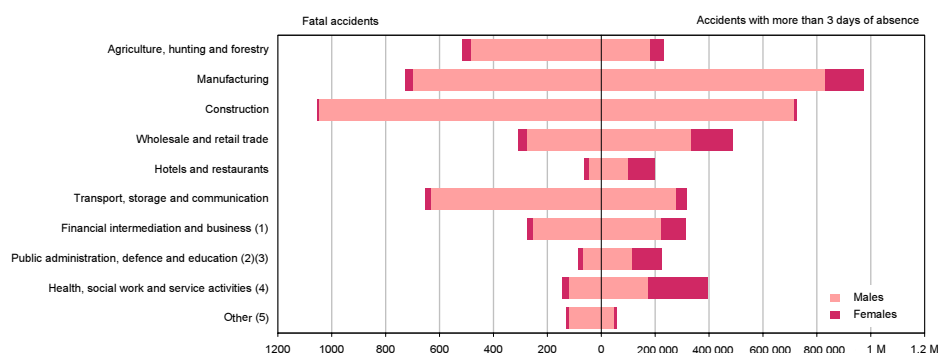
*Male workers were more affected by cases of fatal accidents at work.*

For non-fatal accidents at work, the distribution by sector was less concentrated. The sectors of 'manufacturing', 'construction', 'trade' and 'health and social work' accounted for 66% of all accidents. Around 24% of all non-fatal accidents occurred among women. In sectors comprising a high proportion of female workers, just over half of non-fatal accidents occurred among women, as in 'health and social work' (56%).

*Women were involved in 56% of non-fatal accidents which occurred in the sector of health and social work.*

For 'financial intermediation' the overall incidence rate of non-fatal accidents is relatively low but it is worth noting that this rate is higher among women than men (420 accidents per 100 000 workers against 330 respectively). It should be highlighted that full-time equivalents could not be used and that the differences relating to part-time and full-time employment between women and men were not analysed.

**Figure 1.10** Number of accidents at work by severity, sector of activity and sex of the victim, EU-15, 2005



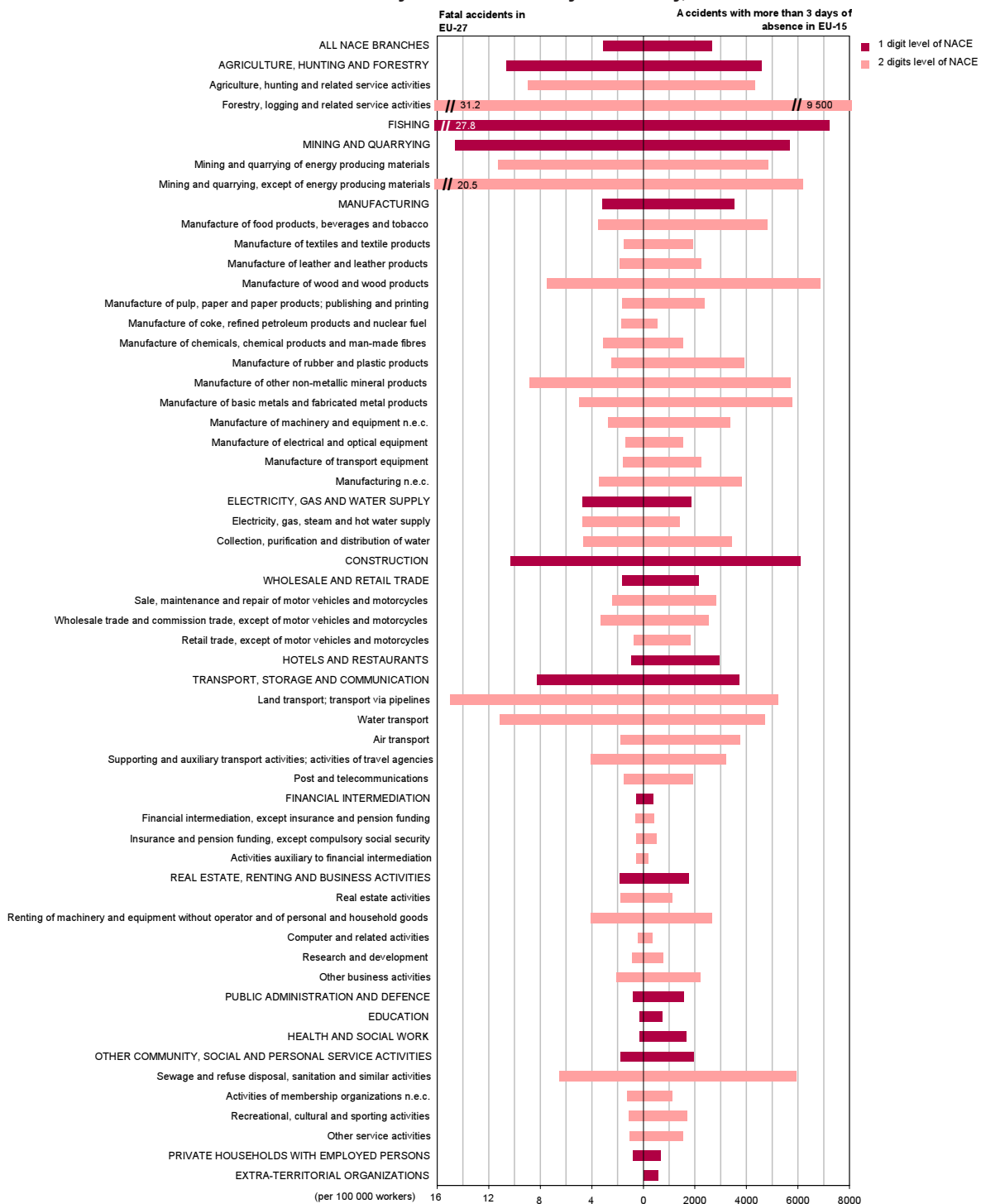
(1) NACE branches: 'Financial intermediation' and 'Real estate, renting and business activities'  
 (2) NACE branches: 'Public administration and defence; compulsory social security' and 'Education'  
 (3) For some countries, public sector is not covered by ESAW (see ESAW methodology for more details)  
 (4) NACE branches: 'Health and social work' and 'Other community, social and personal service activities'  
 (5) NACE branches: 'Fishing', 'Mining and quarrying', 'Electricity, gas and water supply', 'Private households with employed persons' and 'Extra-territorial organisations and bodies'  
 Source: Eurostat – ESAW

*'Fishing', 'forestry', 'wood industry', 'mining and quarrying of energy-producing materials', 'sewage and refuse disposal, sanitation and similar activities', as well as 'construction' accounted for the highest incidence rates of non-fatal accidents at work.*

Considering the main economic sectors with a large workforce, the highest incidence rate for fatal and non-fatal accidents at work were registered in the 'construction' sector. Nevertheless, 'fishing' as well as 'mining and quarrying' also had a high incidence rate, although the overall workforce is relatively small in these sectors.

At a more detailed level of classification, the incidence rate was high in certain subcategories of 'agriculture, hunting and forestry' ('forestry, logging and related service activities'), 'manufacturing' ('manufacturing of wood and wood products', and 'manufacturing of other non-metallic mineral products'), 'transport' ('land transport' and 'water transport') and 'other community, social and personal service activities' ('sewage and refuse disposal, sanitation and similar activities') (see Table A1.9 in the Annex).

**Figure 1.11**  
Incidence rates of accidents at work by subsector of activity and severity, 2005



Source: Eurostat – ESAW/LFS



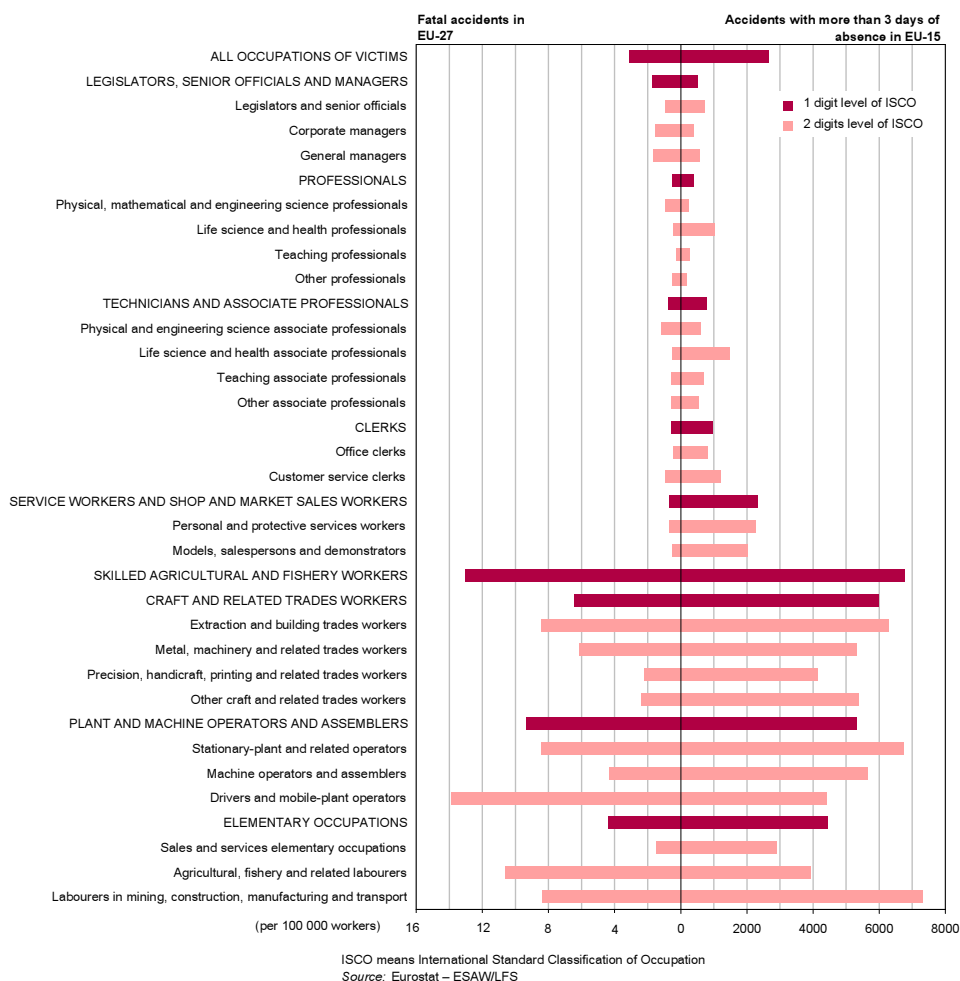
## Occupation of the victim

Economic activity refers to the employer's main line of business, while occupation describes the work carried out by the worker. For example, construction companies do not only employ building workers, but also engineers and office clerks. Occupation therefore provides a more accurate reflection of potential risks at work.

For both fatal and non-fatal accidents at work, the highest incidence rates were observed for industrial and agricultural workers. Around 75% of fatal accidents and 68% of non-fatal accidents occurred among 'craft and related trades workers', 'machine operators' or workers employed in an 'elementary occupation' (see Table A1.10 in the Annex). At a more detailed level of classification, the incidence rate for non-fatal accidents at work was highest among 'labourers in mining, construction, manufacturing and transport', 'stationary and mobile-plant operators' and 'extraction and building trade workers'.

*Around 75% of fatal accidents and 68% of non-fatal accidents occurred among 'craft and related trades workers', 'machine operators' or workers employed in an 'elementary occupation'.*

**Figure 1.12**  
Incidence rates of accidents at work by severity and occupation, 2005



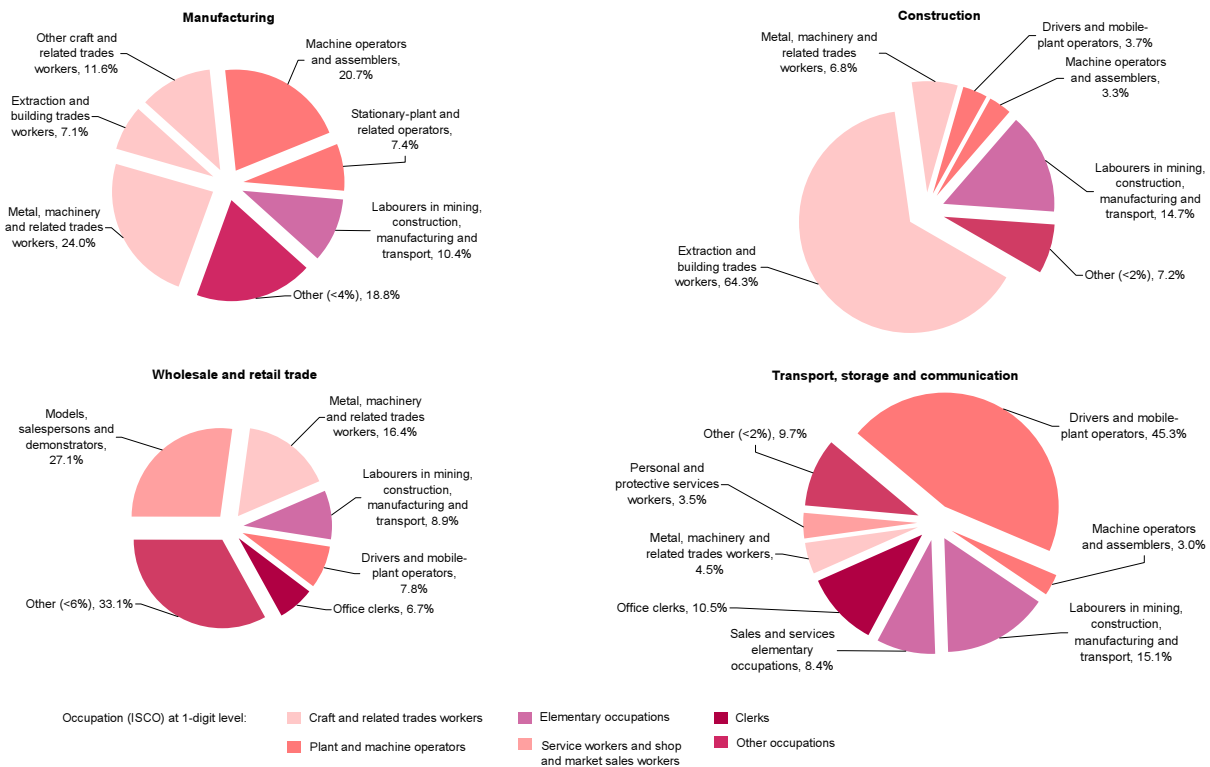
The analysis of the occupational distribution of accident victims within a given economic activity is revealing. For example, in 'manufacturing' 77.6% of victims of non-fatal accidents were either 'craft workers' or 'plant and machine operators' (these two occupations accounted for half of non-fatal accidents at work across all NACE branches). In 'construction', 72.1% of victims were 'craft and related trades workers' (representing 32.5% of all NACE branches). In 'transport', 50.9% of victims were 'plant and machine operators and assemblers' (17.6% of all NACE branches). Overall, 'clerks' accounted for 4.7% of non-fatal accidents at work, but represented 46.6% of cases in 'financial intermediation' (see Table A1.11 in the Annex).

*In 'manufacturing' 77.6% of victims of non-fatal accidents at work were either 'craft workers' or 'plant and machine operators'.*

*'Plant and machine operators and assemblers' accounted for 78.0% of fatal accidents at work in the sector of 'transport, storage and communication'.*

Concerning fatal accidents, 78.0% of victims in the sector of 'transport, storage and communication' were 'plant and machine operators and assemblers', representing 29.1% of fatal accidents at work for all NACE branches. In 'construction', 61.9% of victims were 'craft and related trades workers', representing 30.8% of all NACE branches. In addition, 2.9% of fatal accidents at work at total NACE level occurred among 'service workers and shop and market sales workers', accounting for 45.5% of cases in 'hotels and restaurants' (see Table A1.12 in the Annex).

**Figure 1.13** Distribution (%) of non-fatal accidents at work by occupation (2-digit level) for high-risk activity sectors, EU-15, 2005 <sup>(1)(2)</sup>



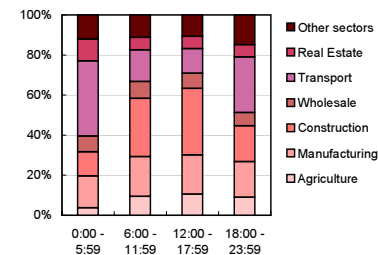
<sup>(1)</sup> The individual pie-chart pieces correspond to ISCO at a 2-digit level. Each cluster of colour is associated with occupation at 1-digit level.  
<sup>(2)</sup> All occupations at 2-digit level comprised in 'Other' are below the percentage displayed in brackets.  
 Source: Eurostat – ESAW

## Time of day when accidents occur

Accidents at work occurring at night are more often fatal than those occurring during the daytime. Out of 1 000 accidents, an average of 2.2 were fatal between midnight and 6:00. This is 50% more compared to the other times of day. Such a difference may be partly explained by road accidents, which are more often fatal during night time. Indeed, the 'transport' sector accounts for 37.5% of fatal accidents occurring between midnight and 6:00.

Concerning non-fatal accidents, there are no apparent differences in the distribution of absence days in relation to the working period.

**Figure 1.14** Distribution (%) of sectors of activity by time of day when fatal accidents occur, EU-15, 2005



Source: Eurostat – ESAW

**Table 1.1** Distribution (%) of accidents at work by severity (number of days lost) and time of day, EU-15, 2005

	4 - 6 days	7 - 13 days	14 - 20 days	21 days or less than 1 month	1 to less than 3 months	3 to less than 6 months	6 month or more	Total non-fatal
00:00 - 05:59	16.9	28.3	14.7	16.8	16.6	3.9	2.8	100.0
06:00 - 11:59	18.0	28.2	14.9	15.3	16.6	3.6	3.3	100.0
12:00 - 17:59	17.2	28.5	14.9	15.6	16.8	3.7	3.3	100.0
18:00 - 23:59	16.8	28.3	15.0	17.0	16.7	3.7	2.6	100.0
Total	17.5	28.3	14.9	15.7	16.7	3.7	3.2	100.0

Source: Eurostat – ESAW



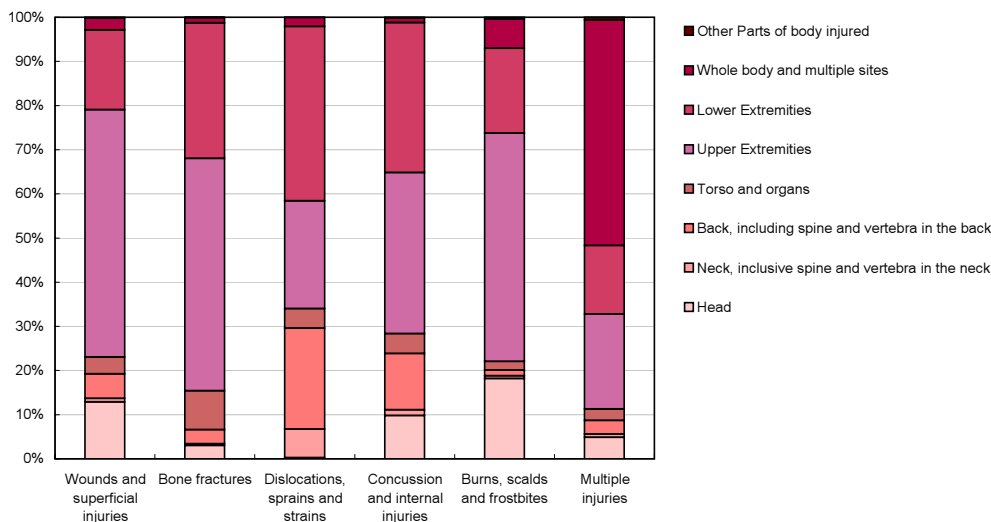
## Type of injury and part of body injured

The most common types of injury for non-fatal accidents at work were 'wounds and superficial injuries' and 'dislocations, sprains and strains' (see Figure 1.7). These two categories accounted for 70.4% of all non-fatal accidents (see Table A1.13 in the Annex). Relating to the part of the body sustaining the injury, 'upper' and 'lower extremities' were affected in 69.4% of all non-fatal accidents. More precisely, among the most frequent types of injuries due to non-fatal work accidents, the 'upper extremities' were the most affected parts of the body: 56.0% of 'wounds and superficial injuries' involved 'upper extremities', against 52.6% for 'bones fractures' and 51.7% for 'burns, scalds and frostbites'. For injuries with a lower occurrence, 91.5% of 'traumatic amputations' affected the 'upper extremities'. The 'head' sustained injuries in 84.3% of non-fatal accidents as a result of the 'effects of sound, vibration and pressure'; and in 68.9% of cases due to the 'effects of temperature extremes, light and radiations'.

*The upper and lower limbs were injured in 69.4% of non-fatal accidents at work.*

Regarding fatal accidents at work, the most common types of injury were 'bone fractures', 'concussion and internal injuries' and 'multiple injuries' (see Figure 1.7). These accounted for 59.7% of all fatal accidents (see Table A1.14 in the Annex). The 'head', 'torso and organs' as well as the 'whole body' and 'multiple sites' were injured in 84.1% of fatal accidents at work. More precisely, 'bone fractures' involved the 'head' in 65.7% of cases, against 41.5% for 'concussion and internal injuries'. 'Multiple injuries' were sustained in the 'whole body and multiple sites' in 85.3% of fatal accidents at work.

**Figure 1.15** Distribution (%) of the part of body injured by type of injury, non-fatal accidents at work, EU-15, 2005



Source: Eurostat – ESAW



## Chapter 2 - Introductory analysis of causes and circumstances







## 2.1 Description and availability of ESAW Phase III variables

In an effort to improve working conditions and the health and safety of workers at work, the Commission services DG Employment, Social Affairs and Equal Opportunities and Eurostat have been working since 1990 to harmonise the criteria and methodologies to be applied in recording and producing statistics on accidents at work. The ESAW methodology has been developed in three phases:

ESAW Phase I covers variables which describe 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 complements the initial Phase I information with data on the size of the local unit, 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.

ESAW Phase III covers variables providing information on the causes and circumstances behind accidents at work. This information will help in defining and targeting preventive policies and measures to avoid accidents at work and to improve working conditions.

### Provision of data by participating countries

ESAW Phase III divides the sequence of events in the occurrence of an accident into three levels:

- First level: the circumstances prevailing just before the accident, including four variables: workstation (optional), working environment, working process and specific physical activity;
- Second level: the deviation, corresponding to the last event deviating from normality and leading to the accident, occurring in the circumstances related at the first level;
- Third level: the contact – mode of Injury, which is the action that actually injures as a result of the deviation.

Each level is independent from the others and constitutes one of the three necessary parts of the description. Therefore, results will be inconsistent if there is not at least one element available at each of the three levels. Failing this, the description of the occurrence of the accident will be incomplete, as one element will be missing.

Moreover, the system associates a Material Agent (MA) to each of the three levels:

- The Material Agent of the specific physical activity;
- The Material Agent of the deviation;
- The Material Agent of the contact – mode of Injury.

Consequently, during its meeting held on 16 October 2000, the Eurostat ESAW Working Group established the following priorities, including a minimum of four variables to be selected from the list below, and recommended using more variables wherever possible.

Each Member State is required to select a minimum of four priority variables out of the following choices:

- 'Working environment', 'working process' or 'specific physical activity' (at least one of these three variables must be selected);
- 'Deviation' (compulsory);



- 'Contact - mode of injury' (compulsory);
- Either 'Material Agent of the deviation' or 'Material Agent of the contact mode of injury' (at least one of these two variables must be selected).

For at least three priority variables selected by each Member State, all the digits of each classification have to be considered as from the adoption of the system (2 positions with a total of 2 digits, however the Working environment must be recorded with 3 digits and Material Agents with 2 positions comprising 2 digits each, i.e., 4 digits in total). If necessary, for one of the four variables, a codification with only one position will at first be accepted. For Material Agents the detailed classification at 3-or 4-position (6 or 8 digits) can be used at national level but only the first two positions will be used for the ESAW data submitted to Eurostat.

### Description of Phase III variables

The variables introduced in ESAW Phase III on the 'causes and circumstances' of accidents at work will provide additional information to identify where, and especially how, accidents occur, with the aim of establishing a prevention policy.

**FIRST LEVEL:** the existing circumstances just before the accident occurs. The variables 'workstation', 'working environment', 'working process' and 'specific physical activity' describe the circumstances in which the accident took place:

#### Workstation

The concept of 'usual' workstation is considered in a restrictive sense: fixed workstation in a workshop, shop, office and more generally usual 'local unit' of work (premises of the local unit of the employer). Conversely, the concept of 'occasional' is used in a broad sense and covers both jobs with a 'mobile' workstation such as truck drivers, construction workers, fitters, repairers, etc., and occasional situations for people usually working at a fixed workstation: temporary assignment in a fixed but different workstation and even more in a local unit different from the usual one.

#### Working environment

This is the general environment, workplace or work premises where the accident took place. It describes the geographical environment where, at the time of the accident, the victim was located, i.e. working, visiting or simply present (in the context of work).

#### Working process

This is the general activity or task being performed by the victim at the time of the accident. It is not the victim's occupation or precise specific physical activity at the moment of the accident. It is a description of the type of work, in broad terms, i.e. the task that was being undertaken by the victim over a certain period of time ending at the instant of the accident.

Accidents often consist of a chain of events; however there is often a tendency for investigators to focus on the exact moment at which the injury occurred. With a view to prevention, a description of the moment when something abnormal occurred is just as important as the description of what the victim was doing at the time of the accident, if not more so. The various stages of the event are registered using three variables: specific physical activity, deviation and contact – mode of injury; and associated Material Agents.

#### Specific physical activity

The specific physical activity describes the victim's activity prior to the accident. It is the victim's deliberate and purposeful action immediately before the accident.

*Data from ESAW Phase III on causes and circumstances of accidents at work can help in developing preventive measures and policies to avoid accidents at work.*

**SECOND LEVEL:** the last 'deviant event from normality' leading to the accident occurring in the framework of the circumstances related at the previous level.

### **Deviation**

The proposed classification for the deviation describes the abnormal event, such as totally or partially losing control of a machine or falling onto/off something.

**THIRD LEVEL:** the variable considered is the 'contact – mode of injury' which is the action that actually injures as a consequence of the deviation:

### **Contact – mode of injury**

The classification for the contact – mode of injury (i.e. the action that leads to the injury) is designed to describe how the victim was injured and how he or she came into contact with the object that caused the injury.

A Material Agent (MA) is associated to each of these three levels of information (specific physical activity, deviation and contact):

### **Material Agent**

The Material Agent of the specific physical activity describes the tool, object, or instrument being used by the victim when the accident happened. If there are several Material Agents associated with the specific physical activity, the Material Agent most closely linked to the accident or injury must be recorded.

The Material Agent of the deviation describes the tool, object, or instrument involved in the abnormal event. If several Material Agents are associated with the last deviation before the accident, the last Material Agent involved should be recorded.

The Material Agent of the contact – mode of injury refers to the object, tool, or instrument with which the victim came into contact or the psychological mode of injury. If several Material Agents are associated with the injury, the Material Agent linked with the most serious injury must be recorded.

More detailed information is available in the publication 'European Statistics on Accidents at Work (ESAW), Methodology, 2001 Edition, European Communities, DG Employment and Social Affairs series', and related documents available in the following websites:

[http://ec.europa.eu/dgs/employment\\_social/index\\_en.htm](http://ec.europa.eu/dgs/employment_social/index_en.htm)

<http://circa.europa.eu/Public/irc/dsis/hasaw/library>



## Availability of variables

As Member States may choose the Phase III variables according to the principles described above, the number of observations available differs from one variable to another. For non-fatal accidents at work, between 1.1 million and 3.1 million cases were available for analysis in the 2005 data (Table 2.1). In order to increase the accuracy of results relating to fatal accidents, data from 2003 to 2005 were also accumulated for the analysis.

**Table 2.1**  
**Number of cases available in the ESAW database for Phase III variables among Member States (abbreviation EU\_V used – see country codes)**

Phase III variables	Number of non-fatal accidents in 2005	Number of fatal accidents over 2003-2005	Number of participating countries	List of countries
Workstation	1 129 528	4 610	15	ES, LU, NL(1)(2), AT(2), FI, CZ, EE, CY, LT, HU, PL, SI, SK, BG, RO
Working environment	2 512 876	7 935	18	DE, ES, IE, IT, LU, NL(1), AT(2), SE, CZ, EE, CY, LT, HU, MT, PL, SK, BG, RO
Working process	1 709 649	6 921	13	BE, ES, IT, AT(2), FI, CZ, EE, LT, HU, PL, SK, BG, RO
Specific Physical Activity	1 746 368	7 122	14	ES, IT, LU, AT(2), FI, SE, CZ, EE, LT, HU, PL, SK, BG, RO
Material agent associated to SPA	1 421 649	5 795	11	ES, IT, AT(2), CZ, EE, LT, HU, PL, SK, BG, RO
Deviation	2 924 467	8 301	20	BE, DE, ES, IE, IT, LU, AT(2), FI, SE, UK, CZ, EE, CY, LT, HU, MT, PL, SK, BG, RO
Material agent associated to Deviation	2 350 667	6 888	14	BE, DE, ES, IT, AT(2), SE, CZ, EE, HU, MT, PL, SK, BG, RO
Contact - Mode of injury	3 063 648	8 548	21	BE, DK, DE, ES, IE, IT, LU, FI, SE, UK, CZ, EE, CY, LV, LT, HU, MT, PL, SK, BG, RO
Material agent associated to Contact	1 880 027	7 089	16	DK, ES, IE, IT, LU, FI, UK, CZ, EE, CY, LT, HU, PL, SK, BG, RO

(1) Data available for fatal accidents only ; (2) Partially filled-in

Source : Eurostat - ESAW

In the following chapters and sub-chapters, the generic name 'all' as denominator for the computation of ratios refers to all data available for a given variable (or cross-tabulation of two variables). For example, in the sub-section entitled 'The deviation' of sub-chapter 2.2 on 'Main characteristics of the Deviation and Contact variables', the segment 'women account for 23.2% of all non-fatal accidents [...] at work' means that women account for 23.2% of all non-fatal accidents at work for data available resulting from the cross-tabulation between the variables 'deviation' and 'sex'.

## 2.2 Main characteristics of the 'Deviation' and 'Contact' variables

This chapter aims to present an overview of the last events deviating from normality and leading to the accident (Deviation) as well the direct consequences of these deviations (Contact – Mode of Injury). For both variables, the most important categories are described using a selection of Phase I and Phase II variables.

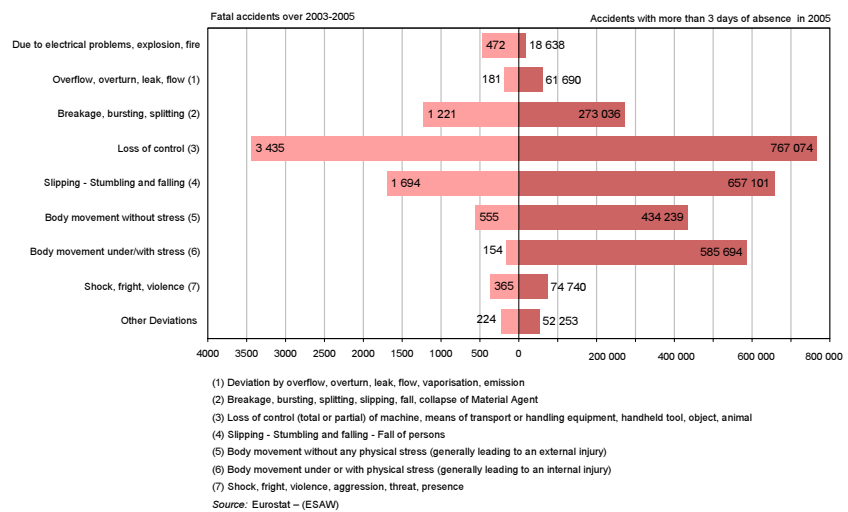
### The deviation

*Around 69% of non-fatal accidents at work were linked to a 'loss of control', a 'fall' or a 'physical stress'. In addition, more than 41% of fatal accidents at work were the result of a 'loss of control'.*

The most common abnormal events leading to non-fatal accidents were a 'loss of control of machine, means of transport, handling equipment or handled tool or object' (26.2% of cases), 'falls of persons' (22.5%) and 'body movement under or with physical stress' (20.0%). For fatal accidents, the most common type of deviation was a 'loss of control' in 41.4% of cases (see Tables A2.1 and A2.2 in the Annex).

The less frequent types of deviation included 'electrical problems, explosion and fire'; however these accidents were more often fatal than others, as they accounted for 5.7% of fatal cases and only 0.6% of non-fatal accidents.

**Figure 2.1**  
Number of accidents at work by deviation and severity, EU\_V



### Loss of control

Women were involved in 17.9% of non-fatal accidents and 6.6% of fatal accidents at work due to a 'loss of control of machine, means of transport, handling equipment or handled tool or object'. In comparison, female workers accounted for 23.2% of all non-fatal accidents and 5.3% of all fatal accidents at work. This means that loss of control accounted for a larger proportion of all non-fatal accidents among men (28.0%) than among women (20.2%).

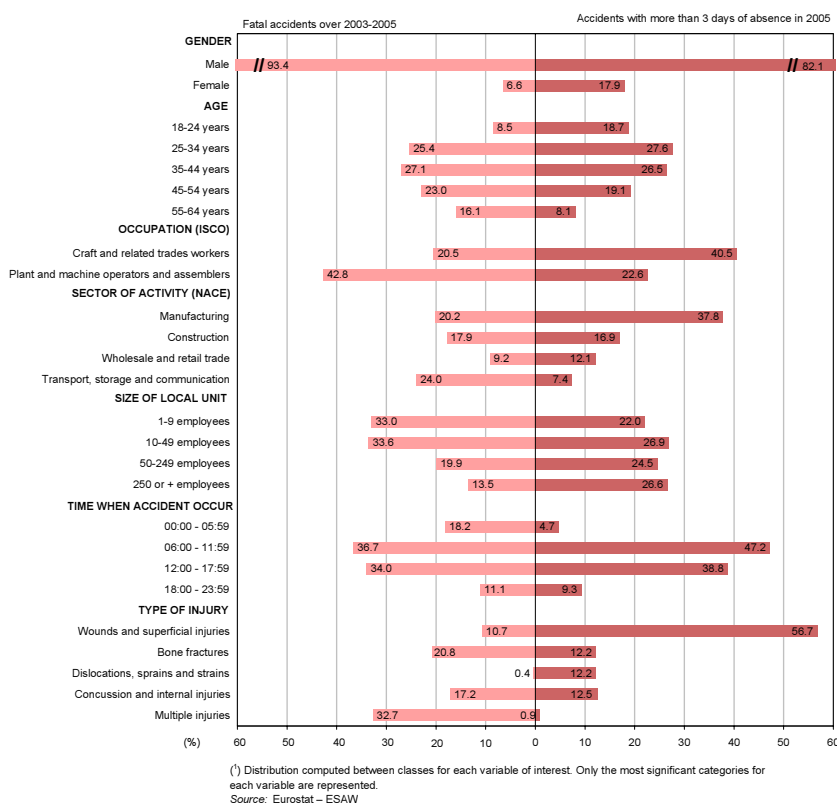


Considering the age distribution of victims of accidents caused by a 'loss of control', workers aged 18-34 accounted for 46.3% of cases of non-fatal accidents (compared to 41.8% of all non-fatal accidents), and 33.9% of fatal accidents (compared to 30.2% of all fatal accidents). 'Loss of control' accounted for a larger proportion of all non-fatal accidents among workers aged 18-24 (32.9%) than among those aged 55-64 (21.8%).

In terms of occupation, 63.1% of victims of non-fatal accidents at work due to a 'loss of control' were 'craft and related trades workers' and 'plant and machine operators and assemblers'. In comparison, these professions accounted for only about 53% of all non-fatal accidents. Moreover, 42.8% of victims of fatal accidents at work due to a loss of control were 'plant and machine operators and assemblers', while this occupation accounted for around 31% of all fatal accidents. Indeed, these professions involve the use of specific machines or tools deemed more dangerous than for other professions.

*'Craft and related trades workers' accounted for 40.5% of non-fatal accidents at work due to a 'loss of control', while 42.8% of victims of fatal accidents due to a 'loss of control' were 'plant and machine operators and assemblers'.*

**Figure 2.2** Distribution (%) of accidents at work associated to a loss of control (\*), by severity, EU-V



Considering the sector of activity, 37.8% of non-fatal accidents at work due to a 'loss of control' occurred in 'manufacturing', whereas this sector accounted for 28% of all non-fatal accidents (see Table A2.1 in the Annex). Moreover, 24% of fatal accidents due to this kind of deviation were registered in 'transport, storage and communication', while this sector only accounted for around 16% of all fatal accidents (see Table A2.2 in the Annex).

*Accidents resulting from a 'loss of control' accounted for over a third of non-fatal accidents at work in 'manufacturing', and around one in four fatal accidents in 'transport, storage and communication'.*

Around 67% of fatal accidents at work due to a 'loss of control' occurred in local units with less than 50 workers, as compared to 64.4% for all fatal accidents. Smaller local units also accounted for around half (51.1%) of non-fatal accidents caused by a loss of control, which is very close to the distribution rate for non-fatal accidents as a whole (50.7%).

*Around one in five fatal accidents at work due to a 'loss of control' occurred between midnight and 6:00.*

Compared to the global distribution of deviations, fatal accidents due to a 'loss of control' seem to be more frequent during the night (from midnight to 6:00): 18.2% of fatal accidents due to a 'loss of control' occurred during this period, compared to 13.4% for all fatal accidents.

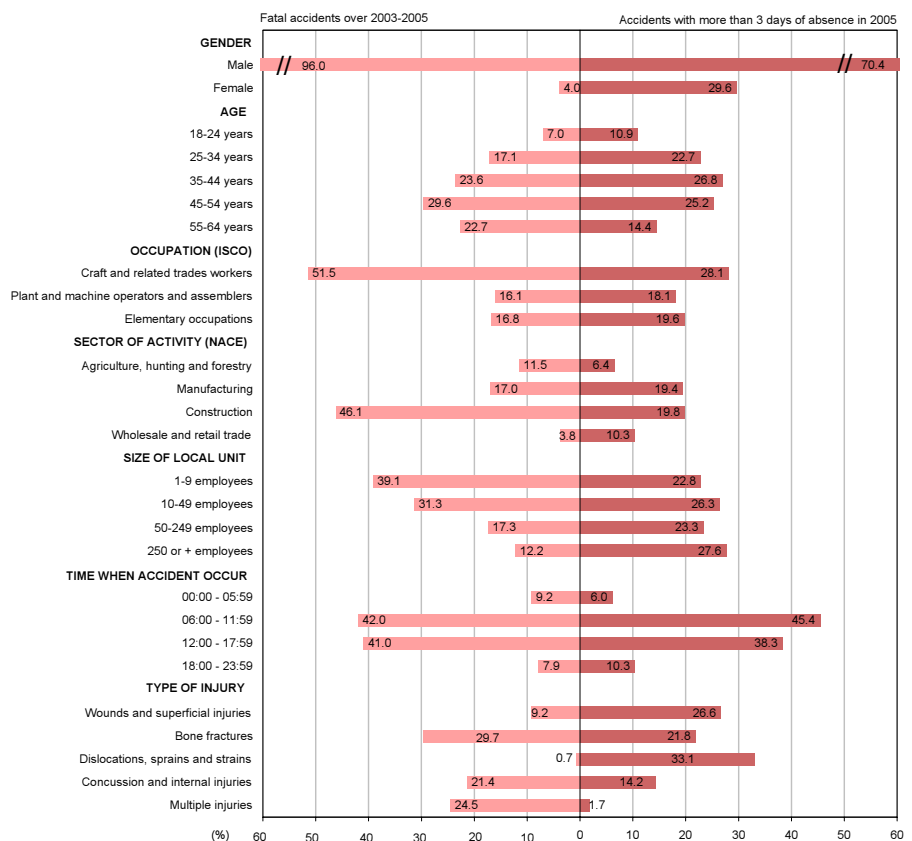
Concerning the type of injury, 56.7% of non-fatal accidents at work due to a 'loss of control' led to 'wounds and superficial injuries', against 39.3% for all non-fatal accidents.

### Fall of persons

*Workers aged between 45 and 64 represented 52.3% of victims of fatal falls at work.*

Although men were by and large the most affected by fatal and non-fatal falls at work, women accounted for a third of non-fatal falls. Furthermore, 30.9% of victims of all non-fatal accidents at work were aged 45 to 64, while this age category accounted for 39.6% of victims of non-fatal accidents due to falls. The same difference can be observed for fatal accidents: 43.6% of victims of all fatal accidents were aged between 45 and 64, while this age group represented 52.3% of victims of fatal falls at work.

**Figure 2.3** Distribution (%) of accidents at work resulting from falls of persons (1), by severity, EU-V



(1) Distribution computed between classes for each variable of interest. Only the most significant categories for each variable are represented.  
Source: Eurostat – ESAW



While the distribution relating to the occupation of victims of non-fatal falls was quite similar to that of non-fatal accidents at work as a whole, this was not the case for fatal accidents: 51.5% of victims of fatal falls were 'craft and related trades workers', compared to 33.2% among all fatal accidents at work.

A similar observation can be made by sector of activity. There were no marked differences of the NACE distribution between non-fatal falls and all non-fatal accidents. However, more than 46% of fatal falls occurred in the sector of 'construction', while this sector accounted for only 27.4% of all fatal accidents at work.

Although 32.8% of all fatal accidents occurred in local units employing fewer than 10 employees, the latter accounted for 39.1% of fatal falls at work.

Non-fatal accidents resulting from falls predominantly led to 'dislocations, sprains and strains' (33.1%), 'wounds and superficial injuries' (26.6%) and 'bones fractures' (21.8%).

*'Craft and related trades workers' accounted for just over half of victims of fatal falls.*

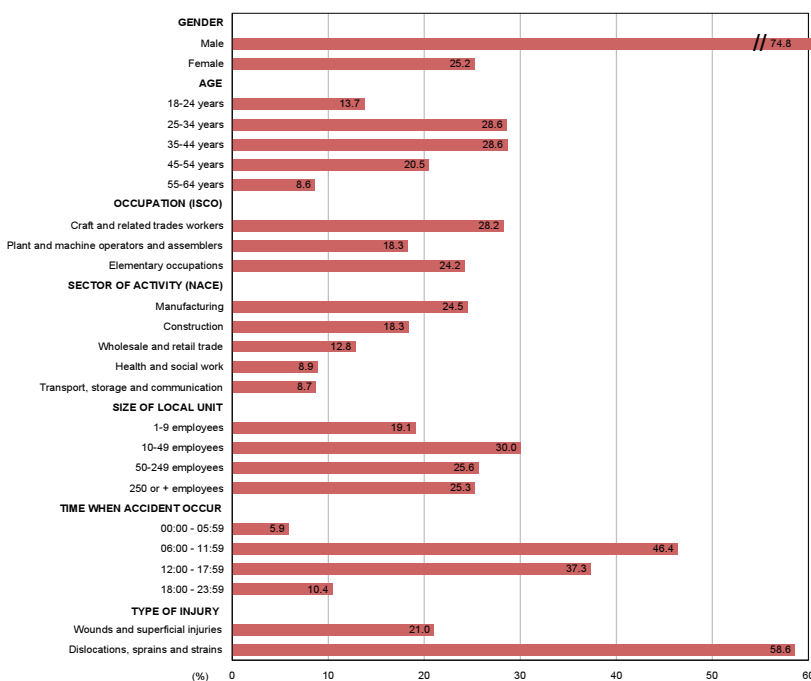
*46.1% of such falls occurred in the sector of construction.*

*39.1% of fatal falls were registered in local units with fewer than 10 employees.*

### Body movement under or with physical stress

Such deviations concern movements involving a physical stress, i.e. a greater than normal physical effort on the part of the victim (e.g. lifting, carrying, pushing, etc.). This generally leads to an internal injury (e.g. musculoskeletal consequences) and implies that the victim has injured himself/herself without external involvement. As accidents resulting from 'body movement under or with physical stress' are generally non-fatal, the following analysis does not include fatal cases.

**Figure 2.4**  
Distribution (%) of non-fatal accidents at work associated with body movement under or with physical stress (¹), EU\_V, 2005



(¹) Distribution computed between classes for each variable of interest. Only the most significant categories for each variable are represented.  
Source: Eurostat – ESAW



Although men were mainly affected by non-fatal accidents due to 'body movement under or with physical stress', women were involved in 25.2% of non-fatal accidents in this category of deviation, against 23.2% for all non-fatal accidents. Furthermore, 57.2% of victims of accidents due to 'body movement under or with physical stress' were aged between 25 and 44, which is slightly more than for non-fatal accidents as a whole, with this age group representing 54.1% of all non-fatal accidents.

In addition, victims of this type of accident were mainly 'craft and related trades workers' (28.2%), or worked in 'elementary occupations' (24.2%), and were employed in the sectors of 'manufacturing' (24.5%), 'construction' (18.3%) and 'wholesale and retail trade' (12.8%).

Considering the type of injury sustained as a result of 'body movement under or with physical stress', 58.6% of accidents led to 'dislocations, sprains and strains'.

### Other specificities relating to non-fatal and fatal accidents at work

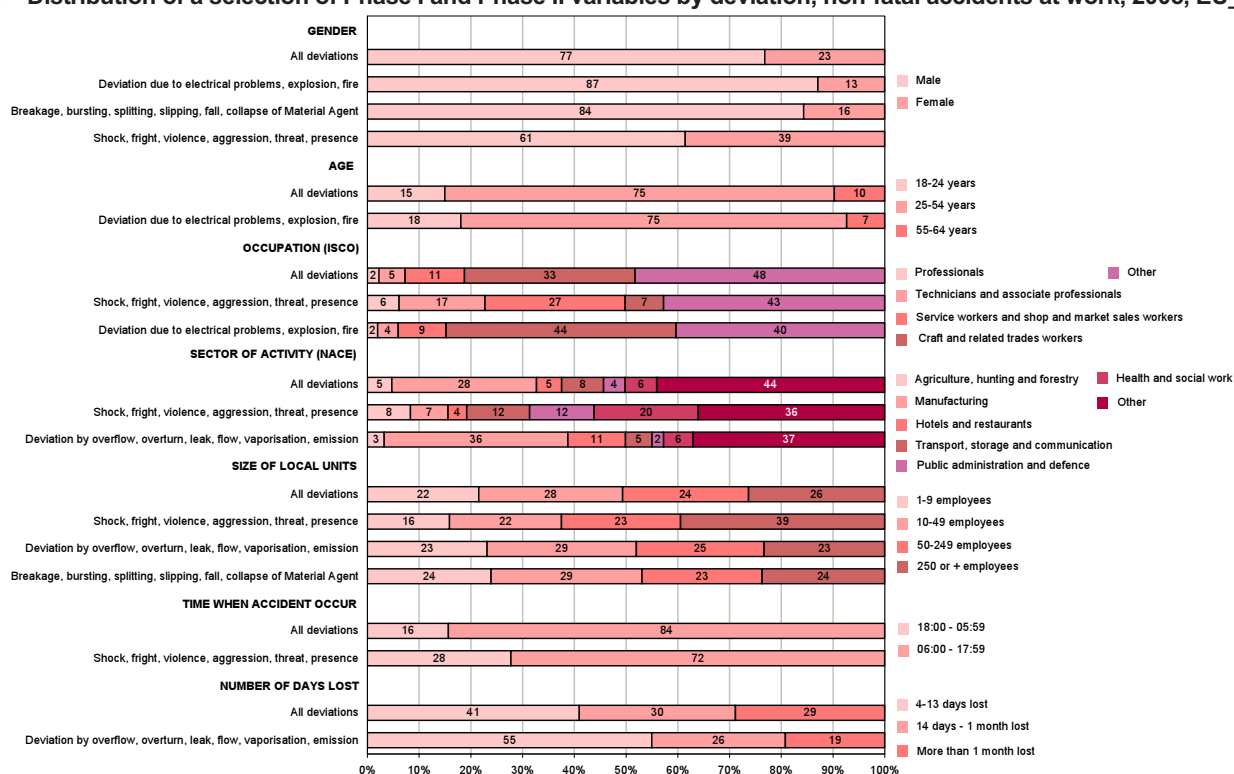
The previous sub-chapters gave details of the most common categories of deviation ('loss of control', 'fall of persons', 'body movement under or with physical stress'). Considering both non-fatal and fatal accidents, the categories 'body movement without stress' and 'breakage, bursting, etc.' accounted for a relatively important number of accidents at work (see Figure 2.1). In addition, a number of deviations were less frequent as causes of non-fatal accidents at work, but comprise certain characteristics which are interesting from the point of view of accident prevention. This sub-chapter summarises some of these specific characteristics, first for non-fatal and then for fatal accidents at work. The detailed distributions are shown in Tables A2.1 and A2.2 in the Annex.

#### Non-fatal accidents at work

Male workers accounted for a particularly high proportion of deviations due to 'electrical problems, explosion or fire' (87.0% of cases) and 'breakage, bursting, splitting, slipping, fall, collapse of Material Agent' (84.3% of cases), while 'shocks, fright, violence and aggressions' involved women in 38.6% of cases.

*Women were involved in 38.6% of accidents involving 'shock, violence and aggression'.*

**Figure 2.5** Distribution of a selection of Phase I and Phase II variables by deviation, non-fatal accidents at work, 2005, EU\_V



NB: Only the deviations with distinctive distributions compared to the distribution of the whole deviations are conserved  
Source: Eurostat – ESAW



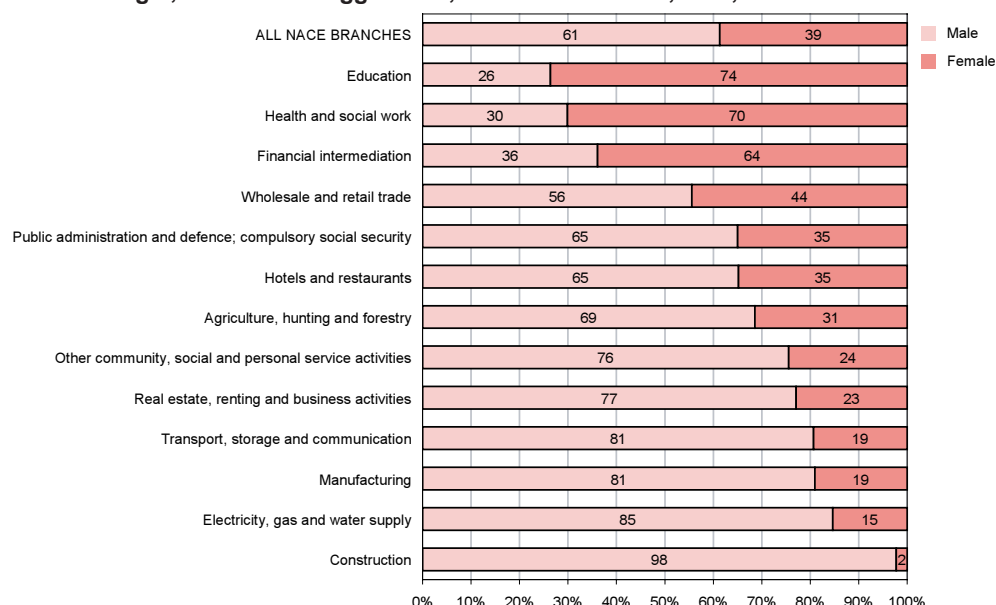
Compared to the overall age distribution of victims of accidents at work, young workers (aged 18 to 24) were overrepresented in deviations due to 'electrical problems, explosion or fire' (18.0%).

When comparing the distribution by occupation, 'shocks, fright, violence and aggression' tended more to affect 'technicians and associate professionals' (16.6%) and 'service workers and shop and market sales workers' (27.1%). 'Craft and related trades workers' were predominantly affected in accidents involving 'electrical problems, explosion or fire' (44.4%).

Compared to the overall distribution by economic activity for non-fatal accidents at work, 'shocks, fright, violence and aggression' were overrepresented in the sectors of 'health and social work' (20.1%), 'agriculture, hunting and forestry', 'transport, storage and communication' and 'public administration and defence'. These four sectors comprised 53.1% of occurrences of such deviations. Around 70% of victims of non-fatal accidents triggered by 'shocks, fright, violence and aggression' in the sectors of 'education' and 'health and social work' were women, as compared to 39% for all NACE branches.

*Women were overrepresented in terms of non-fatal accidents involving 'shock, fright, violence and aggression', especially in the sectors of education and health and social work.*

**Figure 2.6**  
Distribution (%) by sex and by NACE activity for victims of shock, fright, violence and aggression, non-fatal accidents, 2005, EU-27



(<sup>1</sup>) Only sector of activities with at least 200 non-fatal accidents at work are shown  
Source: Eurostat – ESAW

Compared to the overall distribution of sectors, 'manufacturing' (35.5%) and 'hotels and restaurants' (11.1%) were overrepresented in accidents caused by 'overflow, overturn, leak, flow, vaporisation or emission'.

Deviations due to 'shocks, fright, violence and aggression' were more frequent in the largest local units (with more than 250 employees), accounting for 39.5% of non-fatal cases. Conversely, accidents attributable to 'overflow, overturn, leak, flow, vaporisation, emission' or 'breakage, bursting, splitting, slipping, fall, collapse of Material Agent' occurred mostly in smaller local units (1 to 49 employees), accounting for more than 50% of all such accidents.

Moreover, accidents triggered by 'shocks, fright, violence and aggression', were more frequent during night time, with 27.7% of such accidents occurring between 18:00 and 6:00 (compared to 15.7% for all non-fatal accidents).

Concerning the number of days of absence, deviations by 'overflow, overturn, leak, flow, vaporisation or emission', led to the lowest number of days lost, with 55.0% of victims absent for 13 days or less (see Table A6.4 in the Annex).

*27.7% of non-fatal accidents at work due to 'shocks, fright, violence and aggression' occurred between 18:00 and 6:00.*

Fatal accidents at work

While only 5.3% of all fatal accidents at work involved women, female workers accounted for 12.3% of fatalities at work due to 'shock, fright, violence, aggression, threat and presence'. Overall, around 10% of all fatal accidents at work among women were caused by this type of deviation. However, these percentages are calculated on the basis of a relatively small number of fatal accidents among women (45 cases, see Table A2.2 in the Annex).

Moreover, 36.5% of victims of fatal accidents at work triggered by 'electrical problems, explosion and fire' were aged between 18 and 34. This type of deviation was responsible for 8.6% of all fatal accidents among younger workers (aged 18 to 24), against 5.7% for all age groups (see Table A2.2 in the Annex). Around 52% of victims of fatal accidents due to 'shock, fright, violence, aggression, threat and presence' were 45 to 64 years old.

As regards occupation, 'service workers and shop and market sales workers' accounted for 13.7% of fatal accidents at work due to 'shock, fright, violence, aggression, threat and presence' (see Table A2.2 in the Annex), while these trades accounted for only 2.8% of all fatal accidents.

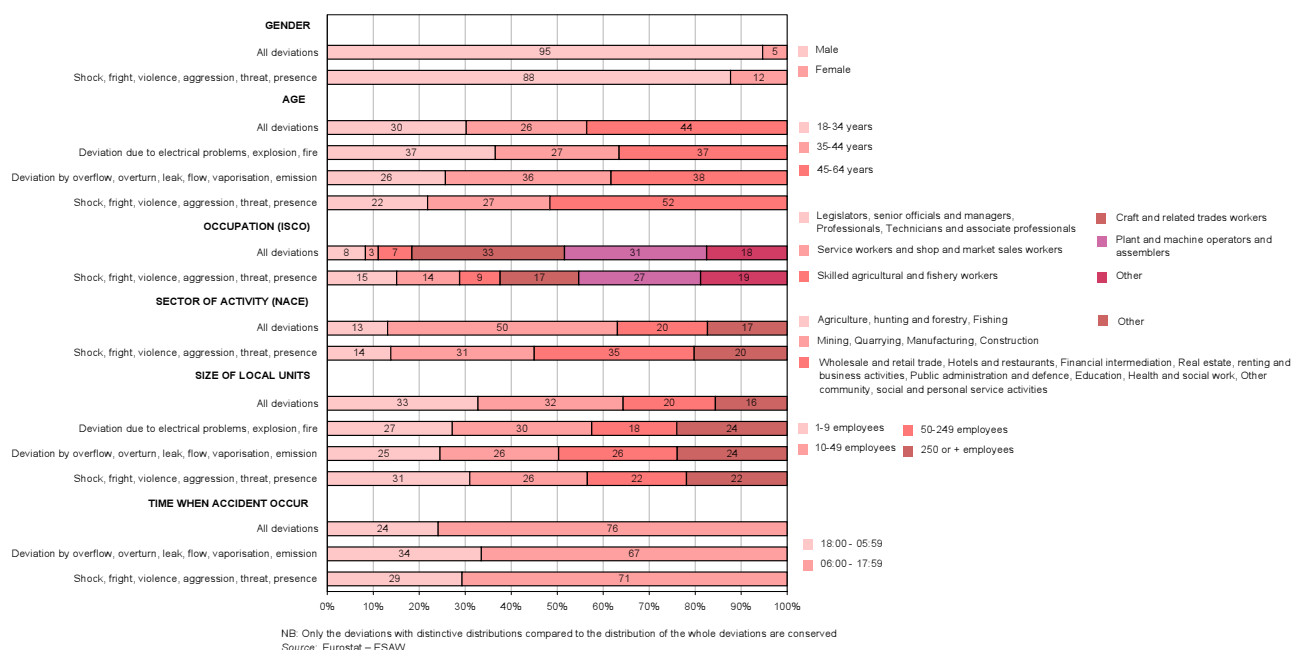
Around 35% of fatal accidents at work due to 'shock, fright, violence, aggression, threat and presence' were concentrated in service activities, including 'wholesale and retail trade', 'hotels and restaurants', 'financial intermediation', 'real estate, renting and business activities', 'public administration and defence', 'education', 'health and social work', and 'other community, social and personal service activities'. In these sectors, 'shock, fright, etc.' accounted for 7.8% of all fatal accidents, against 4.4% of fatalities in all sectors. In the sector of 'electricity, gas and water supply', 24% of fatal accidents were due to 'electrical problems, explosion and fire', although this figure is based on a relatively small number of observations (25 out of 103 cases, see Table A2.2). This type of deviation accounted for only 5.7% of all fatal accidents.

Considering the size of local units, fatal accidents at work due to 'electrical problems, explosion, fire' and 'overflow, overturn, leak, flow, vaporisation and emission' were overrepresented in the largest structures (250 employees and more). Larger local units accounted for about 24% of both types of deviation, while they represented only 16% of all deviations leading to a fatal accident.

*Around 52% of victims of fatal accidents due to 'shock, fright, violence, aggression, threat and presence' were aged between 45 and 64.*

*35% of fatal accidents due to 'shock, fright, violence, aggression, threat and presence' concentrated in the services sector.*

**Figure 2.7** Distribution of a selection of Phase I and Phase II variables by deviation, fatal accidents at work, 2003–2005, EU\_V



## The contact – Mode of injury

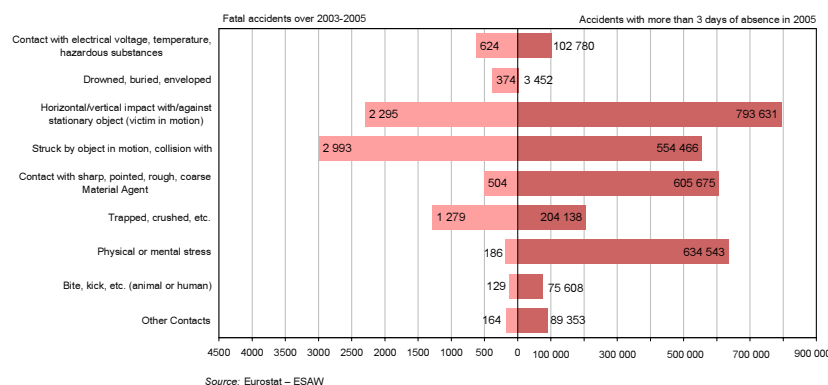
The mode of injury describes how the victim was injured and how the person came into contact with the object that caused the injury. This action is therefore directly linked to the deviation, which is the event that triggers the accident.

The most common modes of injury for non-fatal accidents were 'horizontal/vertical impact with or against stationary object (victim in motion)' (25.9% of cases), 'physical or mental stress' (20.7%), 'contact with sharp, pointed, rough, coarse Material Agent' (19.8%) and 'struck by or collision with an object in motion' (18.1%). For fatal accidents, the most common modes of injury were 'struck by or collision with an object in motion' (35.0% of cases) and 'horizontal or vertical impact with or against stationary object (victim in motion)' (26.8%) (see Tables A2.3 and A2.4 in the Annex).

Among the less frequent modes of injury, accidents at work where victims were 'drowned, buried and enveloped' are remarkable, as they were more often fatal than other accidents, accounting for 4.4% of fatal cases and only 0.1% of non-fatal accidents.

*Around 44% of victims of non-fatal accidents at work and 62% of victims of fatal accidents were injured as a result of an impact or collision with an object.*

**Figure 2.8**  
Number of accidents at work by contact – mode of injury, by severity, EU\_V



### Horizontal or vertical impact with or against a stationary object (victim in motion)

Women were involved in 27.8% of non-fatal accidents and 4.3% of fatal accidents resulting from a 'horizontal or vertical impact with or against a stationary object (victim in motion)'. Comparatively, female workers accounted for 23.4% of all non-fatal accidents and 5.3% of all fatal accidents at work. These figures suggest that impacts with stationary objects were responsible for a larger proportion of all non-fatal accidents among women (30.7%) than among men (24.4%).

As regards occupation, 27.8% of victims of non-fatal accidents involving an impact with a stationary object were 'craft and related trades workers'. Moreover, 43.2% of fatalities resulting from this mode of injury were registered within these professions.

*'Craft and related trades workers' were involved in around 28% of non-fatal accidents and 43% of fatal accidents resulting from an impact with a stationary object.*

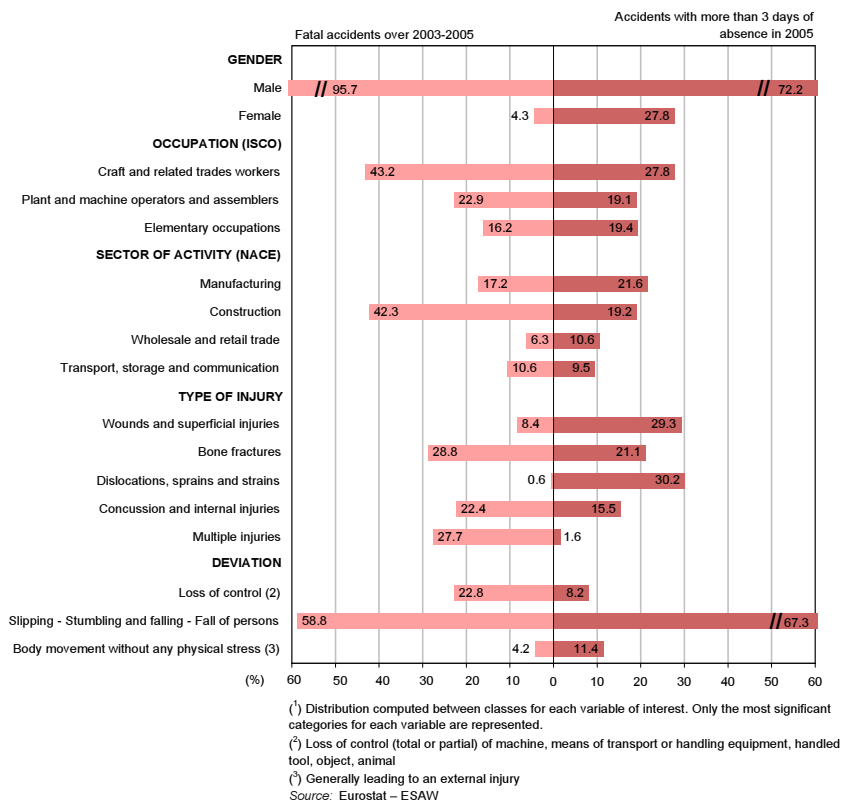
Taking into account the sector of activity, 21.6% of non-fatal accidents at work involving an impact with a stationary object occurred in 'manufacturing', while 19.2% were registered in 'construction'. Furthermore, 42.3% of fatal accidents involving an impact with a stationary object were registered in 'construction'.

Concerning the type of injury, 30.2% of non-fatal accidents at work involving an impact with a stationary object led to 'dislocations, sprains and strains' and 29.3% led to 'wounds and superficial injuries'. For fatal accidents, this mode of injury mainly resulted in 'bone fractures' and 'multiple injuries' (in 28.8% and 27.7% of cases respectively).

Close to 67% of non-fatal and 59% of fatal accidents at work involving an impact with a stationary object were due to persons tripping or falling.

Regarding the deviations, 67.3% of non-fatal accidents at work involving an impact with a stationary object were due to persons tripping or falling. For fatal accidents at work, this mode of injury was attributable to 'fall of persons' in 58.8% of cases, and to 'loss of control (total or partial) of machine, means of transport or handling equipment, etc.' in 22.8% of cases.

**Figure 2.9** Distribution (%) of accidents at work resulting from 'an impact with or against a stationary object (victim in motion)', by severity (1), EU\_V



### Struck by or collision with an object in motion

Women accounted for 16.7% of non-fatal accidents and 7.6% of fatal accidents involving an injury sustained through a collision with an object in motion. It appears moreover that this mode of injury accounted for a larger proportion of all fatal accidents among women than among men, accounting for 49.5% and 34.2% of cases respectively.

In terms of occupation, 36.0% of victims of non-fatal accidents involving a collision with an object in motion were 'craft and related trades workers'. For fatal accidents, the most represented occupations were 'plant and machine operators and assemblers' (39.9%), and 'craft and related trades workers' (22.8%).

Regarding the sector of activity, non-fatal accidents at work involving being struck by or colliding with an object in motion occurred mainly in 'manufacturing' and 'construction', with 29.5% and 20.1% of cases respectively. Fatal accidents due to a collision with an object in motion were mainly observed in the sectors of 'transport, storage and communication', 'manufacturing' and 'construction', with 23.5%, 20.9% and 19.3% of cases respectively.

Non-fatal collisions with an object in motion resulted in 'wounds and superficial injuries' in 45.2% of cases, while 'multiple injuries' (32.7%), 'bone fractures' (22.2%) and 'concussion and internal injuries' (20.1%) were mainly sustained in cases of fatal accidents.

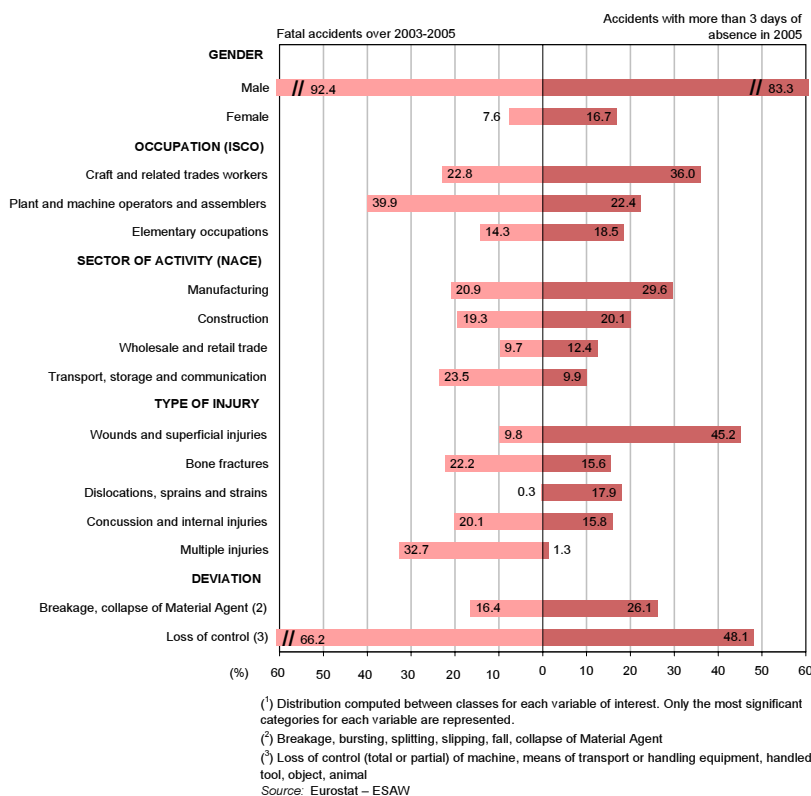
36% of victims of non-fatal accidents involving a collision with an object in motion were 'craft and related trades workers'. 'Plant and machine operators and assemblers' represented around 40% of fatalities due to this mode of injury.



In terms of deviation, 48.1% of non-fatal accidents at work involving a collision with an object in motion were due to 'loss of control (total or partial) of machine, means of transport or handling equipment, etc.' and 'breakage, bursting, splitting, slipping, fall, collapse of Material Agent' (26.1%). For fatal accidents at work, this mode of injury was in most cases (66.2%) the result of a 'loss of control'.

*About 48% of non-fatal and 66% of fatal accidents at work associated with a collision with an object in motion were due to 'loss of control (total or partial) of machine, means of transport or handling equipment, etc.'*

**Figure 2.10**  
Distribution (%) of accidents at work associated with 'struck by or collision with an object in motion', by severity (1), EU\_V



### Contact with sharp, pointed, rough, coarse Material Agent

'Contact with sharp, pointed, rough, coarse Material Agent' implies that the injury was sustained not just because the victim was struck by or collided with the Material Agent, but because the latter was either sharp, pointed, rough or coarse. As this mode of injury predominantly led to non-fatal accidents, the following analysis does not include fatal accidents at work.

80.8% of victims of non-fatal accidents at work involving a 'contact with sharp, pointed, rough, coarse Material Agent' were men. In addition, this mode of injury accounted for 20.9% of all non-fatal accidents among men, against 16.2% among women.

In terms of occupation, victims of non-fatal accidents at work involving a 'contact with sharp, pointed, rough, coarse Material Agent' were mainly 'craft and related trades workers' (40.7%), 'plant and machine operators and assemblers', 'elementary occupations' and 'service workers and shop and market sales workers'. These four categories comprised 86.4% of all non-fatal accidents involving this mode of injury.

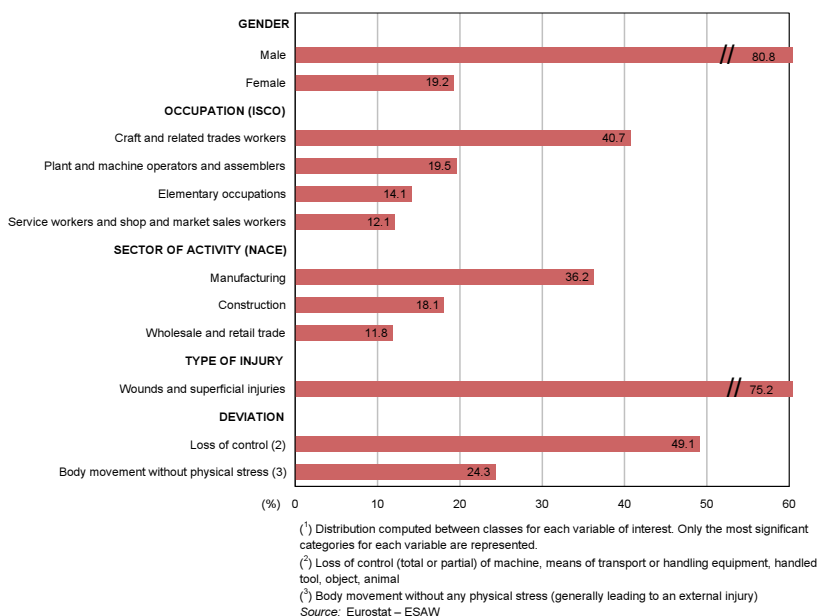
Regarding the sector of activity, non-fatal accidents at work attributable to a 'contact with sharp, pointed, rough, coarse Material Agent' were mainly recorded in 'manufacturing', with 36.2% of cases, 'construction' (18.1%) and 'wholesale and retail trade' (11.8%).

*More than 86% of victims of a non-fatal 'contact with sharp, pointed, rough, coarse Material Agent' were 'craft and related trades workers', 'plant and machine operators and assemblers', 'elementary occupations' and 'service workers and shop and market sales workers'.*

More than 49% of non-fatal accidents at work involving a 'contact with sharp, pointed, rough, coarse Material Agent' were due to a 'loss of control (total or partial) of machine, means of transport or handling equipment, etc.'

Furthermore, this mode of injury resulted in 'wounds and superficial injuries' in 75.2% of cases. The most frequent types of deviation were 'loss of control (total or partial) of machine, means of transport or handling equipment, etc.' (49.1%) and 'body movement without any physical stress' (24.3%).

**Figure 2.11** Distribution (%) of non-fatal accidents at work involving a 'contact with sharp, pointed, rough, coarse Material Agent' (1), 2005, EU\_V



### Physical stress and psychosocial risks

This mode of injury covers cases of strain, regardless of degree, on muscles, joints, organs or tissues, due to excessive movement, physical agents (e.g. noise, radiation, friction, etc.) or trauma. It includes events that occur suddenly and accidentally; however, regular long-term exposure to those physical agents most often lead to complications related to occupational diseases. This mode of injury also covers particular psychosocial risks resulting from an act of aggression or violence, or shock resulting from witnessing an event such as an accident to someone else. As 'physical or mental stress' does not generally lead to death, the following analysis does not include fatal accidents at work.

'Physical or mental stress' accounted for a larger proportion of all non-fatal accidents among women than among men.

Women represented 27.1% of non-fatal accidents at work involving 'physical or mental stress'. Comparatively, they accounted for 23.4% of all non-fatal accidents. This suggests that 'physical or mental stress' was responsible for a larger proportion of all non-fatal accidents among women (24.0%) than among men (19.7%).

Regarding occupation, victims of non-fatal accidents at work due to physical or mental stress were predominantly 'craft and related trades workers' (26.9%), 'plant and machine operators and assemblers', 'elementary occupations' and 'service workers and shop and market sales workers'. These four categories of occupation comprised 82.5% of all non-fatal accidents involving 'physical or mental stress'.

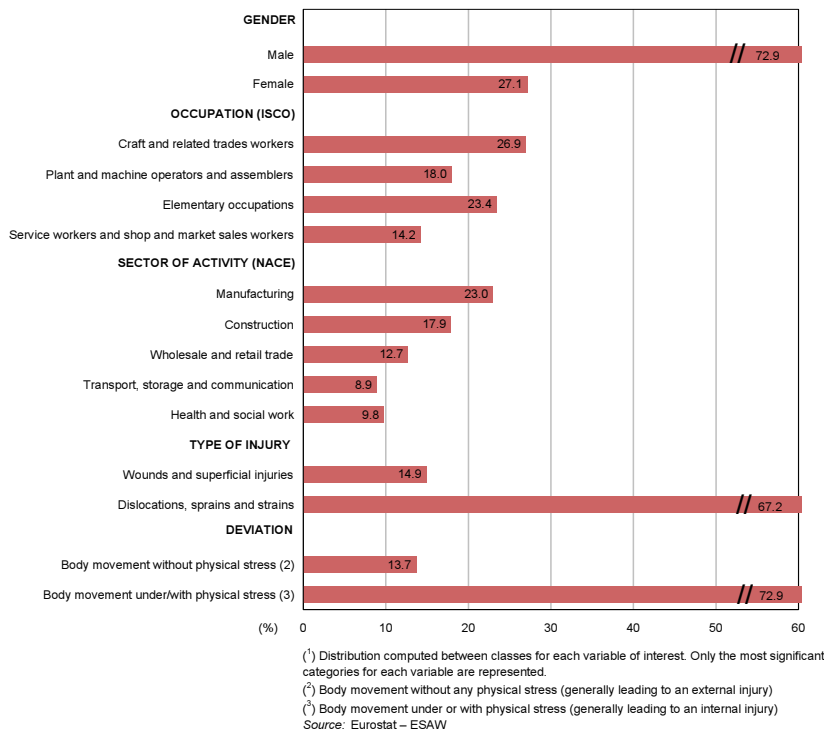
In 'health and social work', 32.4% of non-fatal accidents were caused by 'physical or mental stress', against 28.4% in 'public administration and defence'.

In terms of sector of activity, non-fatal accidents at work involving 'physical or mental stress' occurred mainly in 'manufacturing', with 23.0% of cases, 'construction' (17.9%), 'wholesale and retail trade' (12.7%) and 'health and social work' (9.8%). Moreover, 'physical or mental stress' was responsible for 32.4% of non-fatal accidents in this last occupational category, compared to 28.4% in 'public administration and defence'. However, 'physical or mental stress' accounted for only 20.8% of non-fatal accidents across all NACE branches.



'Physical or mental stress' led to 'dislocations, sprains and strains' in 67.2% of cases. Moreover, the most recurrent deviation for 'physical or mental stress' was a 'body movement under or with physical stress' involving a greater than normal physical effort on the part of the victim (72.9% of cases).

**Figure 2.12**  
**Distribution (%) of non-fatal accidents at work involving 'physical stress and psychosocial risks' (1), 2005, EU\_V**



### Other specificities related to non-fatal and fatal accidents at work

The previous sub-chapters gave details of the most common categories of contact, including 'horizontal or vertical impact with or against a stationary object', 'struck by or collision with an object in motion', 'contact with sharp, pointed, rough, coarse Material Agent', and 'physical or mental stress'. It must be noted that the category 'trapped, crushed, etc.' also accounted for a relatively high number of fatal accidents at work (see Figure 2.8). Moreover, several other modes of injury were less recurrent in non-fatal accidents at work, but did nonetheless comprise a number of interesting characteristics from the point of view of accident prevention. The following sub-chapter summarises some of these specific characteristics, first for non-fatal and then for fatal accidents at work. The detailed distributions can be found in tables A2.3 and A2.4 in the Annex.

#### Non-fatal accidents at work

The analysis of the distribution of non-fatal accidents at work for all modes of injury reveals that men accounted for 84.2% of injuries by asphyxiation ('drowned, buried, enveloped'). While most victims of 'bites, kicks, etc.' were men, no less than 39% were women. Moreover, this mode of injury accounted for a larger proportion of all non-fatal accidents among women (4.1%) than among men (2.0%).

*Men accounted for more than 84% of non-fatal accidents at work involving asphyxiation, while 39% of victims of bites, kicks, etc. were women.*





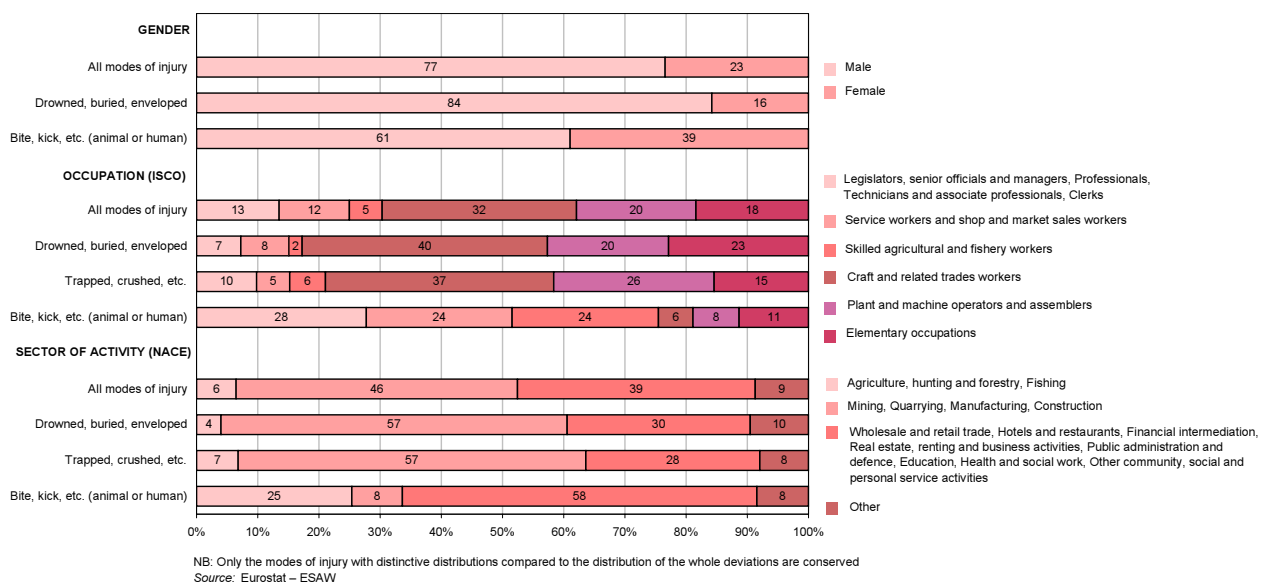
*‘Craft and related trades workers’ comprised 40% of cases of asphyxiation and 37% of accidents involving the force, size, weight, pressure or speed of an object or machine.*

*25% of victims bitten or kicked by a person or an animal worked in ‘agriculture, hunting, forestry or fishing’, whereas 58% were employed in ‘wholesale and retail trade’, ‘education’, ‘health and social work’, ‘public administration and defence’, ‘hotels and restaurants’ and ‘other service activities’.*

Regarding the occupation of victims, ‘craft and related trades workers’ accounted for most accidents resulting in asphyxiation (‘drowned, buried, enveloped’), with 40.1% of cases. ‘Craft and related trades workers’ were also the most represented in injuries related to the force, size, weight, pressure or speed of an object or machine (‘trapped, crushed, etc.’), accounting for 37.3% of cases, against 26.2% for ‘plant and machine operators and assemblers’. For ‘bites, kicks, etc.’, 27.7% of victims were ‘legislators, senior officials and managers’, ‘professionals’, ‘technicians and associate professionals’ and ‘clerks’; 23.9% were ‘skilled agricultural and fishery workers’ and 23.8% were ‘service workers and shop and market sales workers’.

Considering the sector of activity, around 57% of non-fatal accidents involving being ‘trapped, crushed, etc.’ and ‘drowned, buried, enveloped’ occurred in ‘manufacturing’, ‘construction’ and ‘mining and quarrying’. For ‘bites, kicks, etc.’, 25.4% of non-fatal accidents were recorded in the sectors of ‘agriculture, hunting and forestry’ and ‘fishing’, while 57.9% occurred in service activities, including ‘wholesale and retail trade’, ‘hotels and restaurants’, ‘financial intermediation’, ‘real estate, renting and business activities’, ‘public administration and defence’, ‘education’, ‘health and social work’ and ‘other community, social and personal service activities’.

**Figure 2.13** Distribution (%) of a selection of Phase I and Phase II variables by mode of injury, non-fatal accidents at work, 2005, EU\_V



*While fatal accidents at work were more frequent among men (around 95%), women accounted for 15.5% of accidents associated with ‘bites, kicks, etc.’*

### Fatal

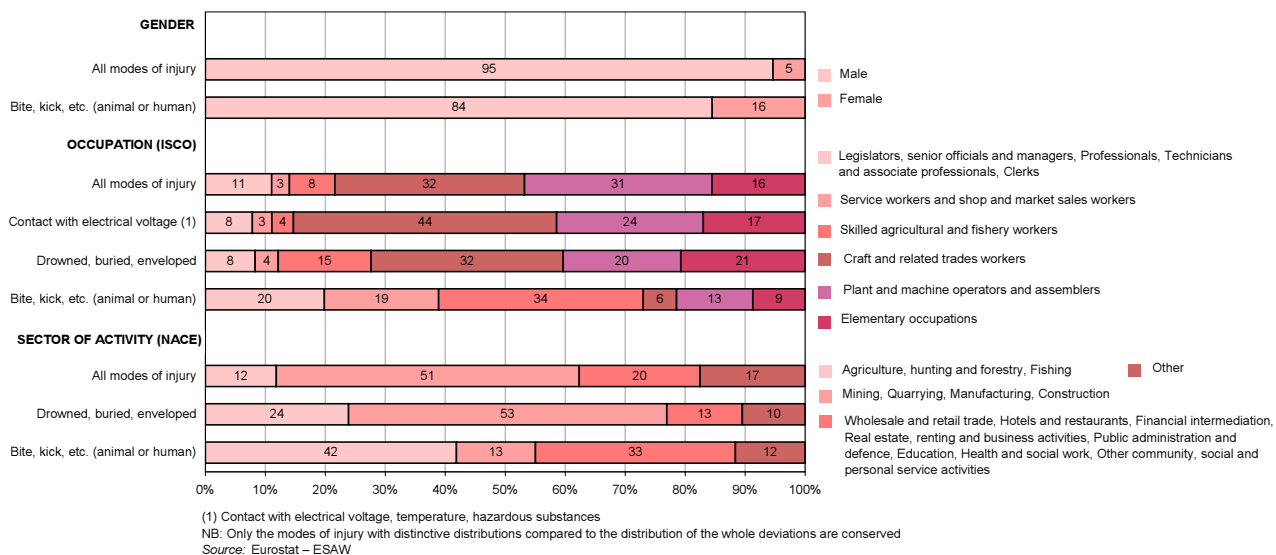
While fatal accidents at work were generally far more prevalent among men (around 95%), ‘bites, kicks, etc.’ accounted for 15.5% of fatal accidents among women. This mode of injury accounted for a greater proportion of all fatal accidents among women (4.4%) than among men (1.3%). However, these ratios are based on a relatively small number of fatal accidents among women (20 cases, see Table A2.4 in the Annex).

Considering the occupation of victims, ‘contact with electrical voltage, temperature or hazardous substances’ concerned ‘craft and related trades workers’ in 43.8% of cases. In cases of asphyxiation (‘drowned, buried, enveloped’), 15.5% of victims were ‘skilled agricultural and fishery workers’, while 20.7% were employed in ‘elementary occupations’.



In terms of sector of activity, it appears that 41.9% of victims who died as a result of being bitten or kicked by a person or animal were employed in the sectors of 'agriculture, hunting, forestry' and 'fishing', whereas 33.3% worked in 'wholesale and retail trade', 'education', 'health and social work', 'public administration and defence', 'hotels and restaurants' and 'other service activities'.

**Figure 2.14** Distribution (%) of a selection of Phase I and Phase II variables by mode of injury, fatal accidents at work, 2003-2005, EU\_V





# Chapter 3 - Detailed analysis of Deviations





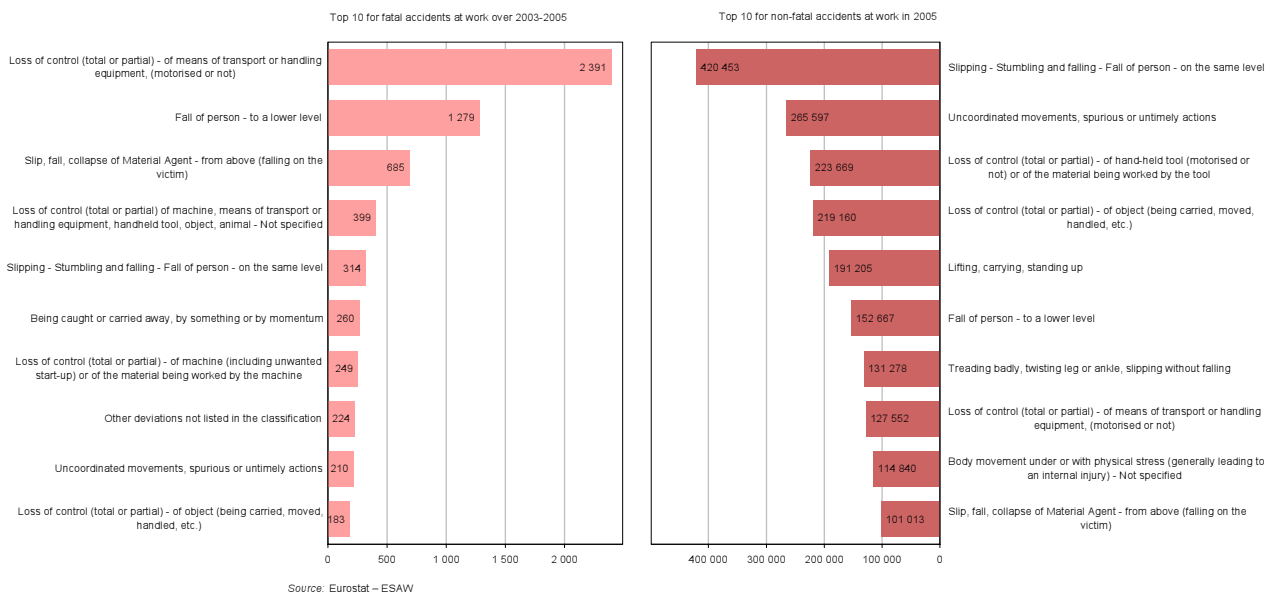
### 3.1 Deviations at two-digit level

The previous chapter gave an overview at one-digit level of the most common deviations leading to accidents at work. In this chapter, the aim is to carry out a more detailed study of the most common deviations at two-digit level by analysing their associated NACE and ISCO distributions at two-digit level. The subsequent sub-chapters will analyse the distribution of a number of Phase III variables, including 'specific physical activity', 'working process' and 'working environment', in relation to the most common types of deviation. Although a two-digit breakdown of Phase III variables is provided in Annexes A6.4 to A6.10, the cross-tabulations between these variables were not presented in the Annex due to a lack of space. However, cross-tabulations between Phase III variables and a selection of Phase I, Phase II and other Phase III variables are provided at one-digit level in Annexes A3.1 to A3.6.

*15.1% of non-fatal accidents at work were attributable to a 'loss of control of hand-held tool' or 'loss of control of an object', while 'loss of control of transport means or handling equipment' accounted for 28.8% of fatal accidents at work.*

Among the most common deviations involved in accidents at work (see Annex A6.4 and Figure 3.1 below), the following chapter will focus on the seven most recurrent types of deviation (three for fatal accidents, four for non-fatal accidents). The analysis reveals that 14.4% of non-fatal accidents were attributable to 'falls on a same level', followed by 'uncoordinated movements, spurious or untimely actions' and accidents caused by 'loss of control of hand-held tools' or 'loss of control of objects'. In parallel, 28.8% of fatal accidents at work were triggered by 'loss of control of transport means or handling equipment', followed by 'falls of workers to a lower level' and 'Material Agents falling on the victim'. According to these results, there appears to be a direct correlation between the outcome of an accident and the type of deviation.

**Figure 3.1** Top 10 deviations (two-digit level) accounting for the highest number of accidents at work, by severity, EU\_V



To complete the analysis, the following section provides a two-digit breakdown of the NACE and ISCO categories in relation to the most common types of deviation leading to fatal and non-fatal accidents at work (see Figures 3.2 and 3.3 below).



## Deviations leading to fatal accidents

As presented above, 'loss of control (total or partial) of means of transport or handling equipment' was the most common two-digit level deviation leading to fatal accidents (28.8%). Considering the sector of activity, more than 24% of such deviations occurred in 'land transport; transport via pipelines', compared to 17% in 'construction'. In terms of occupation, 38.4% of victims of such deviations were 'drivers and mobile-plant operators'.

The second most common type of deviation resulting in a fatal accident was 'fall of persons to a lower level' (15.4%). This category comprises slips, stumbles or falls to a lower level in relation to the victim's initial position. Regarding the sector of activity, around 52% of fatal falls occurred in 'construction'. In terms of occupation, 39% of victims of such accidents were 'extraction and building trades workers'.

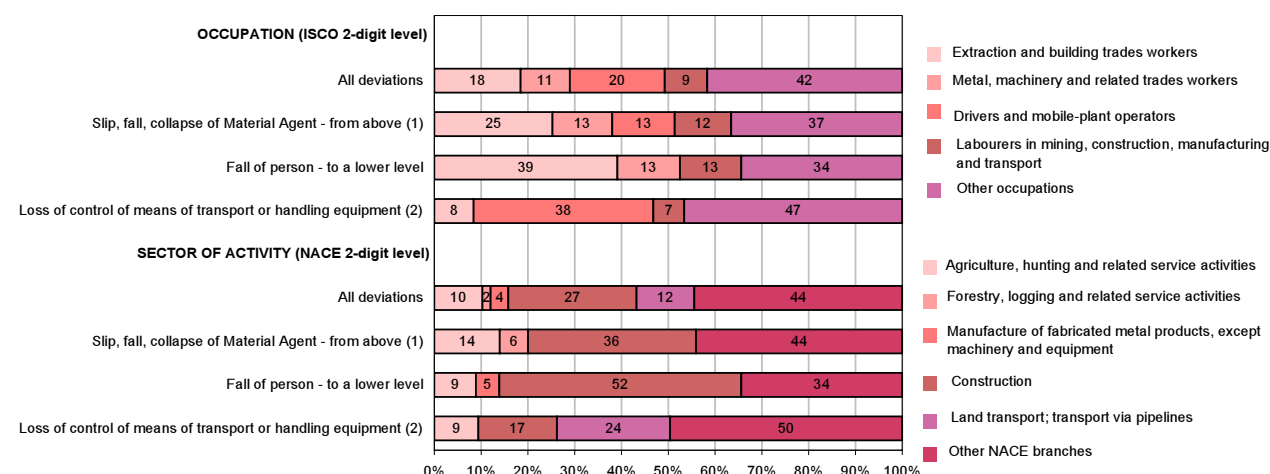
The third most frequent type of deviation was 'slip, fall, collapse of Material Agent - from above (falling on the victim)', with 8.3% of occurrences. In this type of deviation, the victim is stationary in relation to the Material Agent, which falls on the worker from above. This type of deviation was more common in the sectors of 'construction' and 'extraction and building trades workers', accounting for 36% and 25% of cases respectively.

*Fatal accidents at work due to a 'loss of control of means of transport or handling equipment' involved 'drivers and mobile-plant operators' in more than 38% of cases.*

*The 'construction' sector registered the highest number of fatal falls, accounting for 52% of accidents due to falls to a lower level.*

*'Construction' also accounted for 36% of fatal accidents due to falls of objects.*

**Figure 3.2** Distribution (%) by occupation (ISCO) and sector of activity (NACE) (at two-digit level) for the most common two-digit level deviations leading to fatal accidents at work, 2003-2005, EU\_V



(1) Slip, fall, collapse of Material Agent - from above (falling on the victim)  
 (2) Loss of control (total or partial) - of means of transport or handling equipment, (motorised or not)  
 Source: Eurostat – ESAW

## Deviations leading to non-fatal accidents

Regarding non-fatal accidents at work, the most common deviation at two digit level was 'fall of person on the same level' (14.4%). This deviation occurred most frequently in the sector of 'construction', which accounted for 16% of cases (see Figure 3.3). However, accidents at work due to falls were not concentrated in one particular sector, but were spread across a range of different sectors of activity. For example, this deviation accounted for around 27% of all non-fatal accidents in 'financial intermediation, except insurance and pension funding', 26% in 'publishing, printing and reproduction of media' and around 24% in 'education'. Around 13% of victims of 'falls on the same level' were 'metal, machinery and related trades workers', while 11% were employed in 'sales and services elementary occupations' and 9% were 'personal and protective services workers'.

*Around 16% of non-fatal 'falls of persons on the same level' occurred in 'construction'. However, this type of deviation was also prevalent in many different sectors of activity.*

*'Extraction and building workers' accounted for 14% of victims of 'uncoordinated movements, spurious or untimely actions' leading to non-fatal accidents at work.*

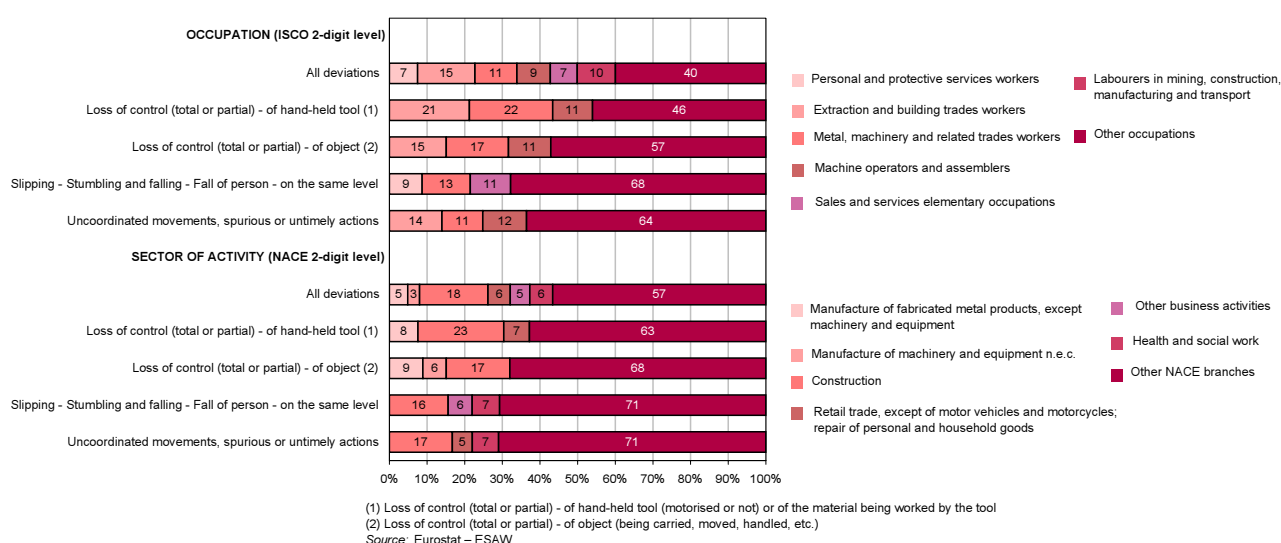
The second most recurrent deviation leading to non-fatal accidents was 'uncoordinated movements, spurious or untimely actions' (9.1%). In this type of deviation, the victim is injured without the involvement of a third person; this includes cases of external injuries caused by uncoordinated movements or spurious or untimely actions. For example, the victim bumps against an object as he stands up, bends down or turns round, causing a bruise or an open wound. Around 17% of such deviations occurred in 'construction'. Furthermore, uncoordinated movements accounted for 8.3% of all non-fatal accidents among workers in 'construction', compared to 14% in the sectors of 'tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear' and 'wholesale trade and commission trade, except of motor vehicles and motorcycles'. Uncoordinated movements were responsible for around 13% of non-fatal accidents in the sectors of 'manufacture of textiles' and 'manufacture of wearing apparel; dressing and dyeing of fur', against 12% in 'recycling' and 'supporting and auxiliary transport activities; activities of travel agencies'. 'Extraction and building workers' comprised 14% of victims of accidents due to 'uncoordinated movements, spurious or untimely actions', while 'machine operators and assemblers' and 'metal, machinery and related trades workers' accounted for 12% and 11% of cases respectively.

*Around 43% of victims of non-fatal accidents due to 'loss of control (total or partial) of hand-held tool' were 'metal, machinery and related trades workers' or 'extraction and building trades workers'.*

The third observed deviation at two-digit level was 'loss of control (total or partial) of hand-held tool (motorised or not) or of the material being worked by the tool' (7.6%). Around 23% of such deviations occurred in the sector of 'construction', and victims were essentially 'metal, machinery and related trades workers' and 'extraction and building trades workers', in 22% and 21% of cases respectively.

The fourth most frequent deviation was 'loss of control (total or partial) of object (being carried, moved, handled, etc.)', in 7.5% of cases. Such accidents occur when the victim or another person drops an object such as a hammer or toolbox and causes an injury. Around 17% of such non-fatal accidents at work occurred in 'construction'. The victims mainly comprised 'metal, machinery and related trades workers' and 'extraction and building trades workers', accounting for 17% and 15% of cases respectively.

**Figure 3.3** Distribution (%) by occupation (ISCO) and sector of activity (NACE) (at two-digit level) for the most common deviations at two-digit level leading to non-fatal accidents at work, 2005, EU\_V



### 3.2 Distribution of specific physical activities by deviation

In order to clearly identify the circumstances of an accident at work, it is essential to analyse the specific physical activity, which describes the victim's deliberate and purposeful action immediately before the accident.

A two-digit breakdown of specific physical activity is provided in Annex A6.6. Although cross-tabulations between this variable and a selection of Phase I, Phase II and other Phase III variables are provided at one-digit level in Annexes A3.1 and A3.2, this section provides a more detailed analysis by focusing on a two-digit classification for cross-tabulations.

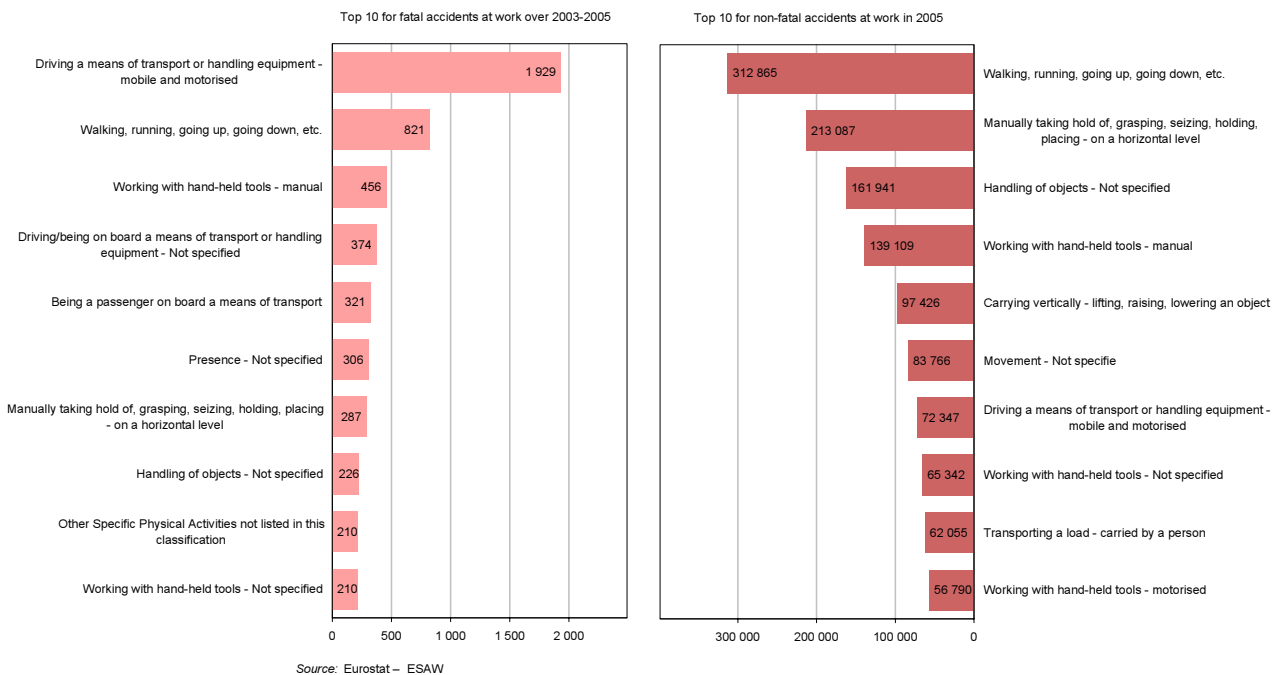
Overall, fatal accidents were more prevalent in activities involving 'driving a mobile and motorised means of transport or handling equipment' in the appropriate manner intended by the manufacturer, in 27.1% of occurrences (see Figure 3.4). Furthermore, 11.5% of fatal accidents at work occurred when victims were 'walking or running forwards or backwards', even if the intention was to take only one step. This also applies when walking or running upwards or downwards, on stairs for example.

Concerning non-fatal accidents at work, 17.9% of cases can be ascribed to a 'movement (walking, running, going up, going down, etc.)' of the victim. 12.2% of injuries occurred when manually taking hold of an object or when reaching out and grasping something (on a horizontal level).

*More than one in four fatal accidents at work involved persons 'driving a means of transport or motorised and mobile handling equipment'.*

*Just under 18% of non-fatal accidents at work involved persons in 'movement' such as 'walking, running, going up, going down, etc.'*

**Figure 3.4** Top 10 specific physical activities (two-digit level) accounting for the highest number of accidents at work, by severity, EU\_V





## Specific physical activity in relation to deviations leading to fatal accidents

As highlighted in Figure 3.1, the most common deviations resulting in death were, 'loss of control of means of transport or handling equipment', 'fall of persons to a lower level' and 'fall of object on the victim from above', accounting together for 52.5% of fatal accidents. In this section, it would be interesting to focus on the specific physical activity of victims in relation to each of the three most frequent deviations.

**66% of victims fatal accidents at work due to a 'loss of control of transport means or handling mobile and motorised equipment' were 'driving mobile and motorised equipment'.**

For the category 'loss of control of transport means or handling equipment', two thirds of victims were 'driving a means of transport' such as a truck, car, aeroplane, motor boat, etc. or 'handling mobile and motorised equipment', such as forklift trucks, and 9% of victims were 'passengers on board a means of transport'. All other specific physical activities at two-digit level were below the 6% threshold (as displayed in brackets under 'Other' in Figure 3.5). The ESAW database makes it possible to draw up the profile of victims of fatal accidents for a given deviation and specific physical activity. For instance, victims who lost control while 'driving a means of transport or handling equipment' were predominantly aged between 25 and 34 (30.3%), were employed as 'drivers or mobile plant operators' (45.0%), working in either 'land transport' (28.4%) or 'construction' (13.7%), in a local unit with less than 50 employees (71.2%). Moreover, 23.8% of such accidents occurred between midnight and 6:00.

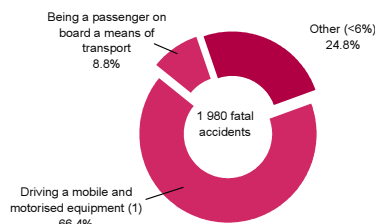
**29% of fatal falls from height involved people walking or running, and 13% were working with manual hand-held tools.**

Concerning fatal 'falls of workers to a lower level', more than 29% of victims were either 'walking or running, going up or down'. Victims of such falls were mostly aged 45–54 (33.3%), were 'extraction or building trades workers' (42.5%), employed in the sector of 'construction' (48.7%), and worked in local units with less than nine employees (37.7%).

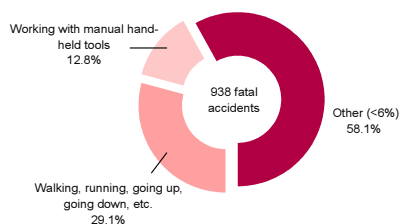
Considering the deviation 'slip, fall, collapse of Material Agent falling on the victim from above', the most recurrent physical activity involved was 'working with manual hand-held tools' (11.9%, representing less than 70 cases). However, compared to the two deviations presented above, no specific activity clearly stands out at two-digit level.

**Figure 3.5** Distribution (%) of specific physical activities of victims (two-digit level) for deviations at two-digit level mostly involved in fatal accidents at work, EU\_V, over the period 2003-2005 <sup>(3)</sup><sup>(4)</sup>

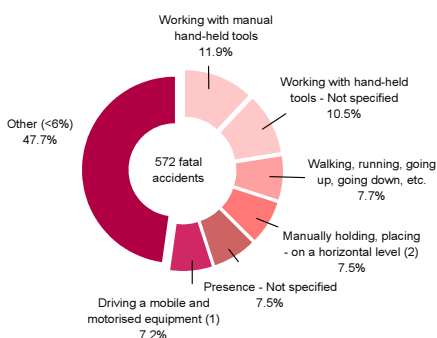
**Loss of control (total or partial) - of means of transport or handling equipment, (motorised or not)**



**Fall of person - to a lower level**



**Slip, fall, collapse or Material agent falling on the victim from above**



Specific physical activity at a one-digit level:

- Working with hand-held tools
- Movement
- Handling of object
- Presence
- Driving/being on board a means of transport or handling equipment

<sup>(1)</sup> Driving a means of transport or handling equipment - mobile and motorised

<sup>(2)</sup> Manually taking hold of, grasping, seizing, holding, placing - on a horizontal level

<sup>(3)</sup> The individual pie-chart pieces correspond to 'specific physical activity' at a 2-digit level. Each cluster of colour is associated with activity at 1-digit level.

<sup>(4)</sup> All 'specific physical activities' at 2-digit level comprised in 'Other' are below the percentage displayed in brackets. Source: Eurostat - ESAW



## Specific physical activity in relation to deviations leading to non-fatal accidents

The most recurrent non-fatal accidents at work comprised 'falls on a same level', 'uncoordinated movements', 'loss of control of hand-held tools' and 'loss of control of objects'. These four two-digit level deviations accounted for 38.6% of all non-fatal accidents at work.

In cases of 'slips, stumbles or falls on the same level' (including on uneven ground), the main specific physical activity identified was 'walking or running forwards or backwards'. Such routine accidents accounted for around 53% of cases of slips, stumbles or falls on a same level. All the other activities at two-digit level were below the 7% threshold (as displayed in brackets under 'Other' in Figure 3.6). As mentioned above, by analysing the data contained in the ESAW database, it is possible to draw up the profile of victims of non-fatal accidents according to a given deviation and specific physical activity. For example, among workers walking or running before they were victim of a non-fatal fall on the same level, 66.7% were men (however women were overrepresented in such deviations, accounting for 34.3% of cases), and 37.6% of victims were aged 45–64.

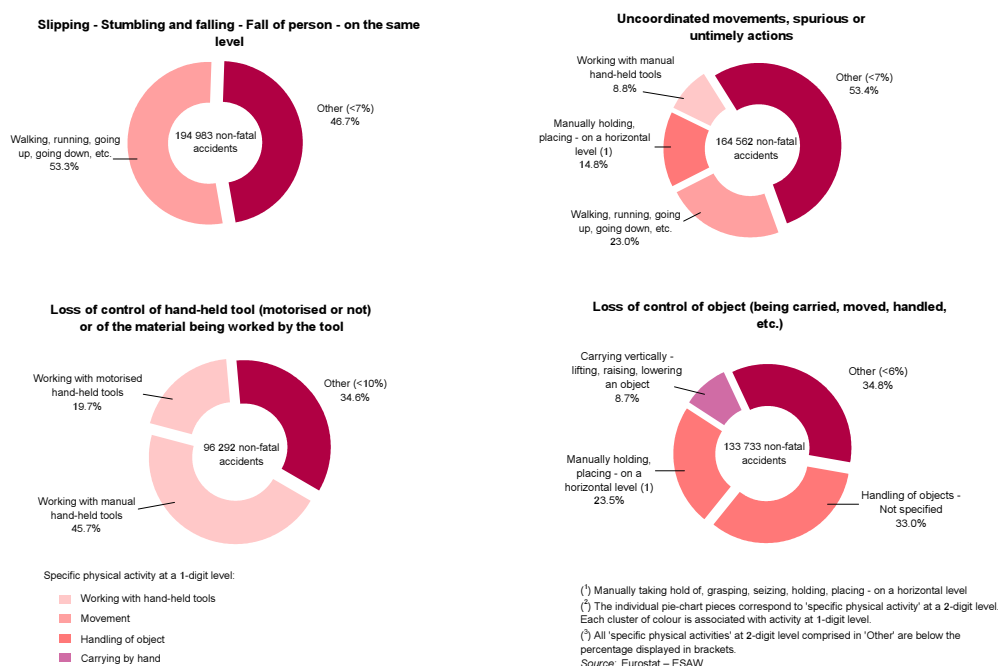
*More than half of non-fatal accidents at work due to a fall of person on the same level involved a routine movement such as walking or running.*

Concerning 'uncoordinated movements, spurious or untimely actions' leading to non-fatal accidents at work, 23.0% of victims were 'walking, running, going up or down'. The sector of 'construction' was the most affected by this combination of deviation and specific physical activity, with an occurrence of 22.3%. This was followed by 'manually taking hold of, grasping, seizing, holding, placing an object on a horizontal level', representing 14.8% of non-fatal accidents triggered by uncoordinated movements. 'Machine operators and assemblers', 'extraction and building trades workers', 'labourers in mining, construction, manufacturing and transport' and 'metal machinery and related trades workers' were the most affected occupations for this type of combination, accounting for just over 50% of cases.

*Around 37% of victims of non-fatal accidents caused by uncoordinated movements were either walking or running, or handling an object on a horizontal level at the time of the accident.*

Considering the deviation 'loss of control of hand-held tool (motorised or not) or of the material being worked by the tool', around 46% of victims were 'working with manual hand-held tools' and less than 20% were 'working with motorised hand-held tools'. Concerning the deviation 'loss of control of object', 33.0% of victims were 'handling an object (not specified)', 23.5% were 'holding or placing an object on a horizontal level' and 8.7% were 'carrying vertically, lifting, raising, lowering an object'.

**Figure 3.6** Distribution (%) of specific physical activities of victims (two-digit level) for deviations at two-digit level mostly involved in non-fatal accidents at work, EU\_V, 2005 <sup>(2)</sup><sup>(3)</sup>



### 3.3 Distribution of working processes by deviation

The working process describes the general activity or task being performed by the victim at the time of the accident. It is neither the victim's occupation nor the specific physical activity being carried out just before the accident. It is a broad description of the type of work, i.e. the task that was being undertaken by the victim over a certain period of time ending at the instant of the accident.

A two-digit breakdown of working processes is provided in Annex A6.7. Although cross-tabulations between the working process and a selection of Phase I, Phase II and other Phase III variables are provided at one-digit level in Annexes A3.3 and A3.4, this section provides a more detailed analysis by focusing on a two-digit classification for cross-tabulations.

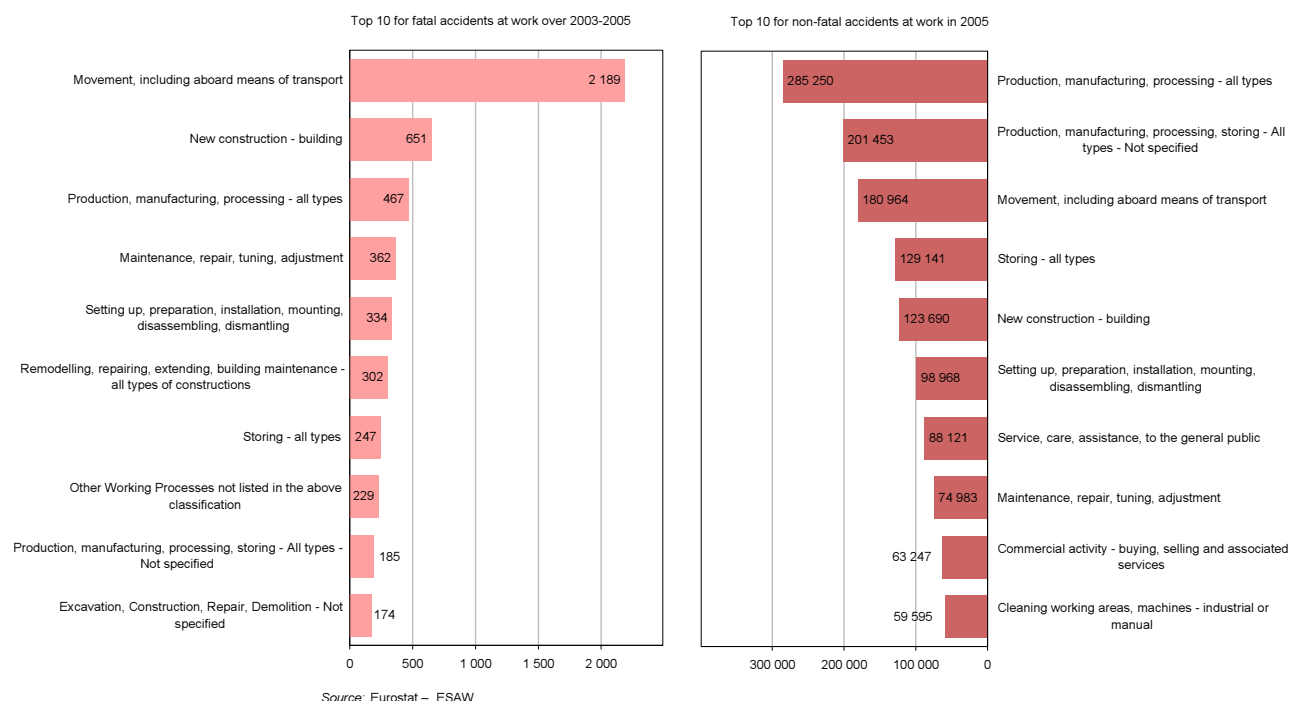
*In terms of working process, 31.6% of fatal accidents at work involved victims in 'movement, including aboard means of transport'.*

*Around one in six non-fatal accidents at work involved workers carrying out 'production, manufacturing or processing' work.*

According to the results associated with the working process, a large number of fatal accidents were linked to 'movements including aboard means of transport' (in 31.6% of cases) (see Figure 3.7). The second most common working process associated with fatal accidents at work was 'construction of new buildings', accounting for 9.4% of cases, while 'production, manufacturing, processing' came third, with 6.7% of cases.

16.7% of non-fatal accidents at work occurred among workers involved in 'production, manufacturing or processing'. Moreover, two activities within the category 'services provided to enterprises and/or to the general public' were among the top 10 most observed occurrences: about 5% of victims were providing 'service, care, assistance to the general public' (e.g. health and social workers) and 4% were involved in 'commercial activities – buying, selling and associated services'.

**Figure 3.7** Top 10 working processes (two-digit level) accounting for the highest number of accidents at work, by severity, EU\_V



## Chain of events leading to accidents at work

The use of ESAW Phase III variables allows a precise analysis of causes and circumstances of accidents at work, which means that a detailed analysis of the chain of events leading to injuries can be carried out. This analysis will focus more specifically on the most important categories of deviation at two-digit level. The approach will involve identifying the most frequent working process for a given deviation at two-digit level. The most common associated specific physical activity can then be highlighted. However, a number of breakdowns relating to fatal accidents at work comprise only relatively few cases, and results should therefore be handled with care.

## Working process in relation to deviations (two-digit level) leading to fatal accidents

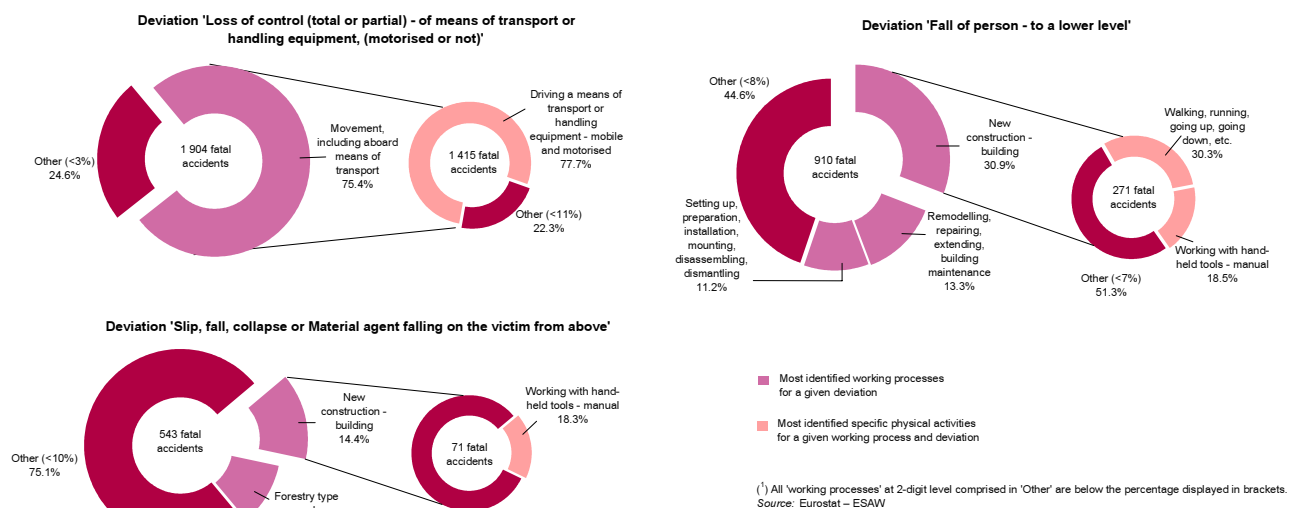
Fatal accidents caused by 'loss of control of transport means or handling equipment', involved the working process 'movement, including aboard means of transport' in 75.4% of cases. Within this particular breakdown, the specific physical activity 'driving a means of transport or handling equipment – mobile and motorised' was recorded in 77.7% of cases.

*'Construction of new building' was the most common working process identified in cases of falls of persons to a lower level and falls of objects on workers resulting in death.*

Concerning the deviation 'fall of person to a lower level', the working process 'new construction – building' was identified in 30.9% of cases. Within this specific breakdown, 30.3% of victims were 'walking, running, going up or down', and 18.5% were 'working with manual hand-held tools'.

Fatal accidents triggered by 'slips, falls, collapse or Material Agent falling on the victim from above', involved 'construction of new buildings' in 14.4% of cases. Within this sub-category of deviation and working process, 18.3% of victims were 'working with manual hand-held tools' (albeit representing a total of only 13 cases).

**Figure 3.8** Detailed chain of events (working process and specific physical activity) at two-digit level for the most recurrent deviations leading to fatal accidents at work, EU\_V, 2003–2005 (1)



## Working process in relation to deviations (two-digit level) leading to non-fatal accidents

The working process ‘movement including aboard means of transport’ accounted for 18.4% of non-fatal accidents at work involving ‘slipping, stumbling and falling on the same level’. Within this working process, 78.4% of victims were ‘walking, running, going up, going down’.

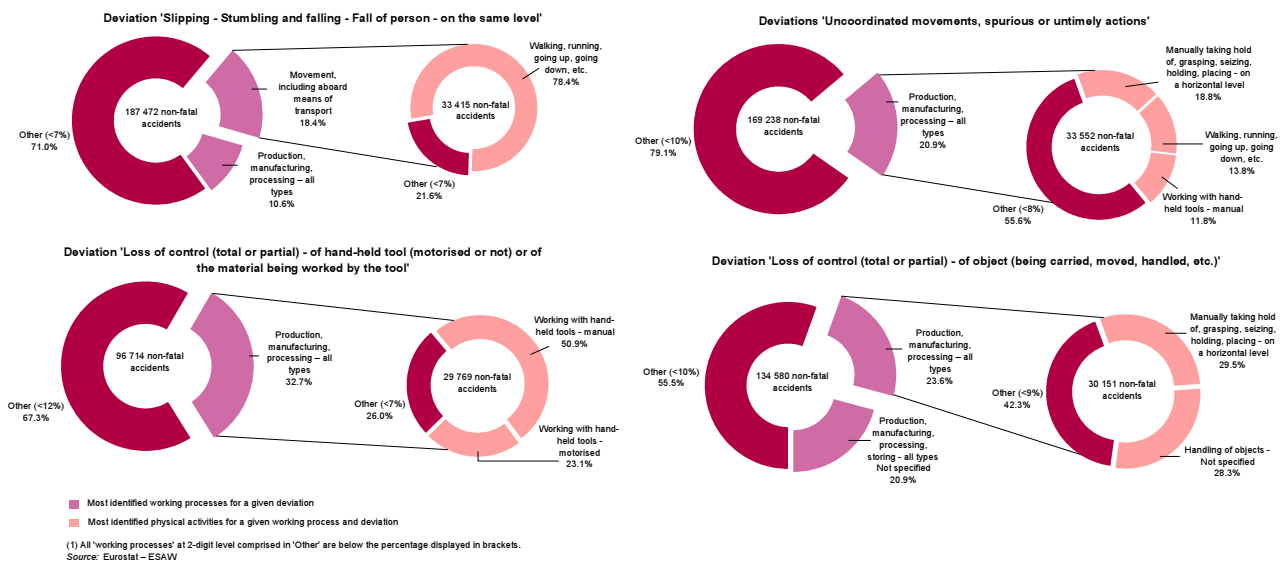
*The working process ‘all types of production, manufacturing and processing’ was mainly observed in accidents involving a loss of control of objects or hand-held tools, and uncoordinated movements.*

Concerning the deviation ‘uncoordinated movements, spurious and untimely actions’, the most common working process involved was ‘production, manufacturing, processing’, with 20.9% of cases. Within this sub-category, the main specific physical activities observed were ‘manually taking hold of, grasping, seizing, holding, placing on a horizontal level’ (in 18.8% of cases), ‘walking, running, going up or down’ (13.8%) and ‘working with manual hand-held tools’ (11.8%).

32.7% of non-fatal accidents triggered by ‘loss of control of hand-held tool, etc.’ involved ‘production, manufacturing and processing’. Within this sub-category, more than half of victims were ‘working with manual hand-held tools’, while 23.1% were ‘working with motorised hand-held tools’.

23.6% of deviations involving a ‘loss of control of an object’ were related to the working process ‘production, manufacturing, processing – all types’. The associated specific physical activities were ‘manually taking hold of an object on a horizontal level’ (29.5% of cases) and ‘handling of objects – not specified’ (28.3%).

**Figure 3.9** Detailed chain of events (working process and specific physical activity) at two-digit level for the most recurrent deviations leading to non-fatal accidents at work, EU\_V, 2005 (\*)



### 3.4 Distribution of working environments by deviation

The following section aims to present the general environment (workplace or work premises) where accidents took place. The working environment describes the geographical environment where the victim was located at the time of the accident, i.e. working, visiting or simply present (in the context of work).

A two-digit breakdown of working environment is provided in Annex A6.8. Although cross-tabulations between the working environment and a selection of Phase I, Phase II and other Phase III variables are provided at one-digit level in Annexes A3.5 and A3.6, this section provides a more detailed analysis by focusing on a two-digit classification for cross-tabulations.

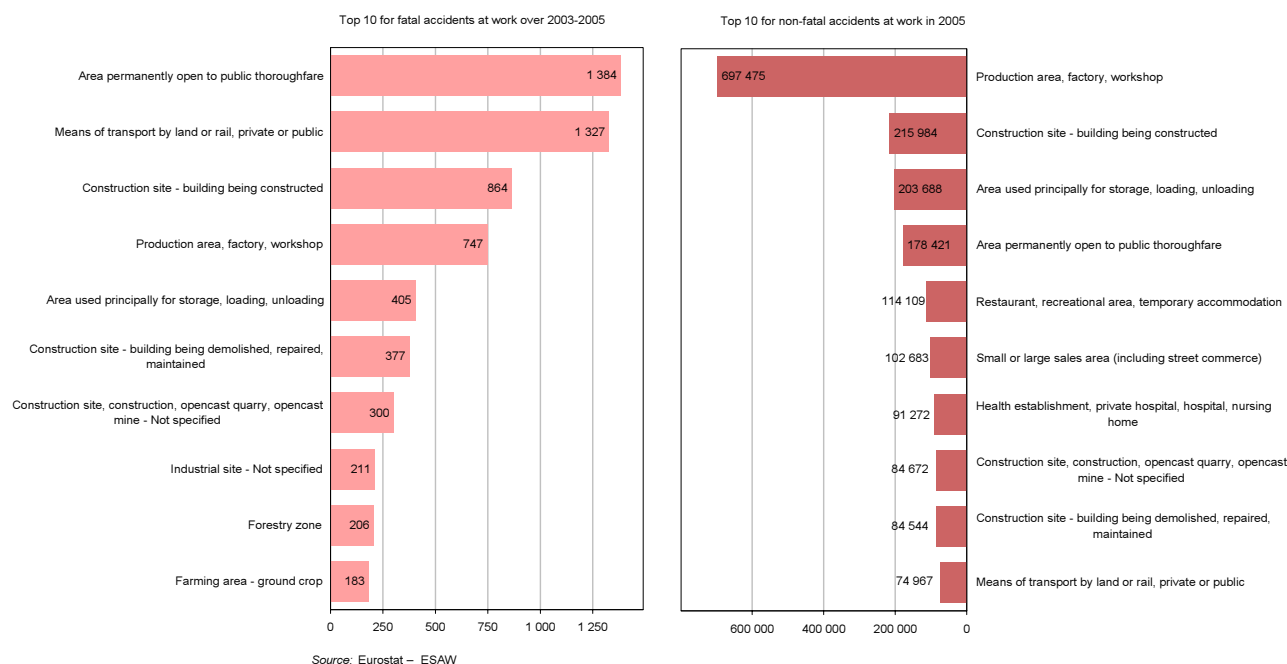
According to the results associated with the working environment, it transpires that a large number of fatal accidents at work occurred in 'areas permanently open to public thoroughfare' (in 17.6% of cases), 'means of transport by land or rail, private or public' (17.1%), 'construction sites, buildings being constructed' (11.4%) and 'production areas, factories, workshops' (9.7%) (see Figure 3.10). Moreover, 'forestry zones' (2.7%) and 'farming areas – ground crops' (2.4%) also counted among the most frequent working environments where fatal accidents at work occurred.

*More than one in three fatal accidents at work occurred either in 'areas permanently open to public thoroughfare' (17.6%) or in 'means of transport by land or rail' (17.1%).*

Concerning non-fatal accidents at work, 27.8% of events occurred in 'production areas, factories, workshops', 8.6% in 'construction sites, buildings being constructed', 8.1% in 'areas used principally for storage, loading, unloading' and 7.1% in 'areas permanently open to public thoroughfare', such as highways, byways, parking areas, stations or airports, waiting rooms, etc. Moreover, it appears that 4.5% of non-fatal accidents at work took place in 'restaurants, recreational areas, temporary accommodations (including museums, auditoriums, stadiums, fairs, etc.)', 4.1% in 'small or large sales areas (including street commerce)' and 3.6% in 'health establishments, private hospitals, hospitals and nursing homes'.

*27.8% of non-fatal accidents at work occurred in 'production areas, factories and workshops'.*

**Figure 3.10** Top 10 working environments (two-digit level) accounting for the highest number of accidents at work, by severity, EU\_V



## Working environment in relation to deviations (two-digit level) leading to fatal accidents

As pointed out in the description of the most frequent deviations leading to fatal injuries, 'loss of control of means of transport or handling equipment', 'fall of persons to a lower level' and 'slip, fall collapse of Material Agent falling on the victim from above' were involved in more than a third of fatal accidents at work. So as to accurately determine where to focus preventive measures, it is necessary to specify the working environment of victims associated with these most recurrent deviations (at two-digit level).

Around 45% of fatal accidents triggered by a 'loss of control of means of transport or handling equipment' occurred in 'means of transport (private or public) by land or rail such as a train, bus, car, etc.', while 33% occurred in 'areas permanently open to public thoroughfare such as highways, byways, parking areas, stations or airports, waiting rooms, etc.'

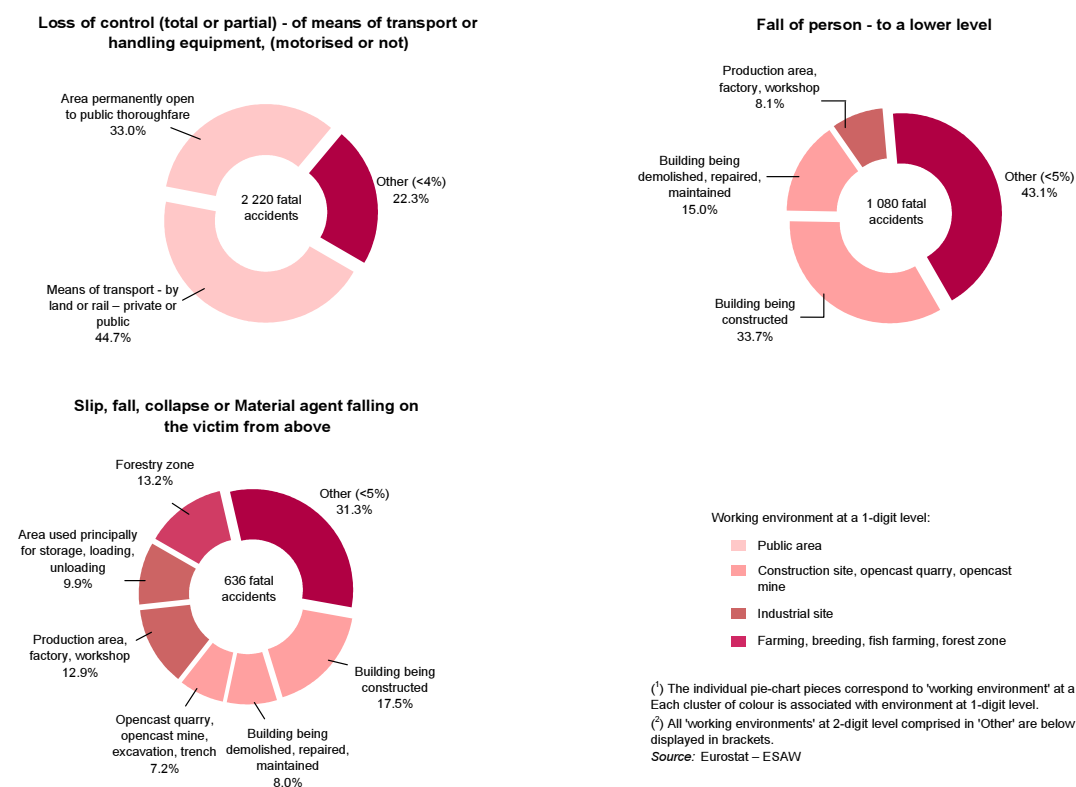
Regarding the deviation 'fall of person to a lower level', around 34% of accidents occurred in 'buildings being constructed', 15% in 'buildings being demolished, repaired or maintained' and 8% in 'production areas, factories or workshops'. Furthermore, falls to a lower level accounted for 62% of all fatal accidents at work involving people working 'elevated on a fixed level such as a roof, terrace, etc.' (with 38 cases out of 61), while they accounted for 50% of accidents where workers were 'elevated on a mast, pylon, suspended platform' (19 cases out of 38).

For the deviation 'slip, fall, collapse or Material Agent falling on the victim from above', the most common working environments where such fatal accidents at work occurred were 'buildings being constructed' (18%), 'forestry zones' (13%), 'production areas, factories, workshops' (13%) and 'areas used principally for storage, loading, unloading' (10%). It is moreover interesting to note that 'falls of Material Agent on the victim from above' accounted for a larger proportion of all fatal accidents at work for workers in 'forestry zones' (42%, with 84 out of 200 cases) and on 'construction sites – underground' (58%, with 11 out of 19 cases).

*34% of fatal falls of persons to a lower level occurred in buildings being constructed and 15% in buildings being demolished, repaired or maintained.*

*'Fall of Material Agent on the victim from above' accounted for 42% of fatal accidents at work in forestry zones, against 58% on underground construction sites.*

**Figure 3.11** Distribution of working environments where the victim was located (two-digit level) for the most recurrent deviations involved in fatal accidents at work, EU\_V, 2003–2005 <sup>(1)</sup><sup>(2)</sup>



## Working environment in relation to deviations (two-digit level) leading to non-fatal accidents

In terms of non-fatal accidents at work, four deviations at two-digit level were highlighted in Figure 3.1: 'falls on a same level', 'uncoordinated movements', 'loss of control of hand-held tools' and 'loss of control of objects'. The following section presents the most common working environments in which these deviations occurred.

Non-fatal falls on the same level occurred mostly in 'production areas, factories or workshops' (with 16.4% of cases), 'areas permanently open to public thoroughfare' (13.2%), 'buildings being constructed' (7.3%), 'areas used principally for storage, loading or unloading' (7.1%) and 'restaurants, recreational areas, temporary accommodations' (5.6%).

*Around one in six non-fatal 'falls on the same level' occurred in 'production areas, factories or workshops', and 13% in 'areas permanently open to public thoroughfare'.*

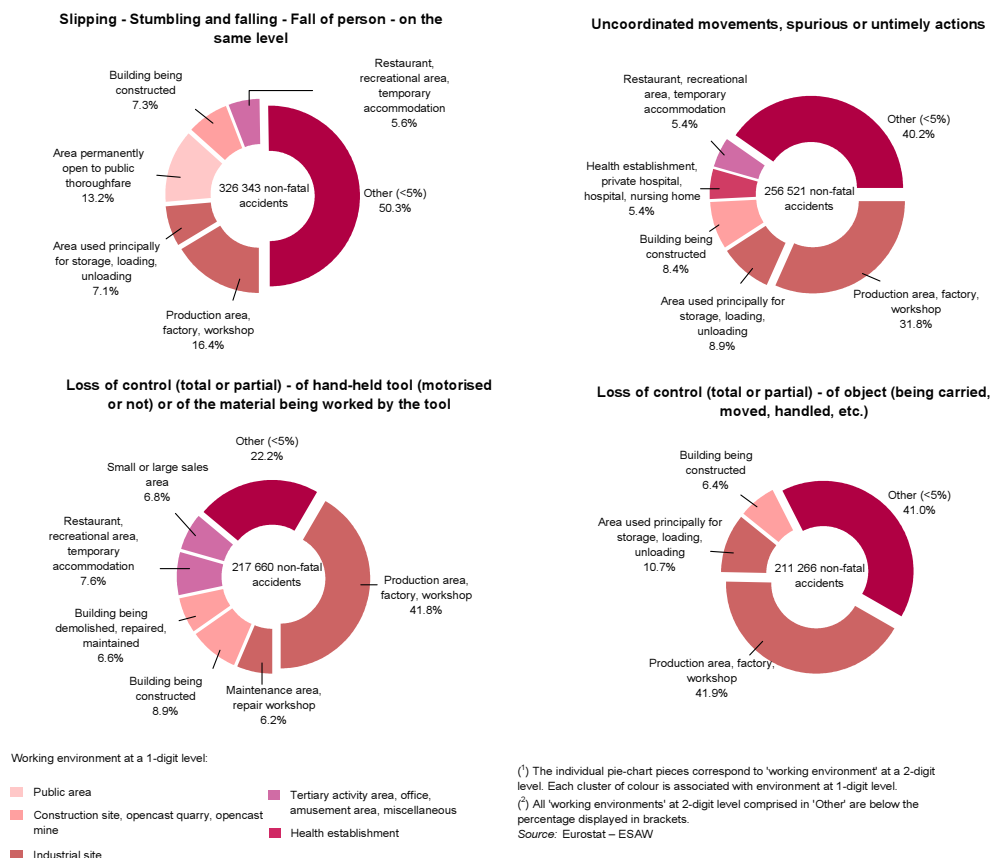
Regarding the deviation 'uncoordinated movements', around one in three non-fatal accidents occurred in 'production areas, factories or workshops'. In addition, 8.9% of such deviations occurred in 'areas used principally for storage, loading, unloading' and 8.4% in 'buildings being constructed'. Moreover, no less than 5% of deviations due to 'uncoordinated movements' were observed in 'health establishments, etc.' and another 5% in 'restaurants, recreational areas and temporary accommodation'.

Concerning 'loss of control of hand-held tools', 41.8% of non-fatal accidents occurred in 'production areas, factories and workshops'. Although only 6.2% of non-fatal accidents caused by loss of control of hand-held tools occurred in 'maintenance areas, repair workshops', this deviation was responsible for more than one in five non-fatal accidents in this working environment.

*'Production areas, factories and workshops' were the main working environments involved in accidents caused by loss of control of hand-held tools and loss of control of objects.*

Considering the deviation 'loss of control of object' leading to non-fatal accidents at work, 41.9% of events occurred in 'production areas, factories and workshops', followed by 'areas used principally for storage, loading and unloading' (10.7%) and 'buildings being constructed' (6.4%).

**Figure 3.12** Distribution of working environments where the victim was located (two-digit level) for the most recurrent deviations involved in non-fatal accidents at work, EU\_V, 2005 <sup>(1)</sup><sup>(2)</sup>







## Chapter 4 - Detailed analysis of Contacts – Modes of Injury





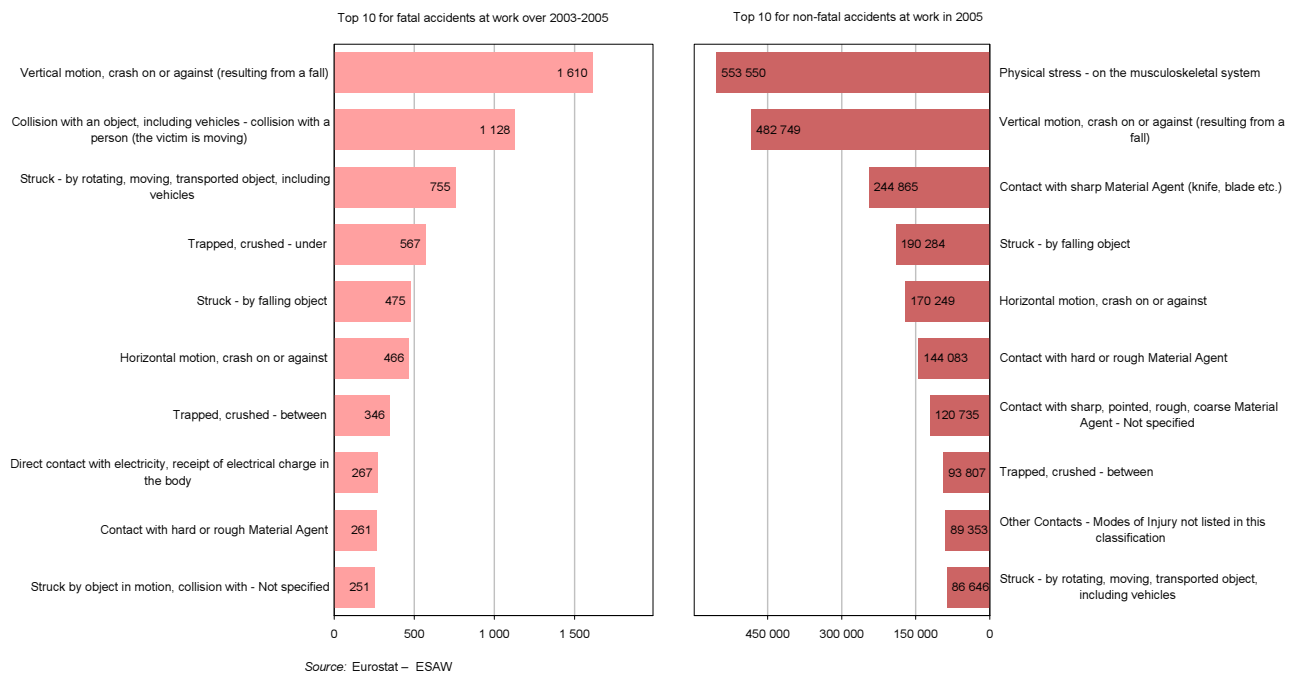
## 4.1 Contacts – modes of injury at two-digit level

The previous chapter provided an analysis of the most common two-digit level deviations leading to accidents at work. The following chapter will focus more specifically on the most frequent modes of injury (or contacts) involved in accidents at work. The aim is to make a detailed study of the most common contacts at two-digit level by first analysing the associated NACE and ISCO distributions at two-digit level. The subsequent sub-chapters will consider the distribution of a number of ESAW Phase III variables, including ‘deviation’, ‘specific physical activity’ and ‘working environment’, in relation to the most common types of contact. Although a two-digit breakdown of Phase III variables is provided in Annexes A6.4 to A6.10, cross-tabulations between these variables were not presented in the Annex due to a lack of space. However, Annexes A3.1 to A3.6 provide cross-tabulations at one-digit level between ESAW Phase III variables and a selection of Phase I, II and other Phase III variables. Further cross-tabulations between deviation and contact are presented in Annexes A4.1 to A4.4 at one and two-digit level.

*Around 18% of non-fatal accidents at work were attributable to ‘physical stress on the musculoskeletal system’, while falls accounted for around 19% of fatal accidents at work.*

Out of the ten most common modes of injury observed in accidents at work (see Annex A6.5 and Figure 4.1 below), the following chapter will focus on the three most recurrent contacts for both non-fatal and fatal accidents at work. The analysis reveals that 18.1% of non-fatal accidents were attributable to ‘physical stress on the musculoskeletal system’, followed by ‘vertical motion, crash on or against (resulting from a fall)’ (15.8%) and ‘contact with sharp Material Agent (knife, blade, etc.)’ (8.0%). Concurrently, 18.8% of fatal accidents resulted from ‘vertical motion, crash on or against (resulting from a fall)’, followed by ‘collision with an object, including vehicles, collision with a person (the victim is moving)’ (15.5%) and ‘struck by rotating, moving, transported object, including vehicles’, (8.8%).

**Figure 4.1** Top 10 contacts – modes of injury (two-digit level) accounting for the highest number of accidents at work, by severity, EU\_V



## Contacts involved in fatal accidents

As mentioned above, ‘vertical motion, crash on or against (resulting from a fall)’ was the most common mode of injury at two-digit level leading to fatal accidents (18.8%). Considering the sector of activity, around 53% of such contacts occurred in the sector of ‘construction’. In terms of occupation, 38.6% of victims of fatal accidents at work were ‘extraction and building trades workers’, while 13.2% were ‘metal, machinery and related trades workers’ and 11.9% were employed as ‘labourers in mining, construction, manufacturing and transport’.

The second most common category of contact involved in fatal accidents was ‘collision with an object, including vehicles, collision with a person’ (15.5%), where both the victim and the injury-causing object were in motion. Such collisions involve an impact between persons or objects moving in the same or opposite direction, and can denote two persons or two vehicles colliding with each other. Regarding the sector of activity, around 22% of fatal collisions occurred in ‘land transport’ and 16% in ‘construction’. In terms of occupation, 34% of victims of such accidents were ‘drivers and mobile-plant operators’.

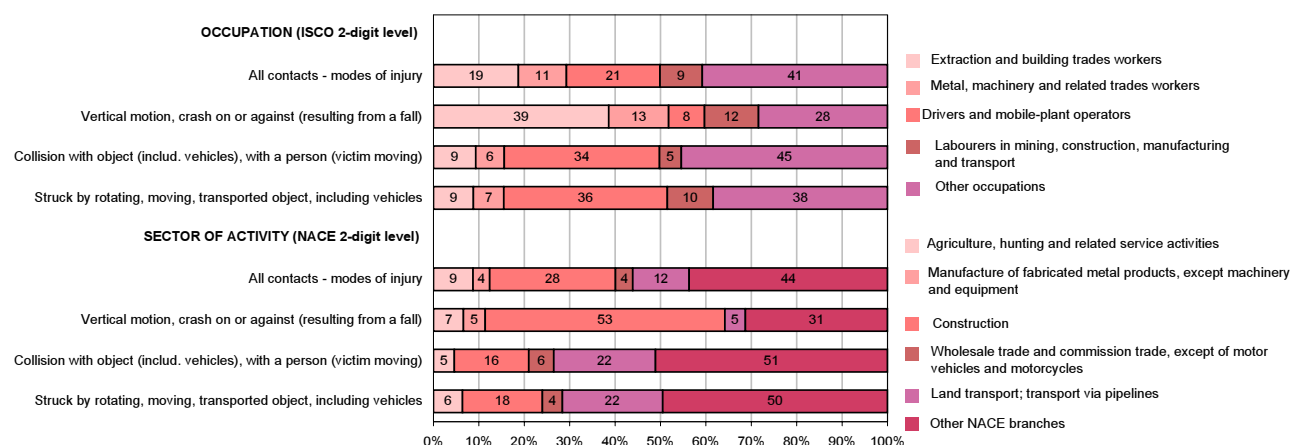
The third category observed was ‘struck by rotating, moving, transported object, including vehicles’, with 8.8% of occurrences. For this mode of injury, the collision is due entirely to the movement of the object, with the victim being hit by a moving or rolling object, such as equipment on wheels (trolley) or a vehicle. This type of contact was more common in the sectors of ‘land transport; transport via pipelines’ and ‘construction’, with 22% and 18% of cases respectively. Victims of such contacts mainly included ‘labourers in mining, construction, manufacturing and transport’, accounting for 36% of cases.

*More than half of all fatal accidents at work resulting from a fall occurred in the sector of construction.*

*‘Land transport’ accounted for over one in five fatal collisions with an object or person where the victim was in motion.*

*‘Land transport’ also accounted for 22% of fatal accidents where victims were struck by a moving object or vehicle.*

**Figure 4.2** Distribution (%) by sector of activity (NACE) and occupation (ISCO) (two-digit level) for the most recurrent fatal contacts – modes of injury at two-digit level, 2003-2005, EU\_V



Source: Eurostat – ESAW

## Contacts involved in non-fatal accidents

Concerning non-fatal accidents at work, the most common contact at two-digit level was ‘physical stress on the musculoskeletal system’ (18.1%). This type of contact occurred most frequently in the sectors of ‘construction’ (18.2% of occurrences) and ‘health and social work’ (10.0%) (see Figure 4.3). Moreover, within each sector of activity at two-digit level, ‘physical stress on the musculoskeletal system’ was one of the most common modes of injury involved in non-fatal accidents at work. For instance, this contact was observed in around 30% of accidents in ‘air transport’ and ‘health and social work’, while it accounted for 18.5% of non-fatal accidents in ‘construction’.

*More than one in six non-fatal accidents occurring through ‘physical stress on the musculoskeletal system’ were registered in the sector of construction.*



*Most victims of 'physical stress on the musculoskeletal system' were 'extraction and building trades workers' and 'labourers in mining, construction, manufacturing and transport'.*

*'Extraction and building workers' accounted for 16.9% of victims of non-fatal accidents at work sustained through a fall.*

*Around 14% accidents due to a contact with a sharp object occurred in the sector of 'construction', followed by 'hotels and restaurants' and 'retail trade, except of motor vehicles and motorcycles; repair of personal and household goods'.*

In terms of occupation, 14.7% of victims of 'physical stress on the musculoskeletal system' were 'extraction and building trades workers' and 13.2% were 'labourers in mining, construction, manufacturing and transport'. However, this mode of injury accounted for 28.9% of all non-fatal accidents among 'clerks without specification' and 26.7% of accidents among 'teaching associate professionals', while it represented 18.3% of accidents among 'extraction and building trades workers' and 24.4% among 'labourers in mining, construction, manufacturing and transport'.

The second most recurrent mode of injury associated to non-fatal accidents was 'vertical motion, crash on or against (resulting from a fall)' (15.8%). Around 21% of such contacts occurred in 'construction'. Furthermore, this mode of injury accounted for 18.2% of all non-fatal accidents among workers in 'construction', against 28.3% in 'publishing, printing and reproduction of recorded media', 28.0% in 'insurance and pension funding, except compulsory social security' and 25.2% in 'post and telecommunications'. Regarding occupation, 16.9% of victims injured as a result of a fall were 'extraction and building trades workers'. However, falls accounted for only 18.2% of all non-fatal accidents among 'extraction and building trades workers', whereas this mode of injury was recorded in 32.5% of accidents both among 'technicians and associate professionals without specification' and 'skilled agricultural and fishery workers without specification'.

The third most frequent contact at two-digit level was 'contact with sharp Material Agent (knife, blade, etc.)' (8.0%). Around 14% of such contacts occurred in the sector of 'construction', while 11% occurred in 'hotels and restaurants' and 10% in 'retail trade, except of motor vehicles and motorcycles; repair of personal and household goods'. Moreover, contact with a sharp object accounted for 19.2% of all non-fatal accidents among workers in 'hotels and restaurants', followed by 'manufacture of food products and beverages', 'retail trade, except of motor vehicles and motorcycles, etc.' and 'construction', accounting for 17.7%, 13.5% and 6.3% of cases respectively. As regards occupation, victims of a 'contact with sharp Material Agent' were predominantly 'extraction and building trades workers' (in 14.5% of cases) 'metal, machinery and related trades workers' (12.8%) and 'personal and protective services workers' (12.6%). However, contact with a sharp object accounted for 7.9% of all non-fatal accidents among 'extraction and building trades workers' and 9.5% of accidents among 'metal, machinery and related trades workers'. This mode of injury also accounted for 22.1% of accidents among 'other craft and related trades workers', compared to 16.9% among 'models, salespersons and demonstrators' and 13.4% among 'personal and protective services workers'.

**Figure 4.3** Distribution (%) by sector of activity (NACE) and occupation (ISCO) (two-digit level) for the most recurrent non-fatal contacts – modes of injury at two-digit level, 2005, EU\_V



## 4.2 Distribution of deviations by contact – mode of injury

The previous section described the most common modes of injury, giving details on how the victim came into contact with the object that caused the injury. In this section it would be interesting to analyse the deviations associated with the six most recurrent types of contact at two-digit level (three for fatal accidents and non-fatal accidents respectively). Cross-tabulations between deviation and contact – mode of injury are provided in Annexes A4.1 to A4.4 at both one and two-digit level.

### Deviation in relation to contacts involved in fatal accidents

As highlighted in Figure 4.1, the most common modes of injury resulting in death were 'vertical motion, crash on or against (resulting from a fall)', 'collision with an object, including vehicles, collision with a person (the victim is moving)' and 'struck by rotating, moving, transported object, including vehicles', accounting together for 43.1% of all fatal accidents at work. In this section, it would be interesting to focus on the most recurrent two-digit level deviations in relation to each of these contacts.

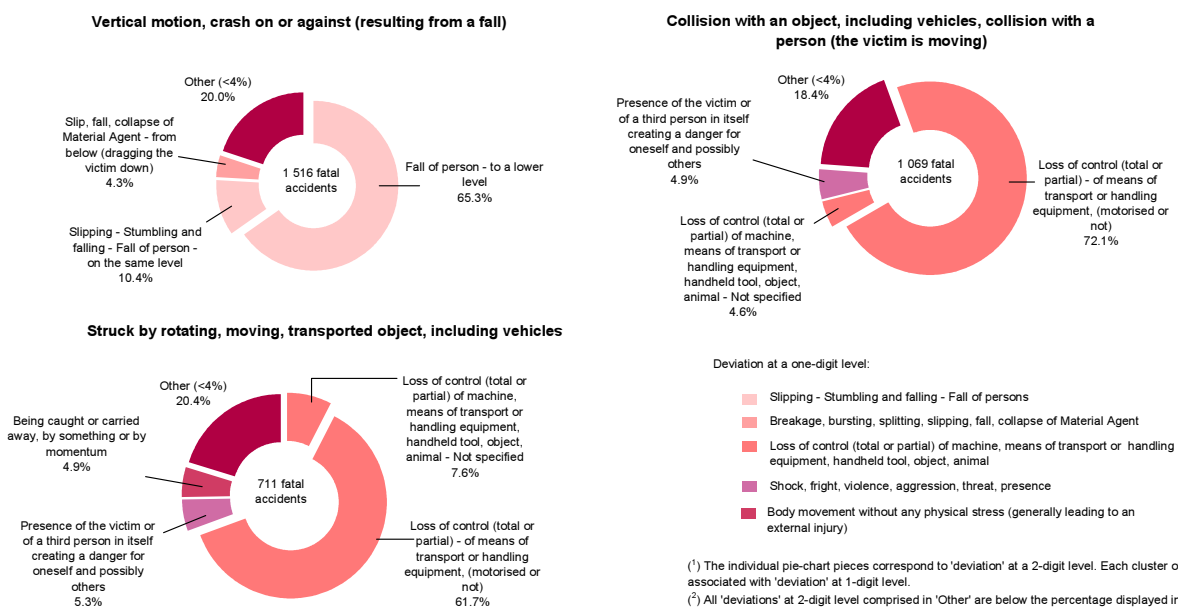
'Vertical motion, crash on or against (resulting from a fall)' was the most common mode of injury observed in fatal accidents at work, in which 65.3% of victims died as a result of a fall to a lower level, 10.4% died as a result of falls on the same level and 4.3% died due to a 'slip, fall, collapse of Material Agent from below (dragging the victim down)'. All other categories of deviation at two-digit level were below the 4% threshold (as displayed in brackets under 'Other' in Figure 4.4).

More than 72% of deviations involving a 'collision with an object, including vehicles, collision with a person (the victim is moving)' were due to a 'loss of control (total or partial) of means of transport or handling equipment, (motorised or not)'. This occurs when the victim or another person loses control of a means of transport or of handling equipment that is moving. Moreover, around 5% of fatal collisions were due to the presence of the victim or a third person in the wrong place at the wrong time. This implies that the person did something unexpected, such as standing in the vicinity of a machine or in the middle of a road or railway tracks, where the accident was caused by a machine, car or train operating or travelling under normal circumstances.

*'Loss of control of means of transport or handling equipment' was by far the most common deviation associated with fatal accidents involving either a 'collision with an object or a person' or being 'struck by moving object'.*

*Around 5% of such fatal collisions were due to the presence of the victim or a third person in the wrong place at the wrong time.*

**Figure 4.4** Distribution (%) of deviations (two-digit level) for the most recurrent contacts – modes of injury at two-digit level involved in fatal accidents at work, EU\_V, over the period 2003-2005 <sup>(1)</sup>/<sup>(2)</sup>



Regarding fatal accidents at work where victims were 'struck by rotating, moving, transported object, including vehicles', the distribution of the most recurrent deviations at two-digit level is quite similar to that of fatal collisions where both the victim and the injury-causing object were in motion. Around 62% of such contacts were due to a 'loss of control of means of transport or handling equipment' and more than 5% were caused by the presence of the victim or a third person in the wrong place at the wrong time. Moreover, in the case of fatal accidents at work where victims were struck by a moving object, around 5% were crushed between a tool in use and another object, for example between a heavy drilling machine and a wall, or between a heavy crate and a machine (mode of injury 'being caught or carried away, by something or by momentum').

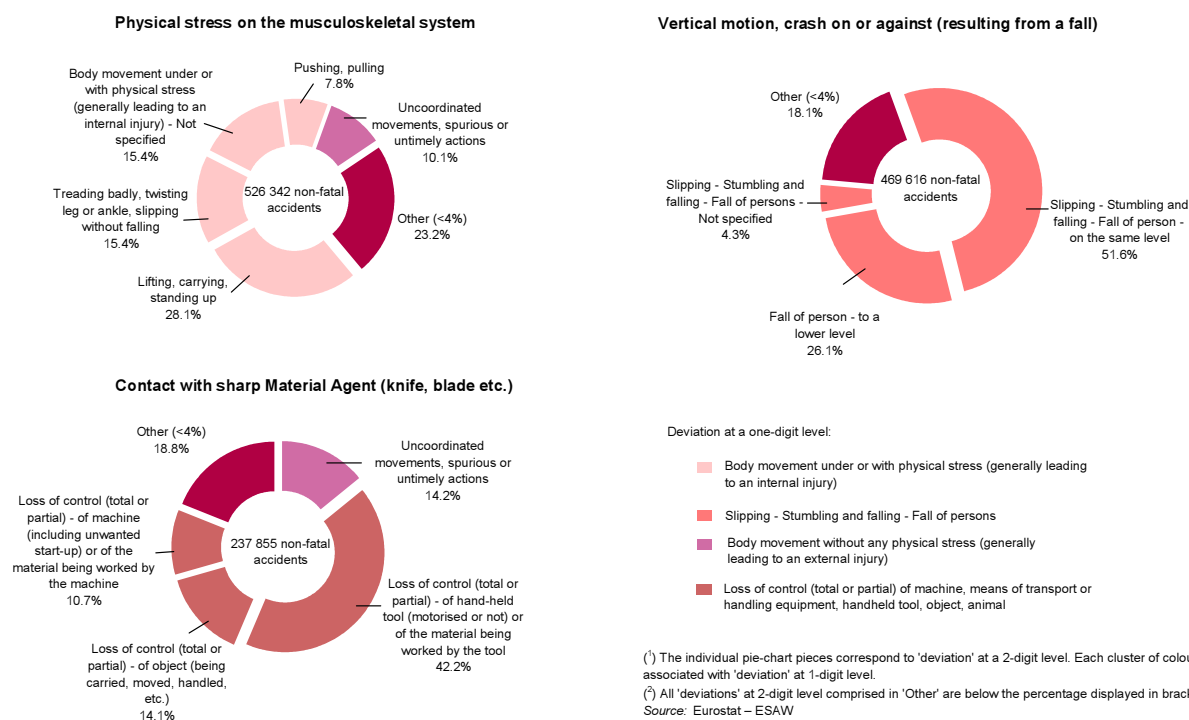
### Deviation in relation to contacts involved in non-fatal accidents

The most recurrent modes of injury for non-fatal accidents at work comprised 'physical stress on the musculoskeletal system', 'vertical motion, crash on or against (resulting from a fall)' and 'contact with sharp Material Agent (knife, blade, etc.)'. These three contacts (at two-digit level) made up 41.9% of all non-fatal accidents at work.

In cases of 'physical stress on the musculoskeletal system', the main deviation identified was 'lifting, carrying, standing up', with 28.1% of occurrences. Moreover, 15.4% of such contacts were due to the deviation 'treading badly, twisting leg or ankle, slipping without falling' and another 15.4% were due to 'body movement under physical stress – not specified' (see Figure 4.5). 'Uncoordinated movements, spurious or untimely actions' also accounted for around 10% of contacts involving 'physical stress on the musculoskeletal system'. This last deviation mostly concerns cases where the victim is injured without the involvement of a third person, usually involving the presence of a Material Agent. For example, the victim bumps against an object as he or she stands up, bends down or turns round, causing a bruise or an open wound. This can also include inadvertently placing a hand or foot in a place or on an object which causes an injury (e.g. by touching a hotplate in a restaurant kitchen).

*Around 28% of cases of 'physical stress on the musculoskeletal system' were caused by lifting, carrying and standing up.*

**Figure 4.5** Distribution (%) of deviations (two-digit level) for the most recurrent contacts – modes of injury at two-digit level involved in non-fatal accidents at work, EU\_V, 2005 <sup>(1)</sup><sup>(2)</sup>



Falls accounted for around 82% of non-fatal accidents at work involving 'vertical motion, crash on or against'. More precisely, 52% of such contacts were due to falls on the same level, 26% to falls from height and 4% to unspecified types of falls.

Loss of control was observed in around 62% of accidents involving 'contacts with sharp Material Agent (knife, blade, etc.)'. More precisely, around 42% of such accidents were caused by 'loss of control of hand-held tool or of the material being worked by the tool', 14% were due to a 'loss of control of object' and 11% were caused by a 'loss of control of machine or of the material being worked by the machine'. This last deviation includes machines starting unexpectedly and material being worked on, waste material or machine components being projected. It should be noted that no less than 14% of non-fatal accidents involving a contact with a sharp object were due to 'uncoordinated movements, spurious or untimely actions'.

*Around 42% of injuries sustained through contact with a sharp object were caused by a loss of control of a hand-held tool, while 14% of such contacts were due to uncoordinated movements.*



### 4.3 Distribution of specific physical activities by contact – mode of injury

This sub-chapter describes the victim's deliberate and purposeful action immediately before the accident in relation to the most common modes of injury identified above. A two-digit breakdown of specific physical activity is provided in Annex A6.6. Although cross-tabulations between specific physical activity and mode of injury are provided at one-digit level in Annexes A3.1 and A3.2, this section provides a more detailed analysis by focusing on cross-tabulations at two-digit level.

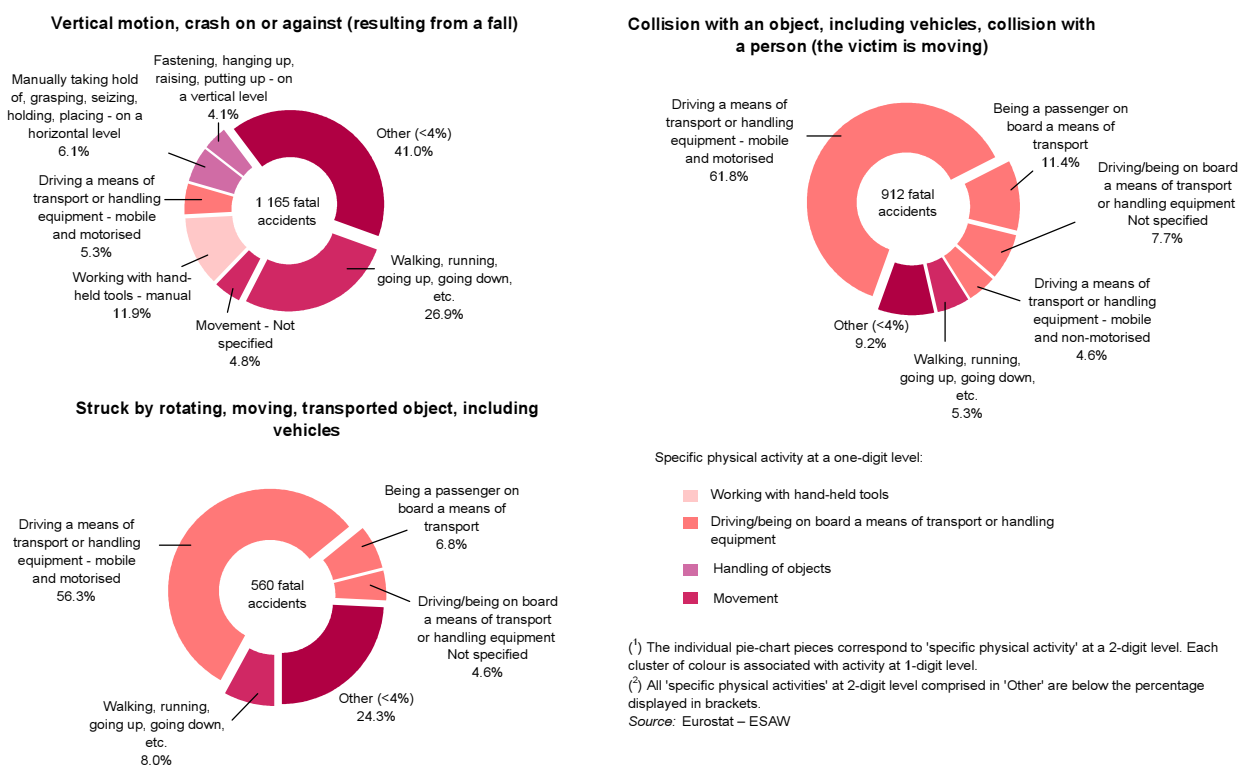
#### Specific physical activity in relation to contacts involved in fatal accidents

As highlighted in Figure 4.1, the most common two-digit level contacts leading to fatal accidents at work were 'vertical motion, crash on or against (resulting from a fall)', 'collision with an object, including vehicles, collision with a person (the victim is moving)' and 'struck by rotating, moving, transported object, including vehicles'. This section will focus on specific physical activities in relation to each of these three most frequent contacts.

*More than a quarter of victims of fatal accidents at work involving a fall were either walking or running just before the accident.*

Close to 27% of fatalities involving a 'vertical motion, crash on or against (resulting from a fall)' were in the process of 'walking, running, going up or down' just before the accident. Moreover, 11.9% of victims were 'working with manual tools', and 6.1% were 'manually holding, placing, etc. something on a horizontal level'. This was followed by 'driving a means of transport or handling equipment (mobile and motorised)' (5.3% of cases) and 'fastening, hanging up, raising, etc. on a vertical level' (4.1%).

**Figure 4.6** Distribution (%) of specific physical activities (two-digit level) for the most recurrent contacts – modes of injury at two-digit level involved in fatal accidents at work, EU\_V, over the period 2003-2005 <sup>(1)</sup><sup>(2)</sup>



62% of victims of fatal 'collisions with objects (including vehicles) or with persons' were driving a motorised vehicle just before the accident, while 11% were 'passengers on board a means of transport'. Only 5% of victims of fatal collisions were walking or running prior to the accident.

*62% of fatal collisions with an object or a person occurred while 'driving a means of transport or mobile and motorised handling equipment'.*

The same pattern can be observed for the mode of injury 'struck by rotating, moving, transported object, including vehicles'. In a large majority of cases, victims were either 'driving a means of transport or motorised and mobile handling equipment' (56.3%) or riding as 'passengers on board a means of transport' (6.8%). It should be highlighted that 8.0% of victims of fatal accidents were simply walking or running as they were struck by a moving object or vehicle.

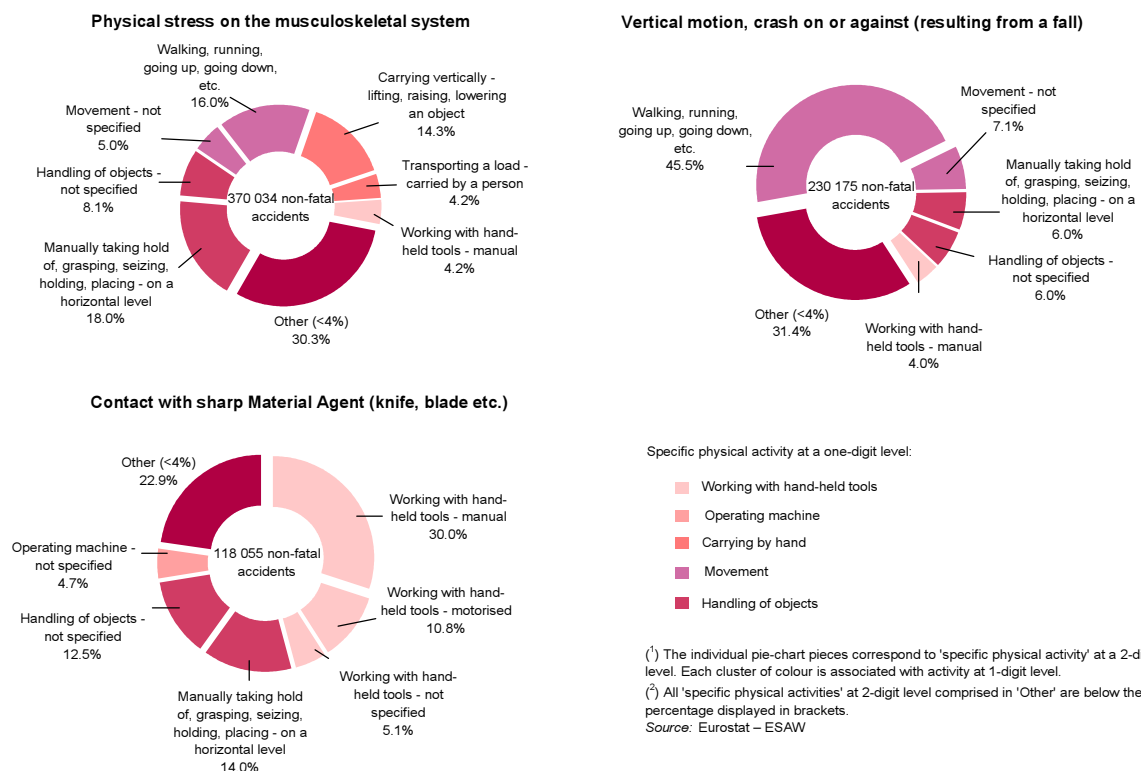
## Specific physical activity in relation to contacts involved in non-fatal accidents

The most frequent contacts observed in non-fatal accidents at work comprised 'physical stress on the musculoskeletal system', 'vertical motion, crash on or against (resulting from a fall)' and 'contact with sharp Material Agent (knife, blade, etc.)'. The following paragraphs will focus on specific physical activities in relation to each of these three most frequent types of contact.

Concerning 'physical stress on the musculoskeletal system', 44.6% of non-fatal accidents occurred while carrying and object by hand or while handling an object. More precisely, 18.0% of accidents involving this contact occurred while holding or placing an object on a horizontal level, 8.1% occurred while 'handling an object – not specified', 14.3% occurred while 'carrying vertically by hand an object (lifting, raising, lowering)' and 4.2% involved transporting a load by hand. Furthermore, more than half of all non-fatal accidents at work occurring while carrying an object vertically led to 'physical stress on the musculoskeletal system'. This mode of injury was also involved in over a third of accidents which happened while transporting a load by hand.

*Just under 45% of non-fatal accidents at work involving 'physical stress on the musculoskeletal system' occurred while carrying or handling an object.*

**Figure 4.7** Distribution (%) of specific physical activities (two-digit level) for the most recurrent contacts – modes of injury at two-digit level involved in non-fatal accidents at work, EU\_V, 2005 <sup>(1)</sup>(<sup>2</sup>)



Around 45% of victims injured through a 'vertical motion, crash on or against (resulting from a fall)' were either walking or running just before the accident. In addition, no less than 12.0% of such contacts occurred while 'handling objects – not specified' (6.0%) or while handling an object on a horizontal level (6.0%).

*Around 46% of non-fatal accidents at work involving a contact with a sharp object occurred while working with hand-held tools.*

For non-fatal accidents at work involving a 'contact with sharp Material Agent (knife, blade, etc.)', 30.0% of victims were 'working with manual hand-held tools', while 10.8% were 'working with motorised hand-held tools' and 5.1% with 'hand-held tools – not specified'. Moreover, 14.0% victims of a contact with a sharp object were handling an object on a horizontal level and 12.5% were 'handling an object – not specified'. Around 27% of non-fatal accidents in which workers were handling manual hand-held tools involved a contact with sharp object. This share amounted to 26.2% for motorised hand-held tools.



## 4.4 Distribution of working processes by contact – mode of injury of injury

The aim of this sub-chapter is to describe the general activity or task being performed by the victim at the time of the accident. It is neither the victim's occupation nor the specific physical activity being carried out just before the accident. It is a broad description of the type of work, i.e. the task that was being carried out by the victim over a certain period of time ending at the instant of the accident. A two-digit breakdown of working processes is provided in Annex A6.7. Although cross-tabulations between working process and contact – mode of injury are provided at one-digit level in Annexes A3.3 and A3.4, this section provides a more detailed analysis by focusing on two-digit level cross-tabulations.

### Working process in relation to contacts involved in fatal accidents

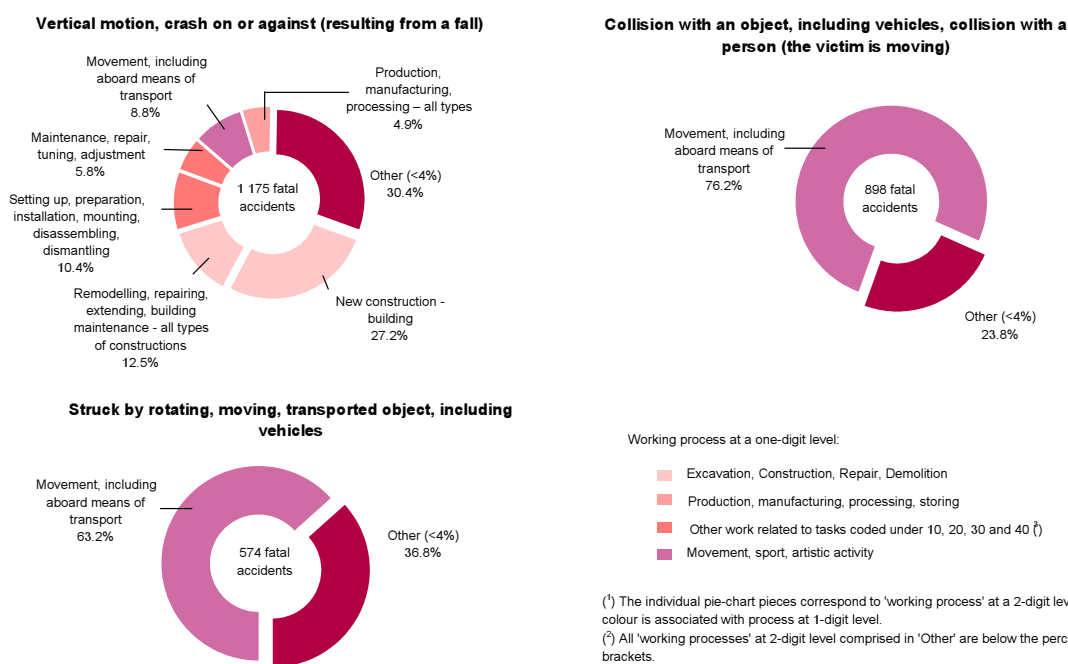
This section focuses on working processes in relation to each of the three most frequent fatal contacts – modes of injury (see Figure 4.1).

Regarding accidents occurring through a 'vertical motion, crash on or against (resulting from a fall)', which was the most common mode of injury resulting in death, 27.2% of victims were in the process of building a new construction, such as houses, apartment buildings or hangars (any construction that is closed or has a roof). This was followed by workers remodelling, repairing, extending or involved in building maintenance, accounting for 12.5% of cases, while 10.4% of victims of fatal falls were in the process of 'setting up, preparation, installation, mounting, disassembling or dismantling'.

*Approximately 40% of fatal falls involved the working process 'building of new construction' or 'remodelling, repairing, extending, building maintenance for all types of construction'.*

Considering the modes of injury 'collisions with objects (including vehicles) or with persons' and 'struck by rotating, moving, transported object, including vehicles', the most common associated working process was 'movement, including aboard means of transport' in 76.2% and 63.2% of cases respectively. All other working process categories at two-digit level were below the 4% threshold (as displayed in brackets under 'Other' in Figure 4.8).

**Figure 4.8** Distribution (%) of working processes (two-digit level) for the most recurrent contacts – modes of injury at two-digit level observed in fatal accidents at work, EU\_V, over the period 2003-2005 <sup>(1)</sup>/<sub>(2)</sub>



## Working process in relation to contacts involved in non-fatal accidents

This section focuses on working processes in relation to each of the three most frequent non-fatal contacts – modes of injury (see Figure 4.1).

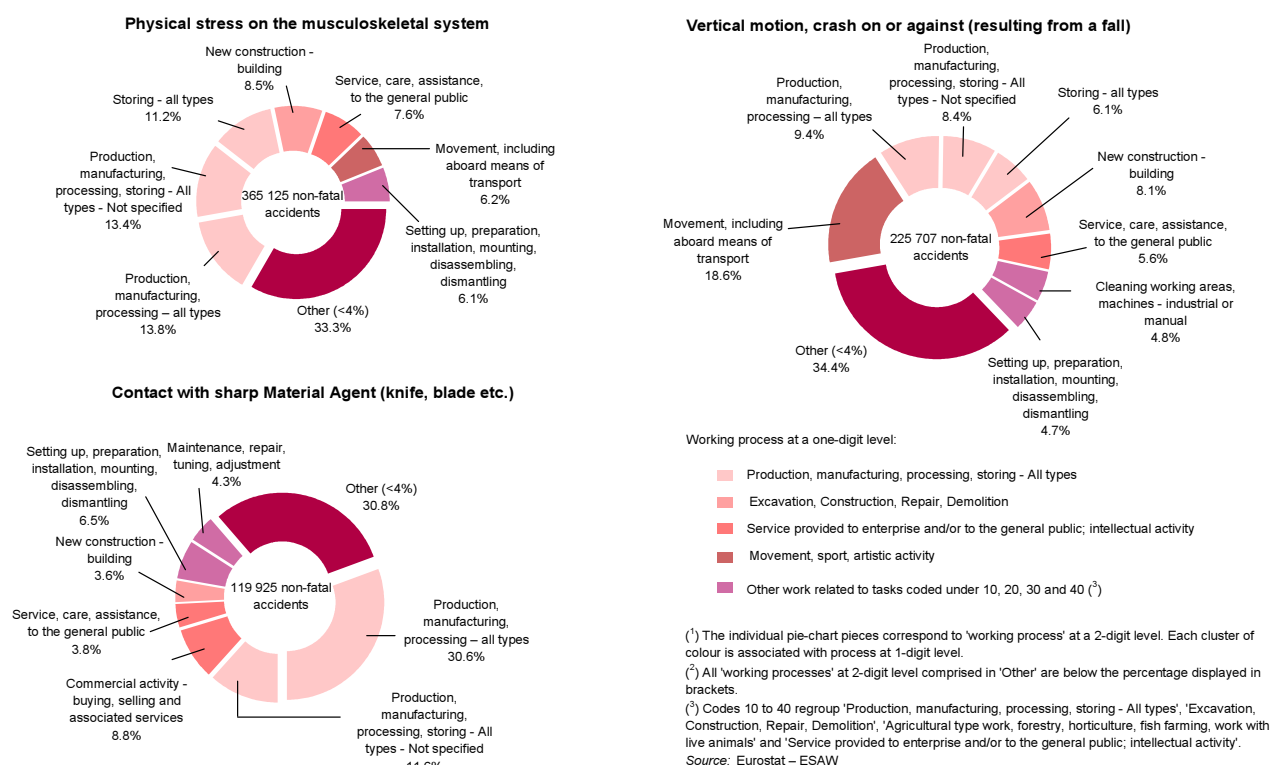
*More than 38% of non-fatal accidents at work occurring through 'physical stress on the musculoskeletal system' involved workers in the process of 'production, manufacturing and storing'.*

*Just under a third of non-fatal injuries that occurred in the working process 'service, care, assistance, to the general public' involved physical stress on the musculoskeletal system.*

Considering accidents involving the contact 'physical stress on the musculoskeletal system', 38.4% of victims were in the process of 'production, manufacturing or storing'. More precisely, 13.8% of victims were working in 'production, manufacturing or processing – all types', 13.4% were in the process of 'production, manufacturing, storing – not specified', and 11.2% of non-fatal accidents involved the working process 'storing – all types'. Furthermore, although 'service, care, assistance, to the general public' was the fifth most common working process identified for non-fatal accidents for this type of contact, it accounted nonetheless for 7.6% of occurrences. Moreover, just under a third of non-fatal accidents which occurred in 'service, care, assistance, to the general public', involved a 'physical stress on the musculoskeletal system'. This share amounted to 17.8% for persons in 'production, manufacturing, processing – all types', and 32.0% for 'storing – all types'.

For the contact 'vertical motion, crash on or against (resulting from a fall)', 23.9% of accidents happened in the course of 'production, manufacturing or storing', while 18.6% occurred during 'movement, including aboard a means of transport'. In addition, 'cleaning working areas, machines (industrial or manual)' was the sixth most common working process involved in non-fatal falls, accounting for 4.8% of cases. Furthermore, 19.1% of non-fatal accidents occurring in the working process 'cleaning working areas, machines, etc.' involved falls. This share stood at 24.1% for 'movement, including aboard a means of transport', 10.8% for 'storing – all types' and 7.5% for 'production, manufacturing or processing – all types'.

**Figure 4.9** Distribution (%) of working processes (two-digit level) for the most recurrent contacts – modes of injury at two-digit level mostly involved in non-fatal accidents at work, EU\_V, 2005 <sup>(1)</sup><sup>(2)</sup>



For non-fatal 'contacts with sharp Material Agent (knife, blade, etc.)', 42.2% of victims were involved in the working process 'production, manufacturing, processing or storing'. This was followed by 'commercial activity – buying, selling and associated services', accounting for 8.8% of non-fatal accidents involving a contact with a sharp object. Moreover, close to one in five non-fatal accidents which occurred in the course of 'commercial activities', involved a contact with a sharp object. This share amounted to 14.6% for 'production, manufacturing, processing – all types' and 7.9% for 'production, manufacturing, processing, storing – not specified'.

*More than 42% of non-fatal accidents resulting from a contact with a sharp object involved the working process 'production, manufacturing, processing storing - all types'.*

*Just under one in five non-fatal accidents which occurred in the course of commercial activities involved a contact with a sharp object.*

## 4.5 Distribution of working environments by contact – mode of injury

This sub-chapter presents the general environment (workplace or work premises) where accidents at work take place. The working environment describes the geographical environment where the victim was located at the time of the accident, i.e. working, visiting or simply present (in the context of work). A two-digit breakdown of working environment is provided in Annex A6.8. Although cross-tabulations between working environment and contact – mode of injury are provided at one-digit level in Annexes A3.5 and A3.6, this section provides a more detailed analysis by focusing on cross-tabulations at two-digit level.

### Working environment in relation to contacts involved in fatal accidents

This section takes a closer look at working environments in relation to each of the three most frequent fatal contacts – modes of injury (see Figure 4.1).

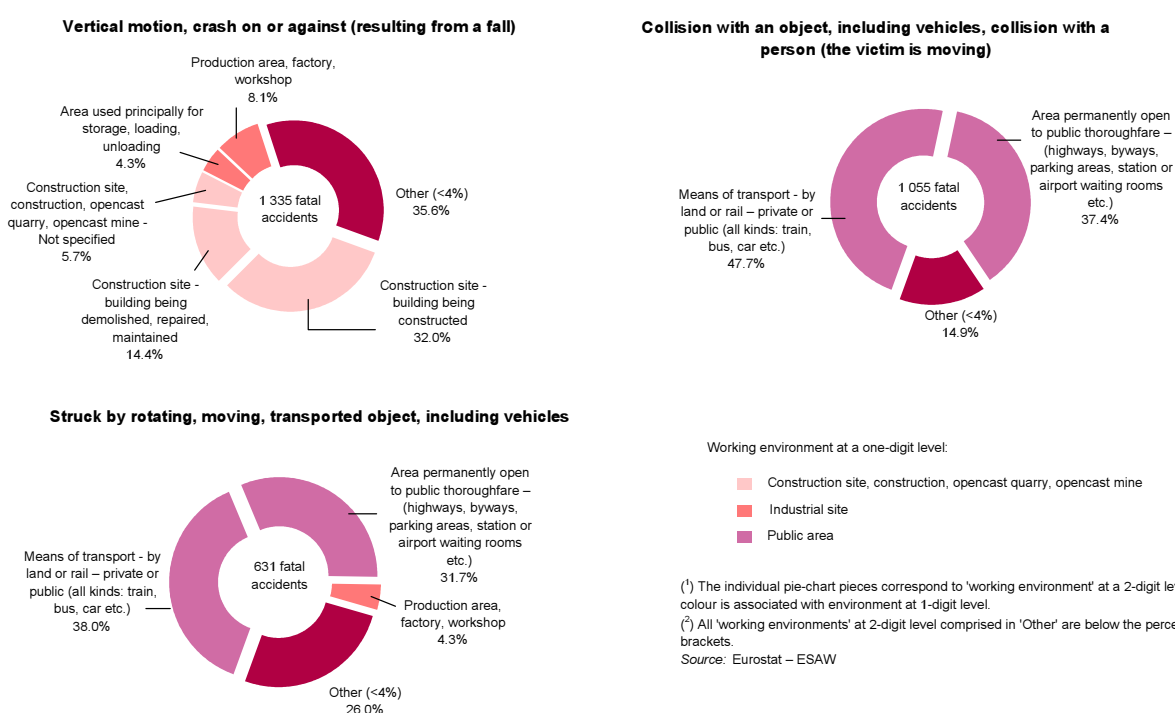
*Fatal falls were most frequent on construction sites where construction, demolition, repair or maintenance work was being carried out.*

*'Means of transport by land or rail' and 'areas permanently open to public thoroughfare' remained by far the most common working environments where fatal collisions occurred.*

Around one in three fatal accidents involving a 'vertical motion, crash on or against (resulting from a fall)' occurred on construction sites where buildings were being constructed and 14.4% on construction sites where buildings were being demolished, repaired or maintained. Just over half of fatal accidents which occurred on building and demolition sites involved a 'contact with sharp Material Agent'.

Considering the modes of injury 'collision with objects (including vehicles) or with persons' and 'struck by rotating, moving, transported object, including vehicles', the most commonly associated working environments were 'means of transport by land or rail, etc.' and 'area permanently open to public thoroughfare'. These two working environments accounted for 85.0% of fatal collisions with objects where the victim is in motion and 69.7% of fatal accidents where the victim is struck by a moving object.

**Figure 4.10** Distribution (%) of working environments (two-digit level) for the most recurrent contacts – modes of injury at two-digit level involved in fatal accidents at work, EU\_V, over the period 2003-2005 <sup>(1)</sup>(<sup>2</sup>)



## Working environment in relation to contacts involved in non-fatal accidents

This section focuses on working environments in relation to each of the three most frequent non-fatal contacts – modes of injury (see Figure 4.1).

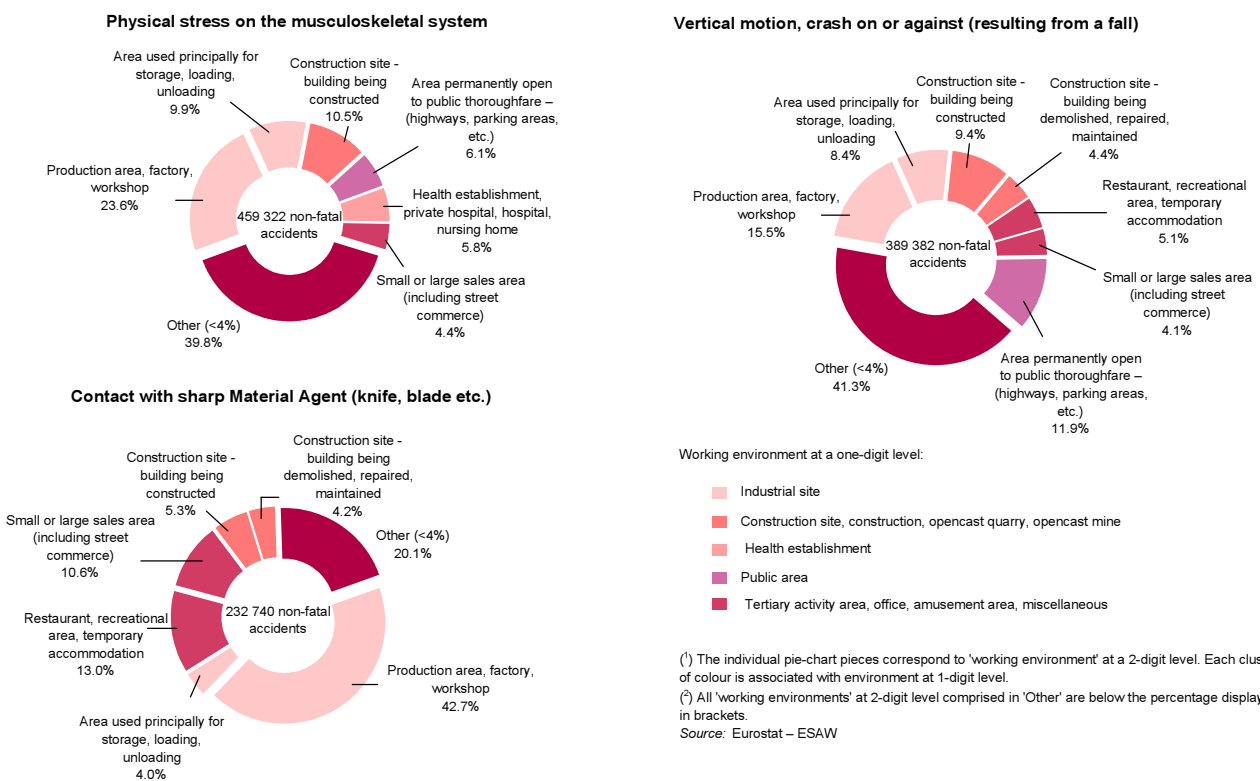
In terms of non-fatal accidents involving physical stress on the musculoskeletal system, 23.6% of cases occurred in the working environment ‘production areas, factories and workshops’, against 10.5% on ‘construction sites - building being constructed’ and 9.9% in ‘areas used principally for storage, loading and unloading’. Although ‘health establishments, private hospitals, hospitals, nursing homes’ were the fifth most common working environment identified for this specific contact, health establishments nonetheless accounted for 5.8% of occurrences. Moreover, 29.6% of non-fatal accidents which occurred in health establishments involved physical stress on the musculoskeletal system. This share amounted to 22.5% for ‘construction sites’, 22.6% for ‘areas used principally for storage, loading and unloading’ and 15.7% for ‘production areas, factories and workshops’.

Regarding non-fatal accidents involving a ‘vertical motion, crash on or against (resulting from a fall)’, 15.5% of cases occurred in ‘production areas, factories and workshops’, 11.9% in ‘areas permanently open to public thoroughfare’, 9.4% on ‘construction sites’ and 8.4% in ‘areas used principally for storage, loading and unloading’. ‘Construction site - building being demolished, repaired and maintained’ was the sixth most common working environment identified in non-fatal accidents involving a fall, accounting for 4.4% of such accidents. Furthermore, around 20% of non-fatal accidents which occurred on demolition sites involved a fall. This share amounted to 26.3% in areas permanently open to public thoroughfare, 17.2% on building sites, 16.3% in storage areas and 8.7% in production areas, factories and workshops.

*Around one in four non-fatal accidents at work involving ‘physical stress on the musculoskeletal system’, occurred in production areas, factories and workshops.*

*Production areas, factories and workshops also accounted for about 16% of non-fatal accidents involving a fall.*

**Figure 4.11** Distribution (%) of working environments (two-digit level) for the most recurrent contacts – modes of injury at two-digit level involved in non-fatal accidents at work, EU\_V, 2005 <sup>(1)</sup>/<sub>(2)</sub>





*Approximately 43% of non-fatal accidents involving a contact with a sharp object occurred in production areas, factories and workshops.*

*More than one in four non-fatal accidents which occurred in 'restaurants, recreational areas and temporary accommodations' involved a contact with a sharp object.*

Around 43% of victims of non-fatal accidents at work resulting from a 'contact with sharp Material Agent (knife, blade, etc.)' were working in 'production areas, factories and workshops', while 13.0% were working in 'restaurants, recreational areas, temporary accommodations' and 10.6% in 'small or large sales areas (including street commerce)'. Furthermore, according to the distribution of contacts by working process, it appears that 27% of non-fatal accidents which occurred in restaurants and recreational areas involved a contact with a sharp object. This share amounted to 24.3% for small or large sales areas, and 14.4% for production areas, factories and workshops.







## Chapter 5 - Detailed analysis of Material Agents





## 5.1 Introduction to Material Agents

Following the analysis of the most recurrent deviations and contacts – modes of injury at two-digit level involved in accidents at work, this chapter will focus on the most recurrent Material Agents of the deviation and of the contact. The Material Agent of the deviation describes the tool, object or instrument involved in the event triggering the accident – for instance, in the case of a worker falling off a ladder, the Material Agent of deviation is the ladder. The Material Agent of the contact – mode of injury refers to the object, tool or instrument with which the victim came into contact or the psychological mode of injury (in the example above, the Material Agent of the contact is the ground). If several Material Agents are associated to a given deviation, only the last Material Agent to be involved in the chain of events leading to the accident is taken into account. Similarly, if several Material Agents are associated to the contact – mode of injury, only the most serious Material Agent of the contact is considered.

The aim of this chapter is to present a clear picture of the most common Material Agents of the deviation and of the contact – mode of injury. The first sub-chapter will present Material Agents of the deviation, followed by Material Agents of the contact – mode of injury. For each sub-chapter, an analysis is first carried out at one-digit level, then at two-digit level. Two-digit breakdowns of Material Agents of the deviation and of the contact are provided in Annexes A6.9 and A6.10. Cross-tabulations between ESAW Phase III variables 'Material Agents of the deviation' and 'deviations' are provided in Annexes A5.1 and A5.2, while cross-tabulations between 'Material Agents of the contact – mode of injury' and 'contacts – modes of injury' are provided in Annexes A5.3 and A5.4 both at one- and two-digit level.



## 5.2 Material Agents of the deviation

### Material Agents of the deviation at one-digit level

At one-digit level, the most common Material Agents of the deviation leading to non-fatal accidents were ‘materials, objects, products, machine or vehicle components, debris, dust’ in 22.4% of cases, ‘buildings, structures, surfaces - at ground level (indoor or outdoor, fixed or mobile, temporary or not)’ (18.6%), ‘hand tools, not powered’ (9.6%), ‘buildings, structures, surfaces - above ground level (indoor or outdoor)’ (9.3%), ‘conveying, transport and storage systems’ (8.5%), ‘land vehicles’ (7.3%) and ‘fixed machines and equipment’ (5.4%). These seven categories accounted for 81% of all non-fatal accidents at work (see Figure 5.1).

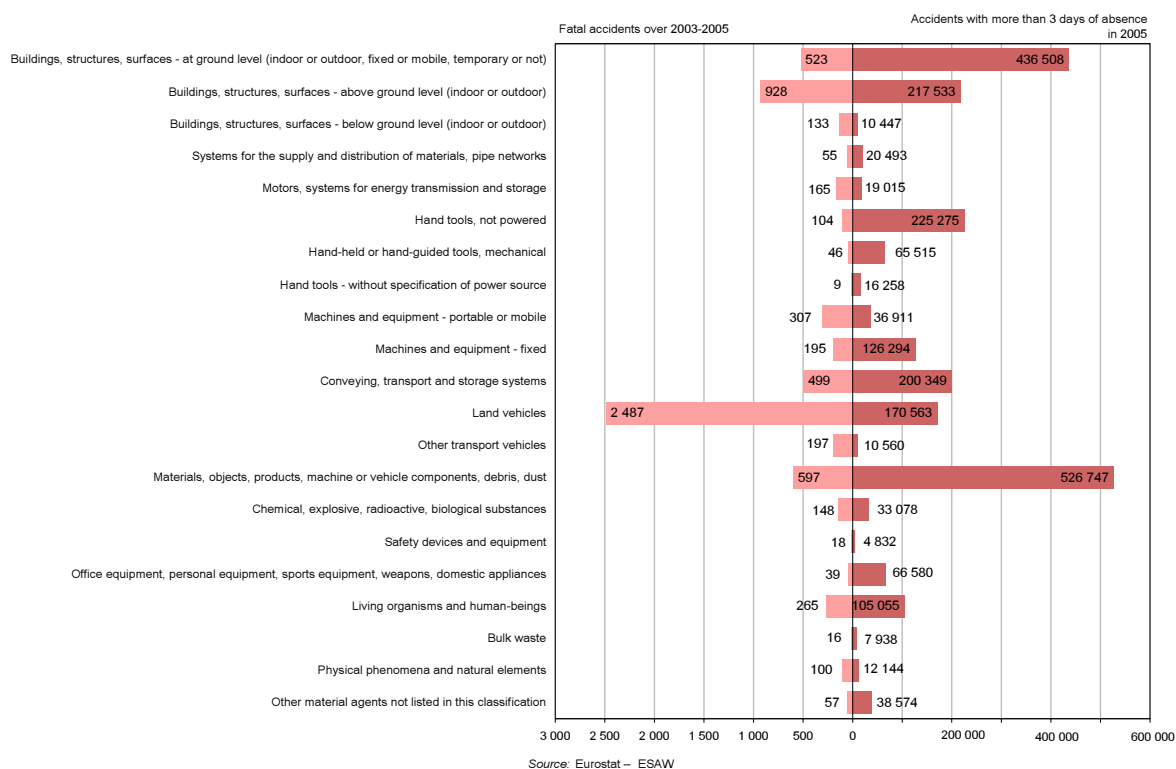
In terms of fatal accidents at work, the most common Material Agents of the deviation were ‘land vehicles’ (36.1% of cases), ‘buildings, structures, surfaces - above ground level (indoor or outdoor)’ (13.5%), ‘materials, objects, products, machine or vehicle components, debris, dust’ (8.7%), ‘buildings, structures, surfaces - at ground level (indoor or outdoor, fixed or mobile, temporary or not)’ (7.6%) and ‘conveying, transport and storage systems’ (7.2%). Taken together, these five categories accounted for more than 73% of all fatal accidents at work.

Moreover, 36.1% of all fatal accidents at work involved the Material Agent ‘land vehicles’, while these were involved in only 7.3% of non-fatal accidents at work. ‘Portable or mobile machines and equipment’ were involved in 4.5% of fatal accidents at work, while this category accounted for 1.6% of all non-fatal occurrences.

*More than one in five non-fatal accidents at work involved the Material Agent of the deviation ‘materials, objects, products, machine or vehicle components, debris, dust’.*

*Around 36% of fatal accidents at work involved ‘land vehicles’ as Material Agent of the deviation.*

**Figure 5.1** Number of accidents at work by Material Agent of the deviation (one-digit level), by severity, EU\_V



## Material Agents of the deviation at two-digit level

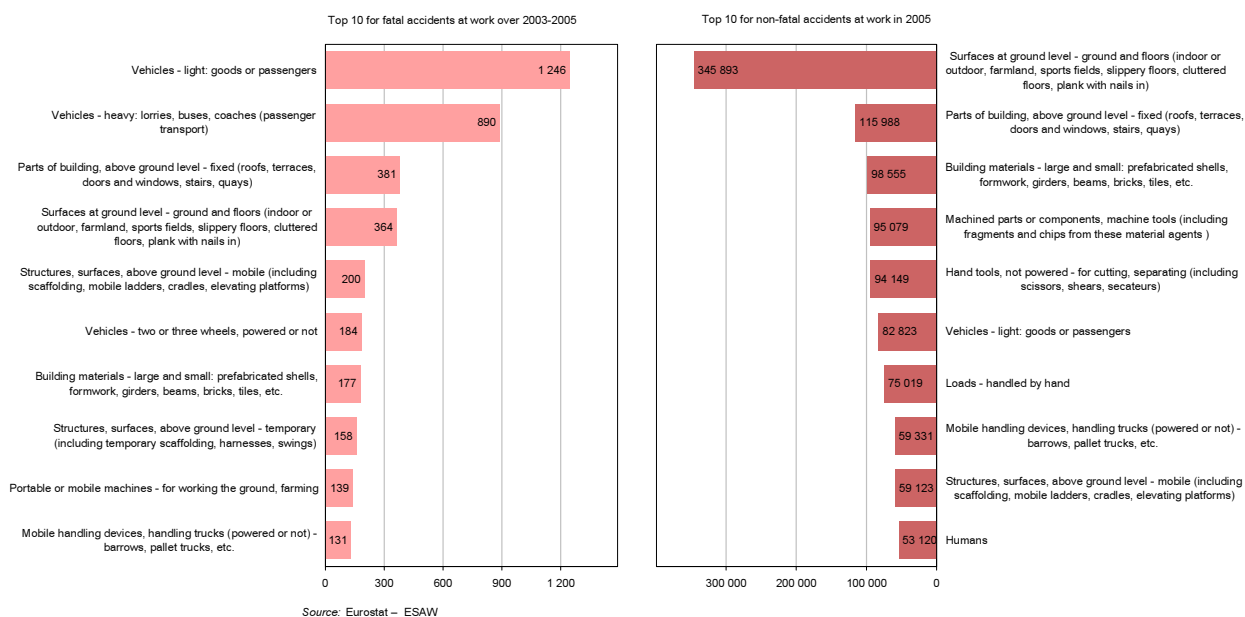
*Around 15% of non-fatal accidents at work involved the Material Agent of the deviation 'surfaces at ground level – ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank with nails in)'.*

*More than 18% of fatal accidents at work involved the Material Agent of the deviation 'light vehicles for goods or passengers'.*

This section focuses on the most common two-digit level Material Agents of the deviation leading to accidents at work. Concerning non-fatal accidents, 14.7% of cases involved 'surfaces at ground level – ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank with nails in)' (see Figure 5.2). Moreover, the Material Agent 'fixed parts of building, above ground level (roofs, terraces, doors and windows, stairs, quays)' accounted for 4.9% of non-fatal accidents at work, followed by 'large and small building materials: prefabricated shells, formwork, girders, beams, bricks, tiles, etc.' (4.2%), 'machined parts or components, machine tools (including fragments and chips from these Material Agents)' (4.0%) and 'hand tools, not powered, for cutting, separating (including scissors, shears, secateurs)' (4.0%). These five categories of Material Agent of the deviation accounted for around a third of all non-fatal accident at work.

Regarding fatal accidents at work, the most common two-digit level Material Agents of the deviation were 'light vehicles: goods or passengers' in 18.1% of cases, 'heavy vehicles: lorries, buses, coaches (passenger transport)' (12.9%), 'fixed parts of building, above ground level like roofs, terraces, doors and windows, stairs, quays' (5.5%) and 'surfaces at ground level - ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank with nails in)' (5.3%). These four categories accounted for around 42% of all fatal accidents at work.

**Figure 5.2** Top 10 Material Agents of the deviation (two-digit level) accounting for the highest number of accidents at work, by severity, EU\_V



A deeper analysis of the age distribution of victims will be carried out in the following section so as to gain greater insight into Material Agents (the tool, object or instrument) involved in deviations triggering accidents at work. Indeed, insufficient training for younger workers, trainees and temporary employees, and neglect of safety measures due to routine working patterns among older workers can lead to serious injuries or death.



## Age of victims in relation to Material Agents of the deviation – fatal accidents

In the following section, the analysis of the age distribution of workers makes it possible to identify the most recurrent Material Agents associated to deviations for specific age groups involved in fatal accidents at work. However, some breakdowns comprise only relatively few cases. Therefore, only Material Agents with at least 100 occurrences were taken into account in this analysis.

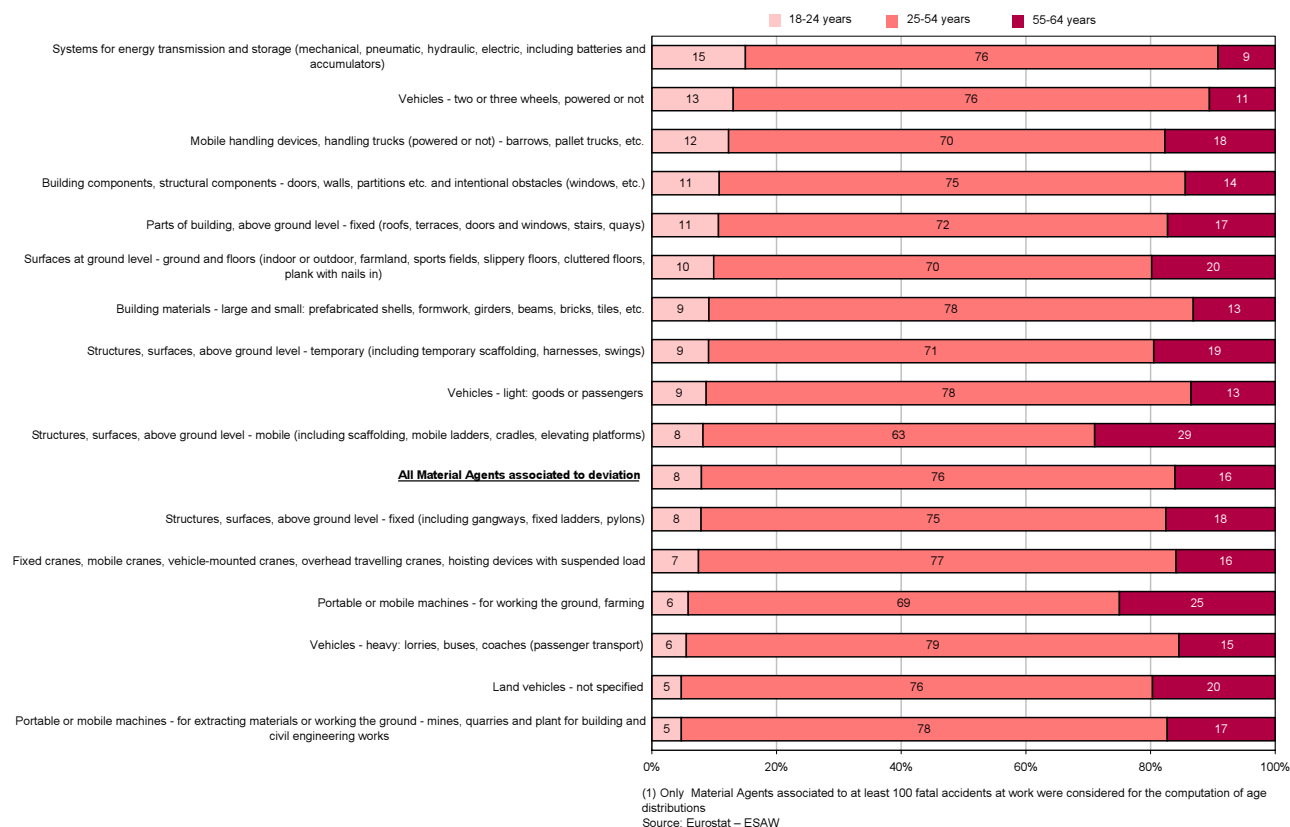
The most significant overrepresentation for workers aged between 18 and 24 was observed in fatal accidents involving the Material Agent ‘systems for energy transmission and storage (mechanical, pneumatic, hydraulic, electric, including batteries and accumulators)’ (see Figure 5.3). Young workers accounted for 15% (18 cases out of 120) of all fatal accidents involving ‘systems for energy transmission’, against 8% of fatal accidents involving all Material Agents of the deviation. The second most recurrent Material Agent for young workers was ‘vehicles with two or three wheels, powered or not’, with 13% of occurrences (21 cases out of 161). This was followed by ‘mobile handling devices, handling trucks (powered or not) - barrows, pallet trucks, etc.’ with an occurrence rate of 12% for workers aged between 18 and 24 (16 cases out of 130).

Regarding workers aged 55-64, the most important overrepresentation was observed for the Material Agent ‘mobile structures, surfaces, above ground level including scaffolding, mobile ladders, cradles, elevating platforms’. Older workers accounted for 29% (53 cases out of 183) of all fatal accidents related to this type of Material Agent, while they accounted for 16% of fatal accidents involving all Material Agents of the deviation. The second most common Material Agent for workers aged between 55 and 64 was ‘portable or mobile machines for working the ground, farming’, with 25% of occurrences involving victims aged 55-64 (30 cases out of 120).

*Workers aged between 18 and 24 were overrepresented in fatal accidents involving the Material Agent of the deviation ‘systems for energy transmission and storage’, ‘vehicles with two or three wheels’ and ‘mobile handling devices or handling trucks’.*

*In contrast, workers aged between 55 and 64 were overrepresented in fatal accidents involving mobile structures or surfaces above ground level, such as ladders, and portable or mobile machines for working the ground or farming.*

**Figure 5.3** Distribution (%) of age categories for Material Agents of the deviation leading to fatal accidents at work, EU\_V, over the period 2003-2005 (1)





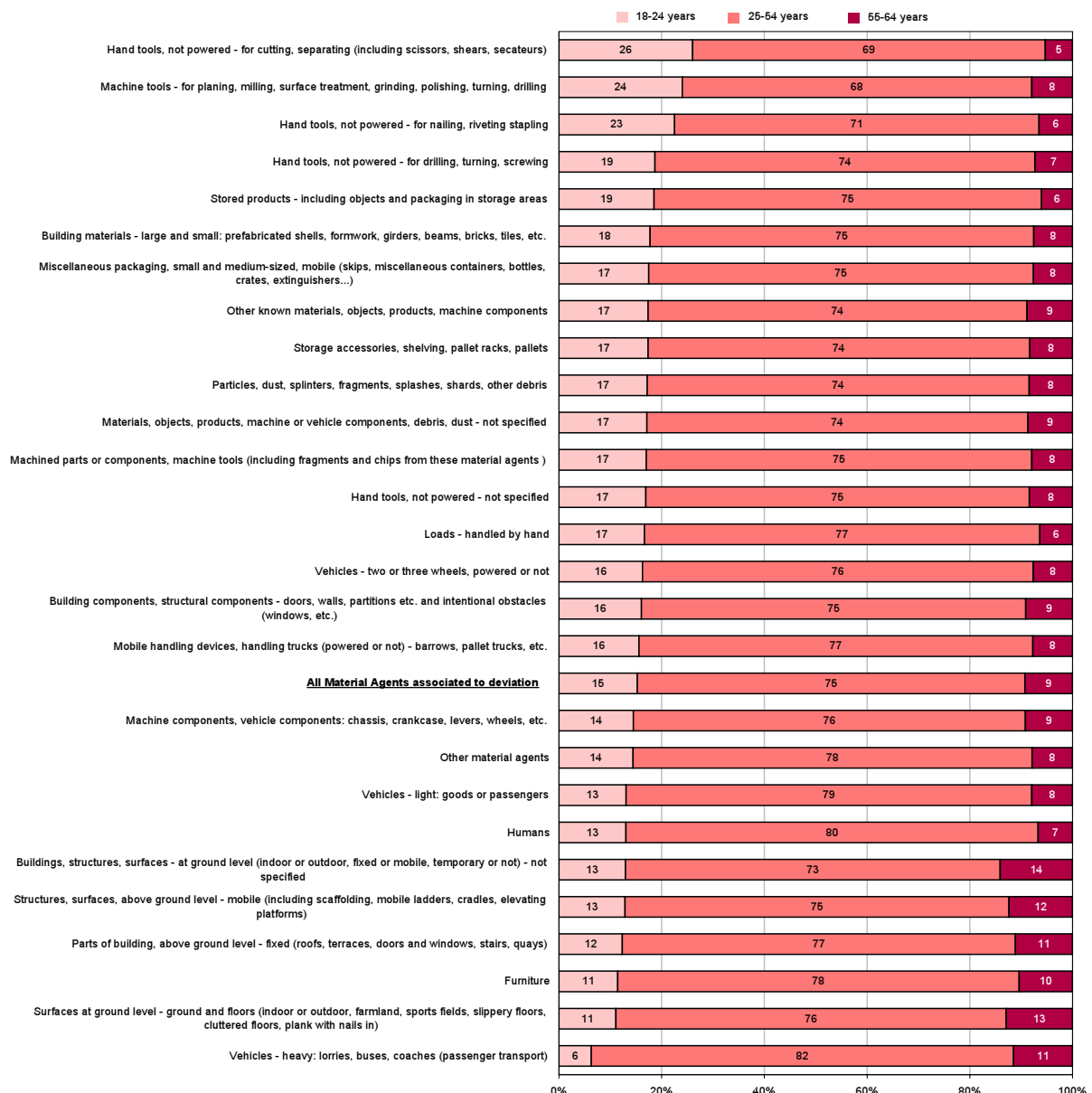
## Age of victims in relation to Material Agents of the deviation – non-fatal accidents

The following section focuses on the age distribution of victims of non-fatal accidents at work by Material Agents of the deviation. The minimum threshold of occurrences for this analysis was set at 20 000, accounting for 72% of all non-fatal accidents at work.

*Workers aged 18-24 were overrepresented in non-fatal accidents involving the Material Agents of the deviation 'non-powered hand tools for cutting, separating', 'machine tools for planing, milling, etc.' and 'hand tools, not powered, for nailing, riveting and stapling'.*

Among the most recurrent Material Agents linked to deviations leading to non-fatal accidents at work, the main overrepresentation for workers aged 18-24 was observed for 'hand tools, not powered, for cutting, separating' (see Figure 5.4). Young workers accounted for 26% of all non-fatal accidents triggered by non-powered hand tools, while they accounted for only 15% of non-fatal accidents involving all categories of Material Agents associated to deviations. The second most common Material Agent linked to deviations was 'machine tools for planing, milling, surface treatment, grinding, polishing, turning, drilling', with 24% of occurrences involving victims aged 18-24. This was followed by 'hand tools, not powered, for nailing, riveting, stapling', with an occurrence rate of 23% among workers aged between 18 and 24.

**Figure 5.4** Distribution (%) of age categories for Material Agents of the deviation leading to non-fatal accidents at work, EU\_V, 2005 <sup>(1)</sup>



(1) Only Material Agents associated to at least 20 000 non-fatal accidents at work were considered for the computation of age distributions  
Source: Eurostat – ESAW



Regarding workers aged 55-64, the most recurrent Material Agents of the deviation leading to non-fatal accidents involved 'buildings, structures, surfaces at ground level, not specified', accounting for 14% of all non-fatal accidents involving this Material Agent, while older workers accounted for 9% of non-fatal accidents involving all Material Agents of the deviation. The second most common Material Agent was 'surfaces at ground level, ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank with nails in)', with 13% of victims aged between 55 and 64. This was followed by 'mobile structures or surfaces above ground level, including scaffolding, mobile ladders, cradles or elevating platforms' with an occurrence rate of 12% for the population aged 55-64.

*Workers aged 55-64 were overrepresented in non-fatal accidents involving 'buildings, structures, surfaces at ground level, not specified', 'surfaces at ground level, ground and floors, etc.' and 'mobile structures or surfaces above ground level'.*

## Material Agents of the deviation involved in fatal accidents

Following the study of the most common Material Agents involved in deviations leading to non-fatal injuries, this section will focus on the distribution of Material Agents at two-digit level for the three most common deviations involved in fatal accidents at work, namely 'loss of control of means of transport or handling equipment', 'fall of persons to a lower level' and 'fall of object on the victim from above'.

*Light vehicles were involved in around 42% of fatal accidents due to loss of control of means of transport, while heavy vehicles were involved in around 28% of such fatalities.*

*Fixed structures and fixed parts of building above ground level accounted for around 33% of fatal falls from height, while mobile and temporary structures were involved in respectively 14.8% and 11.9% of such fatal accidents.*

*Building materials were involved in 13.6% of fatal accidents involving Material Agents falling on the victim from above.*

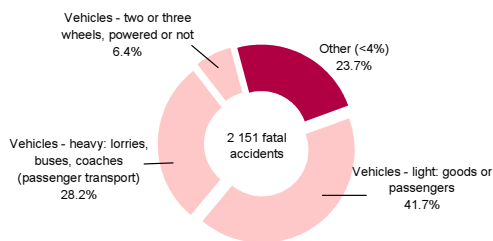
For the deviation 'loss of control of means of transport or handling equipment', the main Material Agents observed were 'light vehicles to transport goods or passengers', in 41.7% of cases and 'heavy vehicles like lorries, buses, coaches (passenger transport)', in 28.2% of cases. All other Material Agents of the deviation at two-digit level were below the 4% threshold (as displayed in brackets under 'Other' in Figure 5.5).

Concerning fatal falls of workers from height, around a third of accidents involved fixed structures or parts of buildings, with 'fixed parts of building above ground level (roofs, terraces, doors and windows, stairs, quays)' accounting for 25.2% of falls and 'fixed structures, surfaces above ground level like gangways, fixed ladders or pylons' for 7.4%. In addition, 14.8% of Material Agents of the deviation were 'mobile structures, surfaces above ground level (scaffolding, mobile ladders, cradles or elevating platforms)' and 11.9% were 'temporary structures, surfaces above ground level (temporary scaffolding, harnesses or swings)'.

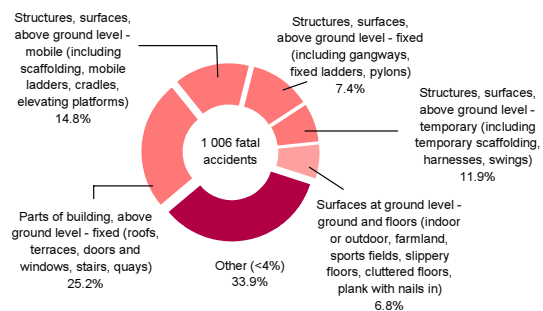
Regarding 'slip, fall, collapse of Material Agent falling on the victim from above', the most common associated Material Agents were 'large and small building materials (prefabricated shells, formwork, girders, beams, bricks or tiles)' in 13.6% of cases, 'materials, objects, products, machine or vehicle components, debris or dust - not specified' (7.4%), 'excavations, trenches, wells, pits, escarpments, garage pits' (6.9%) and 'trees, plants, crops' (6.9%) and 'building or structural components like doors, walls, partitions, etc.' (5.2%).

**Figure 5.5** Distribution (%) of Material Agents (two-digit level) for the most frequent deviations involved in fatal accidents at work, EU\_V, over the period 2003-2005 <sup>(1)</sup><sup>(2)</sup>

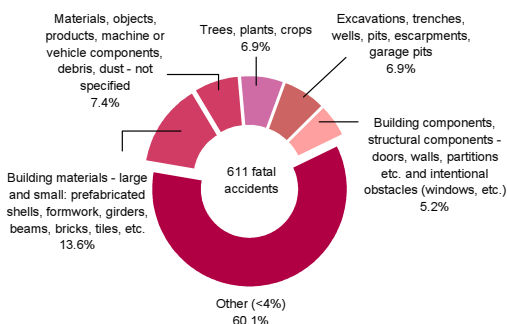
### Loss of control (total or partial) - of means of transport or handling equipment, (motorised or not)



### Fall of person - to a lower level



### Slip, fall, collapse or Material agent falling on the victim from above



Material Agent at a one-digit level:

- Land vehicles
- Buildings, structures, surfaces - at ground level (indoor or outdoor, fixed or mobile, temporary or not)
- Buildings, structures, surfaces - above ground level (indoor or outdoor)
- Buildings, structures, surfaces - below ground level (indoor or outdoor)
- Living organisms and human-beings
- Materials, objects, products, machine or vehicle components, debris, dust

<sup>(1)</sup> The individual pie-chart pieces correspond to 'Material Agent' at two-digit level. Each cluster of colour is associated with Material Agent at one-digit level.

<sup>(2)</sup> All 'Material Agents' at two-digit level comprised in 'Other' are below the percentage displayed in brackets. Source: Eurostat - ESAW



## Material Agents of the deviation involved in non-fatal accidents

This section aims to present the distribution of Material Agents at two-digit level in relation to each of the four most frequent deviations leading to non-fatal accidents at work, as specified in Figure 3.1: 'falls on the same level', 'uncoordinated movements', 'loss of control of hand-held tools' and 'loss of control of objects'.

Around 58% of accidents triggered by 'slips, stumbles or falls on the same level', involved the Material Agent 'surfaces at ground level – ground and land floors (indoor or outdoor, farmland, sport fields, slippery floors, cluttered floors or plank with nails in)'. Moreover, 11.4% of such deviations involved 'fixed parts of building, above ground level (roofs, terraces, doors and windows, stairs or quays)'. All the other categories of Material Agent of the deviation were below the 3% threshold (as displayed in brackets under 'Other' in Figure 5.6).

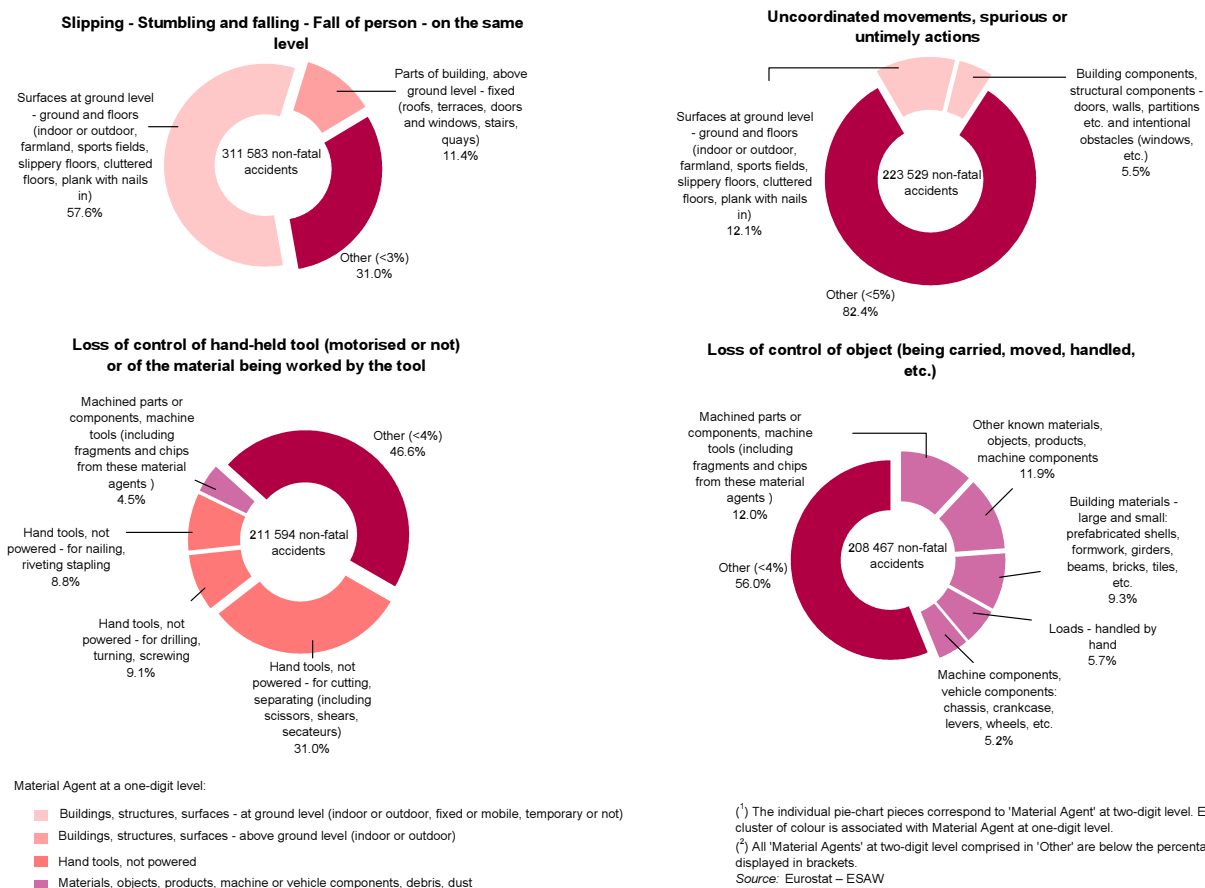
Considering the deviation 'uncoordinated movements, spurious or untimely actions', 12.1% of associated Material Agents were 'surfaces at ground level – ground and floors (indoor, outdoor, etc.)' and 5.5% were 'building or structural components (doors, walls, etc.)'

Concerning 'loss of control of hand-held tool (motorised or not) or of the material being worked by the tool', no less than 31% of associated Material Agents were 'hand tools, not powered, for cutting or separating (scissors, shears, secateurs)', followed by 'hand tools, not powered, used for drilling, turning or screwing' (9.1%) and 'hand tools, not powered, used for nailing, riveting and stapling' (8.8%). In addition, this deviation involved 'machined parts or components, machine tools (including fragments and chips from these Material Agents)' in 4.5% of cases.

*Just under 58% of non-fatal accidents at work due to slips and falls on the same level involved surfaces at ground level.*

*Deviations triggered by loss of control of a hand-held tool involved non-powered hand tools for cutting or separating in 31% of cases.*

**Figure 5.6** Distribution (%) of Material Agents (two-digit level) for the most frequent deviations involved in non-fatal accidents at work, EU\_V, 2005 <sup>(1)</sup>(<sup>2</sup>)



*12% of non-fatal accidents due to loss of control of an object involved machined parts or components and machine tools.*

Regarding the deviation 'loss of control of object (being carried, moved, handled, etc.)', 44% of associated Material Agents were 'materials, objects, products, machine or vehicle components, debris, dust'. More precisely, 'machined parts or components, machine tools' represented 12.0% of occurrences, followed by 'other known materials, objects, products, machine components' (11.9%), 'building materials' (9.3%), 'loads handled by hand' (5.7%) and 'machine or vehicles components' (5.2%).



### 5.3 Material Agents of the contact – mode of injury

#### Material Agents of the contact at one-digit level

The most common one-digit level Material Agents of the contact involved in non-fatal accidents were 'materials, objects, products, machine or vehicle components, debris, dust' (23.7% of cases), followed by 'buildings, structures, surfaces - at ground level (indoor or outdoor, fixed or mobile, temporary or not)' (20.1%), 'conveying, transport and storage systems' (9.0%), 'buildings, structures, surfaces - above ground level (indoor or outdoor)' (7.4%), 'hand tools, non-powered' (7.0%), 'living organisms and human beings' (6.1%) and 'land vehicles' (6.0%). These seven categories accounted for close to 80% of all non-fatal accidents at work (see Figure 5.7).

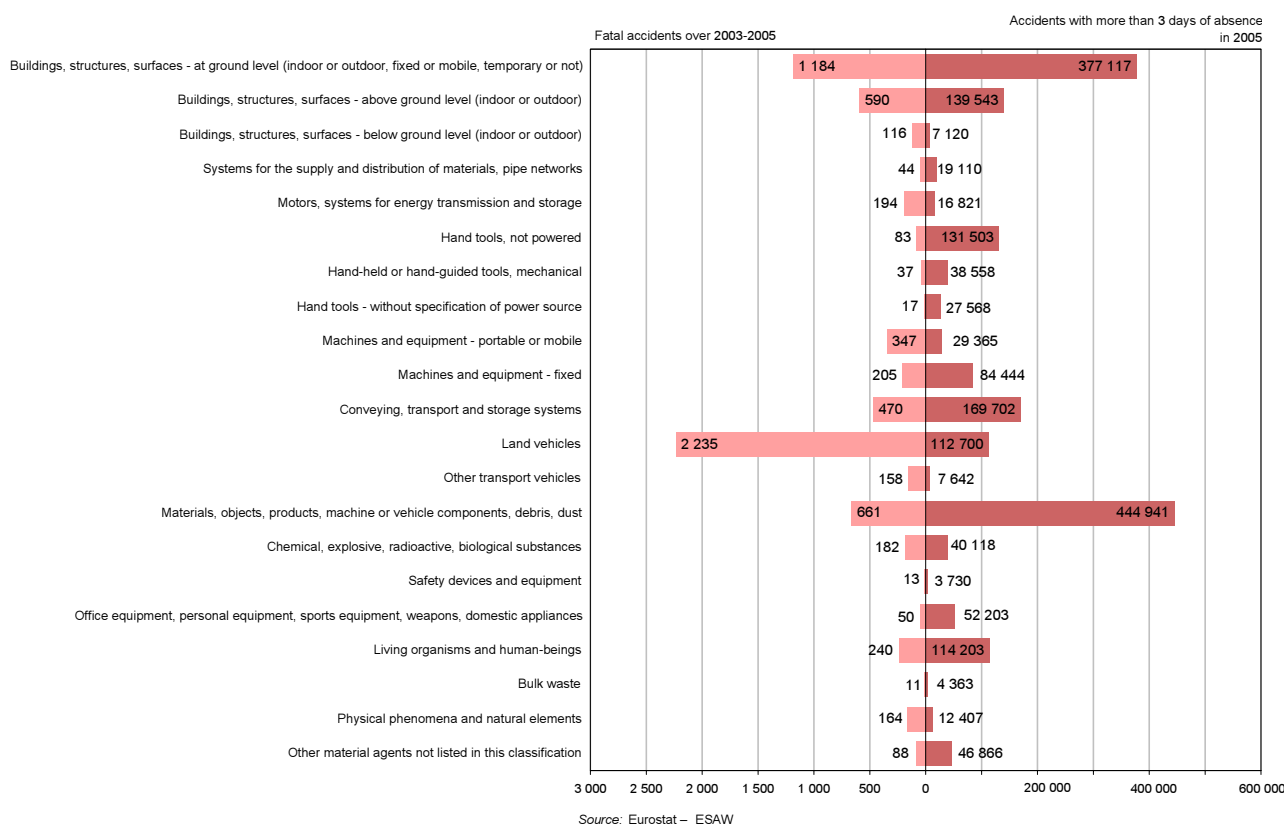
For fatal accidents at work, the most common Material Agents of the contact were 'land vehicles' (31.5% of cases), followed by 'buildings, structures, surfaces at ground level (indoor or outdoor, fixed or mobile, temporary or not)' (16.7%), 'materials, objects, products, machine or vehicle components, debris, dust' (9.3%), 'buildings, structures, surfaces above ground level (indoor or outdoor)' (8.3%) and 'conveying, transport and storage systems' (6.6%). These five categories accounted for around 73% of all fatal accidents at work.

The Material Agent of the contact 'Land vehicles' was involved in 31.5% of all fatal accidents at work, against only 6.0% of all non-fatal accidents at work. Furthermore, among the less recurrent Material Agents, 'portable or mobile machines and equipment' were involved in 4.9% of fatal accidents at work, while these accounted for 1.6% of all non-fatal accidents at work. 'Motors, systems for energy transmission and storage' accounted for 2.7% of fatal accidents at work and only 0.9% of non-fatal cases. Concurrently, 'buildings, structures, surfaces below ground level' accounted for 1.6% of fatal accidents at work and only 0.4% of non-fatal cases.

*Around one in four non-fatal accidents at work involved the Material Agent of the contact 'materials, objects, products, machine or vehicle components, debris, dust'.*

*Regarding fatal accidents at work, around 32% of cases involved 'land vehicles' as Material Agent associated with the contact.*

**Figure 5.7** Number of accidents at work by Material Agent of the contact – mode of injury (one-digit level), by severity, EU\_V



## Material Agents of the contact at two-digit level

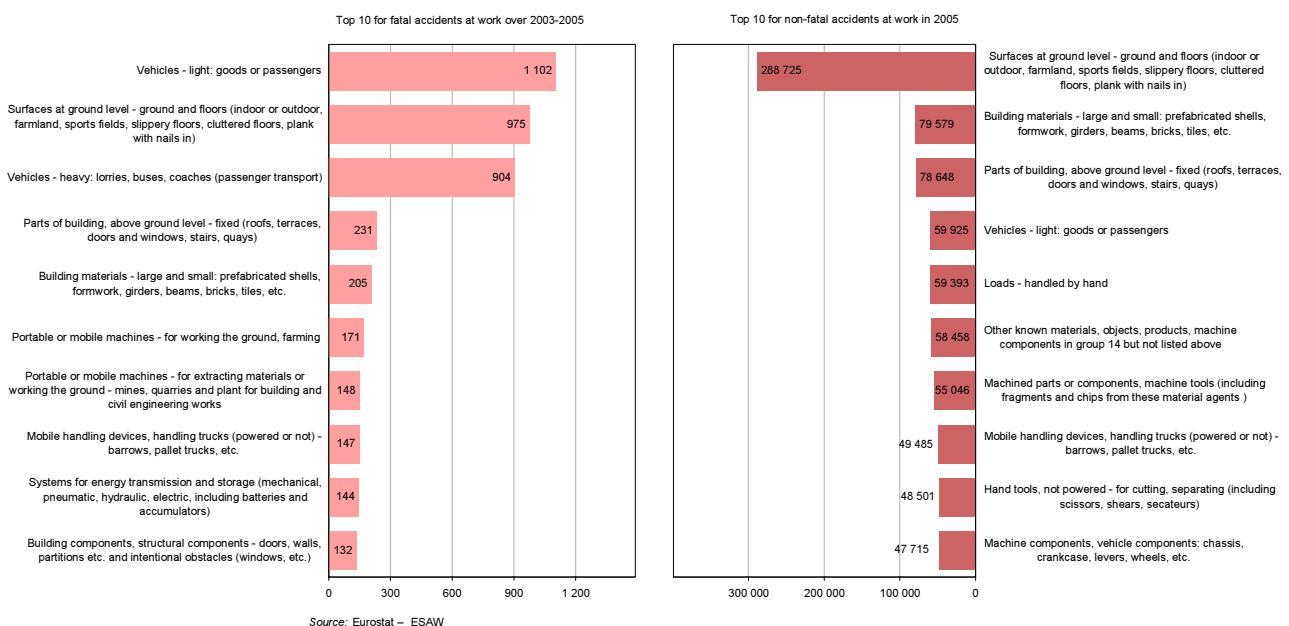
*Around 15% of non-fatal accidents at work involved 'surfaces at ground level' as Material Agent associated with the contact.*

This section will focus on the most common two-digit level Material Agents of the contact involved in accidents at work. Figure 5.8 below shows that 15.4% of non-fatal accidents involved 'surfaces at ground level - ground and floors like indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank with nails in'. Furthermore, the Material Agent 'large and small building materials (prefabricated shells, formwork, girders, beams, bricks, tiles, etc.)' was observed in 4.2% of cases, and another 4.2% involved 'fixed parts of building, above ground level (roofs, terraces, doors and windows, stairs, quays)'. These three categories of Material Agents of the contact accounted for around a quarter of all non-fatal accidents at work.

*More than 28% of fatal accidents at work involved the Material Agent of the contact 'light and heavy vehicles'.*

In terms of fatal accidents at work, the most common two-digit level Material Agents of the contact were 'light vehicles: goods or passengers' in 15.5% of cases, 'surfaces at ground level, etc.' (13.8%) and 'heavy vehicles: lorries, buses, coaches (passenger transport)' (12.8%). These three categories of Material Agent associated with the contact accounted for more than 42% of fatal accidents at work.

**Figure 5.8** Top 10 Material Agents of the contact – mode of injury (two-digit level) accounting for the highest number of accidents at work, by severity, EU\_V, 2005



As for the previous sub-chapter on Material Agents associated with the deviation, the following section provides an analysis of the age distribution of victims for the most common Material Agents involved in the contact – mode of injury (the object, tool or instrument with which the injured worker came into contact).



## Age of victims in relation to Material Agents of the contact – fatal accidents

The analysis of the age distribution of workers makes it possible to identify the most common Material Agents of the contact for particular age groups involved in fatal accidents at work. However, as some categories of Material Agents of the contact comprise only relatively few cases, this analysis considers only Material Agents for which at least 100 fatal accidents were recorded.

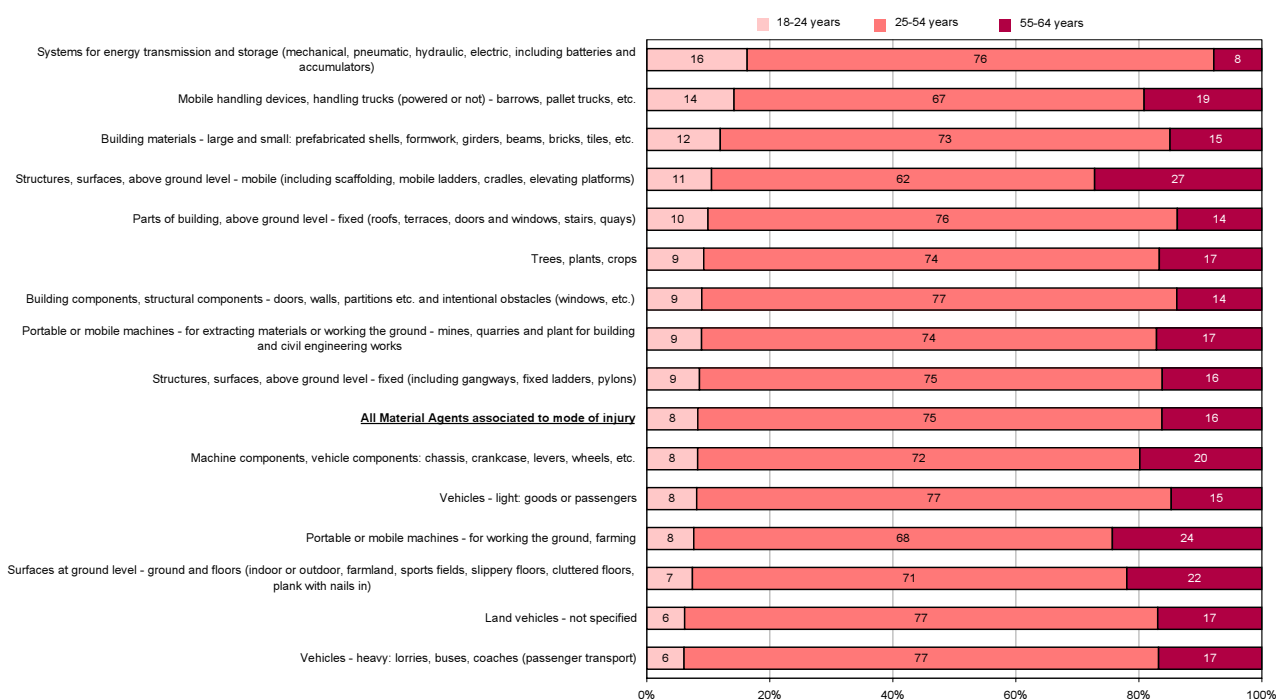
Figure 5.9 below shows that the most recurrent Material Agent of the contact among workers aged 18-24 was ‘systems for energy transmission and storage (mechanical, pneumatic, hydraulic, electric, including batteries and accumulators)’, accounting for 16% (23 cases out of 141) of fatal accidents involving this Material Agent (compared to 8% for all Material Agents of the contact). The second most recurrent Material Agent of the contact was ‘mobile handling devices, handling trucks (powered or not) - barrows, pallet trucks, etc.’, with 14% of fatal accidents involving workers aged 18-24 (20 cases out of 141). This was followed by ‘large and small building materials (prefabricated shells, formwork, girders, beams, bricks, tiles, etc.)’ with an occurrence rate of 12% for the population aged between 18 and 24 (24 cases out of 201).

*Workers aged 18-24 were overrepresented in fatal accidents involving ‘systems for energy transmission and storage’, ‘mobile handling devices or handling trucks’ and ‘large and small building materials’ as Material Agent associated to the contact.*

Regarding workers aged 55-64, the largest overrepresentation was observed for the Material Agent ‘mobile structures or surfaces above ground level, including scaffolding, mobile ladders, cradles, elevating platforms’. Workers aged 55-64 accounted for 27% (31 cases out of 114) of fatal accidents involving this Material Agent (compared to 16% for all Material Agents of the contact). The second most recurrent Material Agent among this age group was ‘portable or mobile machines for working the ground, farming’, with 24% (34 cases out of 144), followed by ‘surfaces at ground level, ground and floors, etc.’ with an occurrence rate of 22% (201 cases out of 916).

*Workers aged 55-64 were overrepresented in fatal accidents involving ‘mobile structures, surfaces, above ground level’, ‘portable or mobile machines for working the ground’ and ‘surfaces at ground level’.*

**Figure 5.9** Distribution (%) of age categories by Material Agents of the contact – mode of injury, fatal accidents at work, EU\_V, 2003–2005 (1)



(1) Only Material Agents associated to at least 100 fatal accidents at work were considered for the computation of age distributions  
Source: Eurostat – ESAW





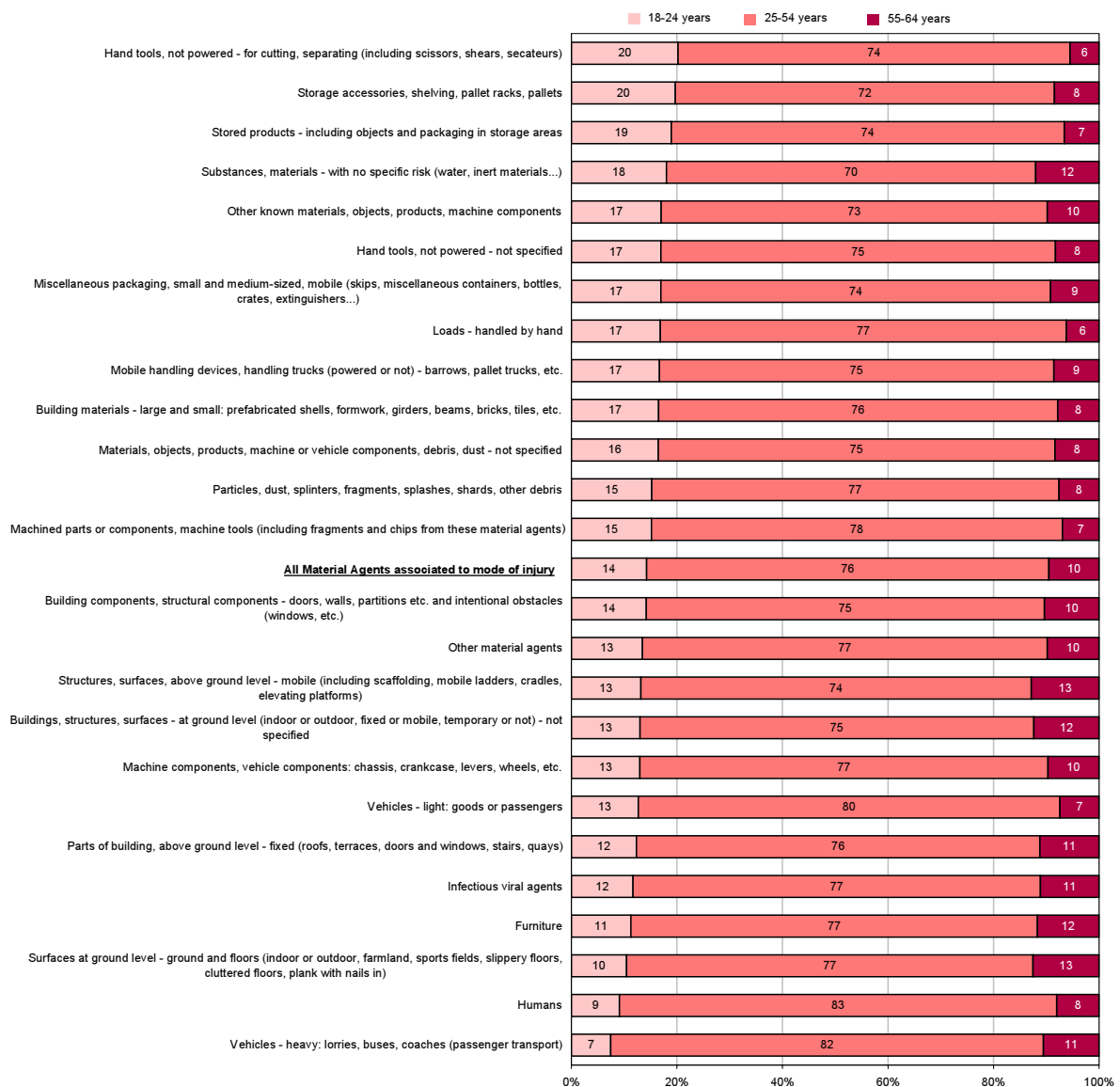
## Age of victims in relation to Material Agents of the contacts – non-fatal accidents

Following the analysis by age group of the most common overrepresentations of Material Agents of the contact for fatal accidents at work, a similar study will be carried out for non-fatal accidents.

*Workers aged 18-24 were largely overrepresented in non-fatal accidents involving 'hand tools, not powered, for cutting, separating', 'storage accessories, shelving, pallet racks, pallets' and 'stored products including objects and packaging in storage areas'.*

Among the most recurrent Material Agents of the contact involved in non-fatal accidents at work (Material Agents associated with at least 20 000 occurrences, representing 72% of all non-fatal accidents), the main overrepresentation for workers aged 18-24 was observed for the Material Agent 'hand tools, not powered, for cutting, separating' (see Figure 5.10), accounting for 20.2% of non-fatal accidents involving this Material Agent (whereas young workers accounted for 14.3% of non-fatal accidents involving all Material Agents associated to mode of injury). This was followed by 'storage accessories, shelving, pallet racks, pallets' (19.7%) and 'stored products including objects and packaging in storage areas' (19.0%).

**Figure 5.10** Distribution (%) of age categories by Material Agents of the contact – mode of injury, non-fatal accidents at work, EU\_V, 2005 (1)



(1) Only Material Agents associated to at least 20 000 non-fatal accidents at work were considered for the computation of age distributions  
Source: Eurostat – ESAW



Regarding workers aged 55-64, the most recurrent Material Agent of the contact was 'mobile structures or surfaces above ground level including scaffolding, mobile ladders, cradles or elevating platforms', accounting for 12.8% of non-fatal accidents among workers aged 55-64 (while this age group accounted for 9.5% of non-fatal accidents involving all Material Agents of the contact). This was followed by 'surfaces at ground level, ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank with nails in)' (12.5%) and 'buildings, structures or surfaces at ground level - not specified' (12.3%).

*Workers aged 55-64 were overrepresented in non-fatal accidents involving the Material Agents of the contact 'mobile structures or surfaces above ground level', 'surfaces at ground level, ground and floors, etc.' and 'buildings, structures, surfaces at ground level - not specified'.*

## Material Agents of the contact – mode of injury involved in fatal accidents

This section will analyse the distribution of Material Agents at two-digit level associated with the three most common contacts involved in fatal accidents at work (see Figure 4.1), namely 'vertical motion, crash on or against (resulting from a fall)', 'collision with an object, including vehicles, collision with a person (the victim is moving)' and 'struck by rotating, moving, transported object, including vehicles' (see Figure 4.1).

*Just under half of fatal accidents at work due to falls involved a direct contact with 'surfaces at ground level', while 'buildings, structures or surfaces above ground level' were involved in 22% of cases.*

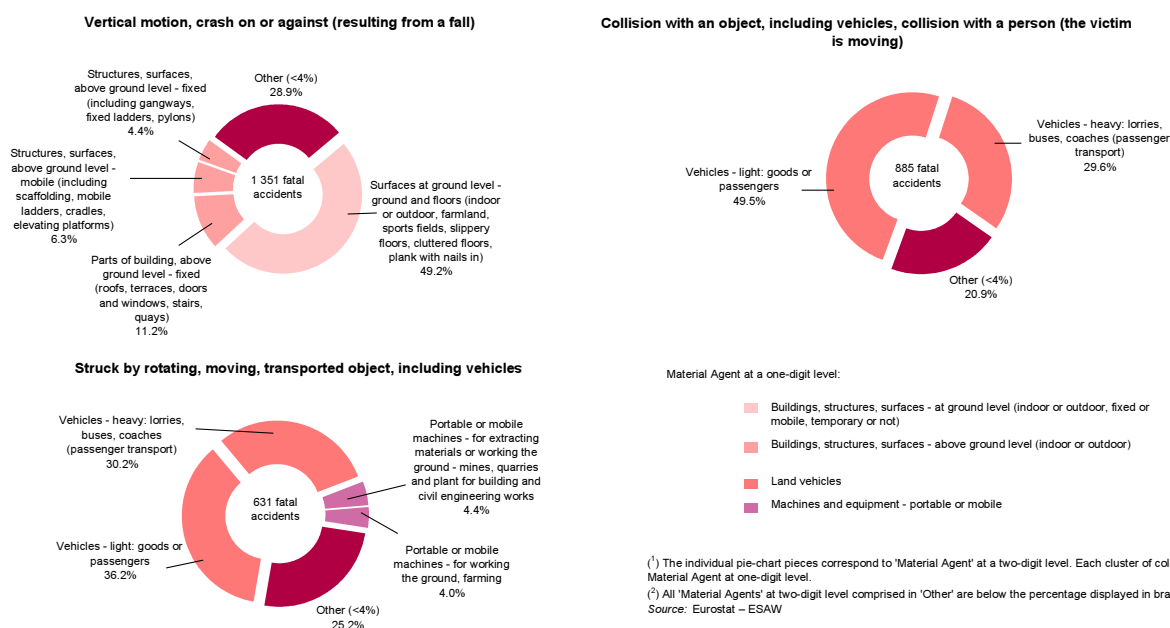
For the contact 'vertical motion, crash on or against, etc.', the most recurrent Material Agents were 'surfaces at ground level, ground and floors, etc.', identified in 49.2% of cases, 'fixed parts of building, above ground level' (11.2%), 'mobile structures, surfaces, above ground level' (6.3%) and 'fixed structures, surfaces, above ground level' (4.4%). All other Material Agents at two-digit level were below the 4% threshold (as displayed in brackets under 'Other' in Figure 5.11).

Concerning fatal 'collisions with an object or a person (the victim is moving)', around 50% of accidents involved 'light vehicles transporting goods or passengers', while around 30% of fatal collisions included 'heavy vehicles like lorries or buses'.

*Two thirds of fatal accidents involving workers being struck by rotating, moving or transported objects, including vehicles, were caused by heavy or light vehicles. This contact was also registered in 8% of accidents involving portable or mobile machines for working the ground.*

Two-thirds of fatal accidents involving the victim being 'struck by rotating, moving, transported object, including vehicles' involved heavy or light vehicles as Material Agent. In addition, 'portable or mobile machines for extracting materials or working the ground' and 'portable or mobile machines for working the ground, farming' accounted for 8.4% of all fatal accidents at work involving the mode of injury 'struck by rotating, moving, transported object, including

**Figure 5.11** Distribution (%) of Material Agents (two-digit level) for the most frequent contacts – modes of injury involved in fatal accidents at work, EU\_V, 2003–2005 <sup>(1)</sup>/<sup>(2)</sup>



## Material Agents of the contact – mode of injury involved in non-fatal accidents

This section aims to present the distribution of Material Agents at two-digit level in relation with each of the three most frequent contacts leading to non-fatal accidents at work, namely ‘physical stress on the musculoskeletal system’, ‘vertical motion, crash on or against (resulting from a fall)’ and ‘contact with sharp Material Agent (knife, blade etc.)’ (see Figure 4.1).

One in ten non-fatal accidents at work due to ‘physical stress on the musculoskeletal system’ involved ‘loads handled by hand’, followed by ‘surfaces at ground level including sports fields, slippery floors, etc.’ (9%), ‘miscellaneous packaging, small and medium-sized, mobile, etc.’ (7%), ‘building materials, large and small’ (6%) and ‘stored products’ (5%). No less than 5% of non-fatal accidents at work due to ‘physical stress on the musculoskeletal system’ involved ‘infectious viral agents’ and another 5% involved ‘humans’. All other categories of Material Agent were below the 4% threshold (as displayed in brackets under ‘Other’ in Figure 5.12).

For the mode of injury ‘vertical motion, crash on or against (resulting from a fall)’, 50% of cases involved ‘surfaces at ground level, etc.’, followed by ‘fixed parts of building above ground level’ (9%), ‘mobile structures, etc. above ground level’ (5%) and ‘substances or materials with no specific risk (water, inert materials, etc.)’ (4%).

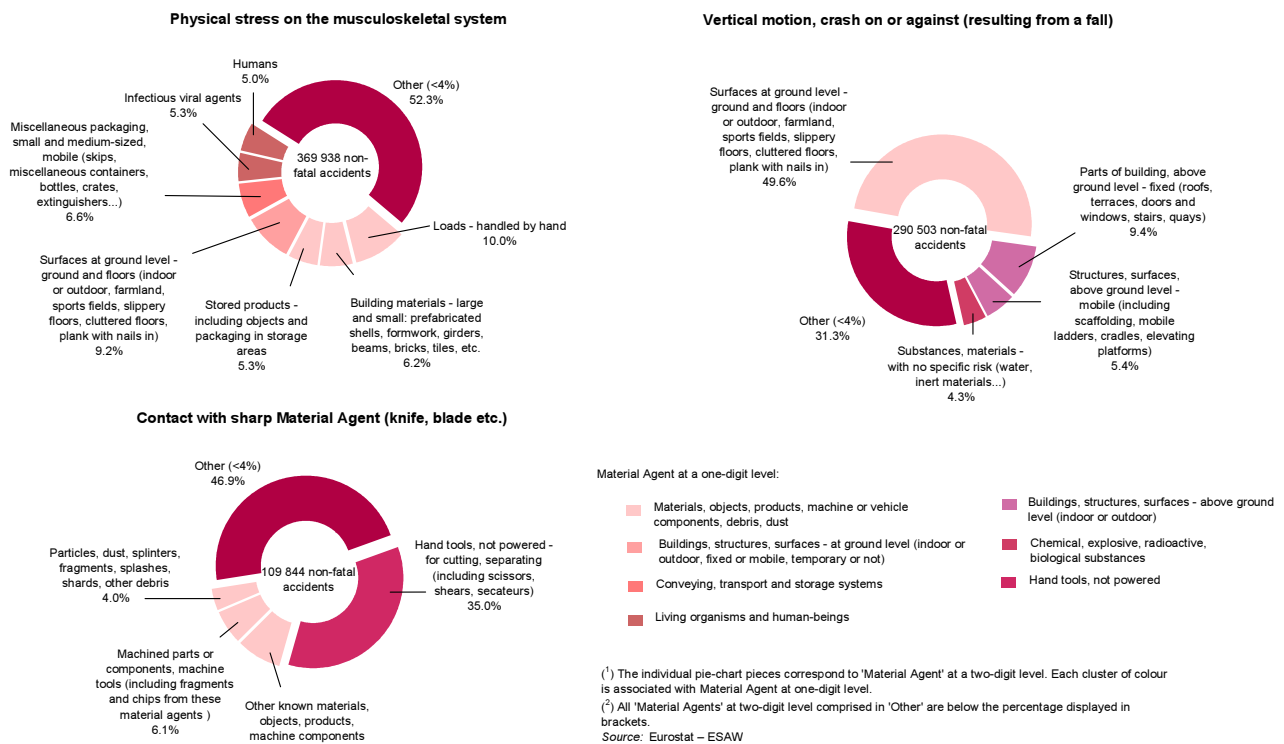
No less than 35% of ‘contacts with a sharp Material Agent’ involved ‘hand tools, not powered, for cutting or separating’, followed by ‘other known materials, etc.’ (8%), ‘machined parts of components or machine tools’ (6%) and ‘particles, dust, splinters, fragments, splashes, shards or other debris’ (4%).

*One in ten non-fatal accidents at work due to ‘physical stress on the musculoskeletal system’ involved ‘loads handled by hand’, followed by ‘surfaces at ground level, including slippery floors, sport fields, etc.’ (9%) and ‘miscellaneous packaging, etc.’ (7%).*

*Half of non-fatal accidents due to falls involved ‘surfaces at ground level’, while 9% were associated to ‘fixed parts of building above ground level’ and 5% to ‘mobile structures or surfaces above ground level’.*

*More than a third of non-fatal accidents due to a ‘contact with a sharp Material Agent’ involved non-powered hand tools for cutting or separating’.*

**Figure 5.12** Distribution (%) of Material Agents (two-digit level) for the most frequent contacts – modes of injury involved in non-fatal accidents at work, EU\_V, 2005 <sup>(1)</sup><sup>(2)</sup>





## Chapter 6 - Absences caused by accidents at work





## 6.1 Number of days of absence from work

As a direct consequence of accidents at work, the number of days of absence can serve as an indicator to evaluate the severity of an injury. More precisely, the variable 'days lost', used in the ESAW database, represents the number of calendar days where the victim is unfit for work due to an accident at work. Only accidents at work resulting in three or more full calendar days of absence are taken into account. In case of permanent incapacity (six months' absence or more) or death, the days lost before the permanent incapacity is officially recognised are not considered.

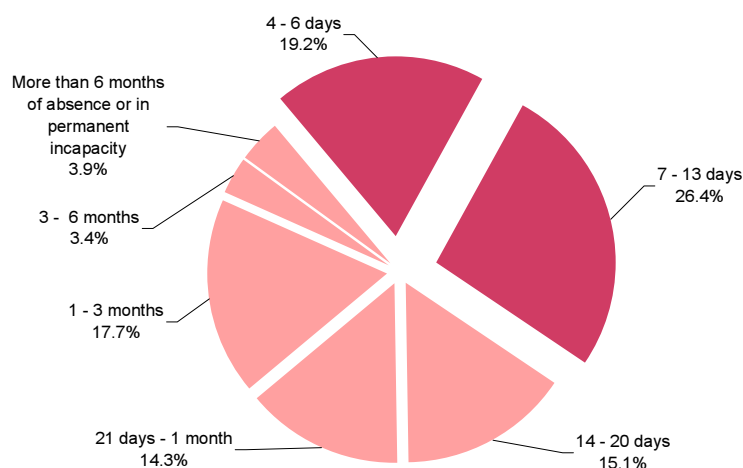
The aim of this chapter is to present a general picture of absence days resulting from accidents at work using NACE and ISCO distributions at one and two-digit level. The subsequent sub-chapters will analyse the number of days of absence in relation to the variables 'type of injury', 'deviation', 'mode of injury' and 'Material Agents associated to mode of injury'. The breakdowns associated to these variables are available in Annexes A6.1 to A6.10. The last section will focus on the average age of victims of fatal accidents at work and persons involved in non-fatal accidents leading to more than six months of absence or to permanent incapacity. This will provide new elements regarding the potential workforce prematurely lost due to accidents at work.

*In 2005, 141 million days were lost due to accidents at work, with an average 35 days of absence per accident at EU-15 level.*

In 2005, more than 141 million days were lost on account of accidents at work in the EU-15. This corresponds to an average of 35 days of absence per accident. Regarding the distribution of days lost, a large share of accidents entailed less than 14 days of absence (45.6%). However, the number of accidents leading to more than one month of absence remains considerable, accounting for one fourth of occurrences (see Figure 6.1).

It is nonetheless important to bear in mind that the average number of absence days could be overrepresented, as only accidents resulting in more than three days of absence have been taken into account. Moreover, in certain sectors or occupations, minor injuries sustained in certain types of activity do not call for work to be interrupted, which means that short-term absences may be underrepresented, leading to an increase in the total average number of absence days. Additionally, severe injuries related to road accidents mostly result in longer periods of absence from work, especially for certain specific occupations such as managers, senior officials, etc.

**Figure 6.1**  
Distribution of total absence days by length of absence per accident, EU-15, 2005



Source: Eurostat – ESAW



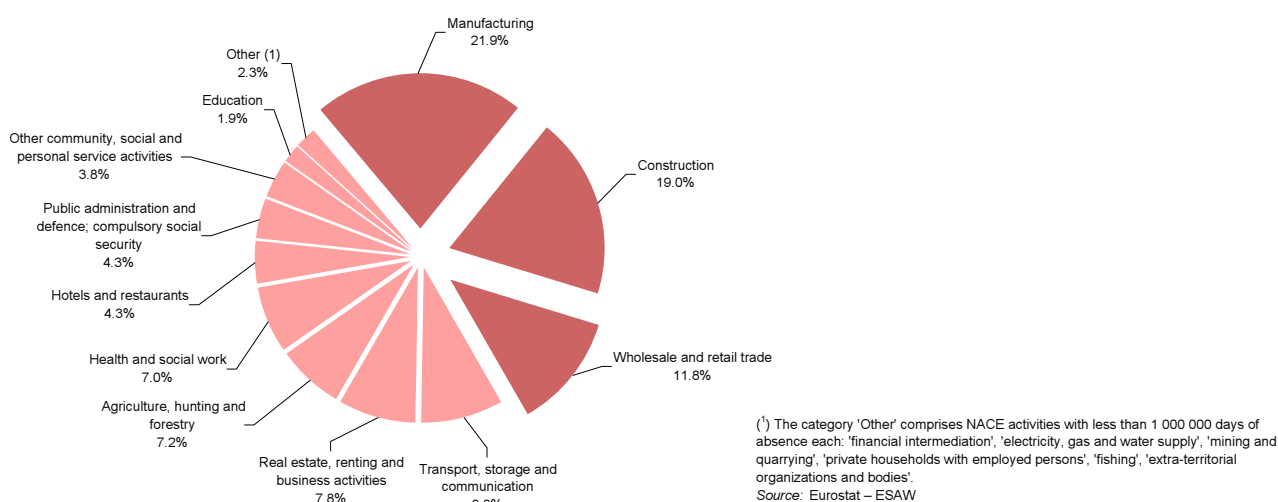
## Distribution of absence days by sector of economic activity of the employer

Considering the sector of economic activity at one-digit level, in 2005 around 53% of absence days were concentrated in only three NACE branches: 'manufacturing' (21.9%), 'construction' (19.0%) and 'wholesale and retail trade' (11.8% – see Figure 6.2). In addition, the duration of absence varies according to the branch of activity. It appears that non-fatal accidents at work leading to 'more than six months of absence or a permanent incapacity' were overrepresented for 'extra-territorial organizations and bodies', with 7.4% of occurrences, 'private households with employed persons', with 7.3% and 'financial intermediation', with 6.9%. In comparison, accidents at work involving 'more than six month of absence or a permanent incapacity' represented less than 4% of occurrences for all NACE branches in 2005 (see Annex A6.1).

In contrast, four to six days of absence were registered in 19.2% of all non-fatal accidents at work, while this was observed for 22.6% of accidents occurring in the sector of 'health and social work'. Moreover, 30.8% of non-fatal accidents which occurred in 'hotels and restaurants' and 28.9% of accidents in 'manufacturing' resulted in seven to 13 days of absence, while this was observed in 26.4% of accidents when considering all sectors of activity.

*More than half of all absence days registered in 2005 were concentrated in only three sectors of economic activity.*

**Figure 6.2** Distribution of total of absence days by sector of economic activity of the employer (one-digit level), EU-15, 2005



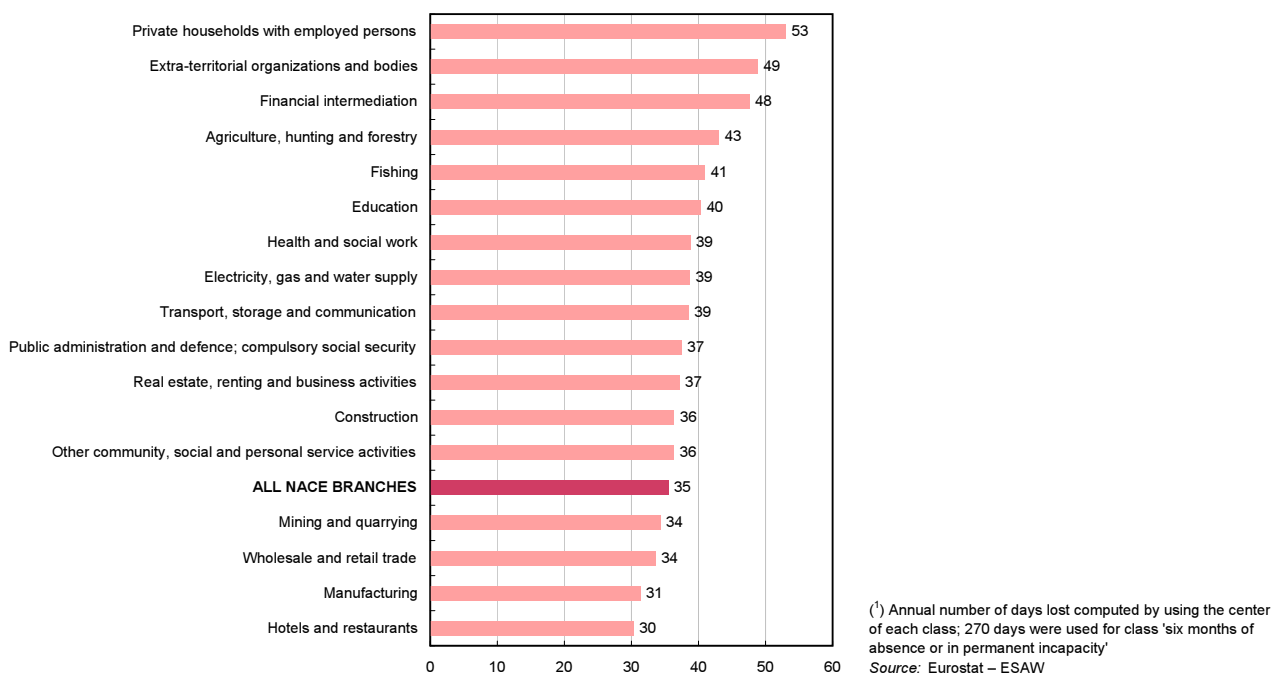
Regarding the number of absence days per non-fatal accident at work by sector of activity at one-digit level (see Figure 6.3), 'private households with employed persons', 'extra-territorial organizations and bodies' and 'financial intermediation' registered the highest average number of days lost per accident, with 53, 49 and 48 respectively. In contrast, workers in 'mining and quarrying', 'wholesale and retail trade', 'manufacturing' and 'hotels and restaurants' were on average absent from work for less than 35 days per accident at work. At a deeper level of NACE classification (two-digit level), 'financial intermediation, except insurance and pension funding' registered on average 51 days of absence per accident (see Annex A6.1). This was followed by 'computer and related activities' with 46 days of absence, 'forestry, logging and related service activities' and agriculture, hunting and related service activities' with an average 43 days of absence per accident. Conversely, workers in 'manufacture of rubber and plastic products', 'water transport' and 'air transport' were on average absent from work less than 30 days as a result of an accident at work.

*On average, non-fatal accidents at work in 'private households with employed persons' resulted in 53 days of absence from work.*

*Accidents in the sector of 'hotels and restaurants' led to an average of 30 days of absence.*



**Figure 6.3** Average number of absence days per accident (¹) by sector of activity (one-digit level), EU-15, 2005

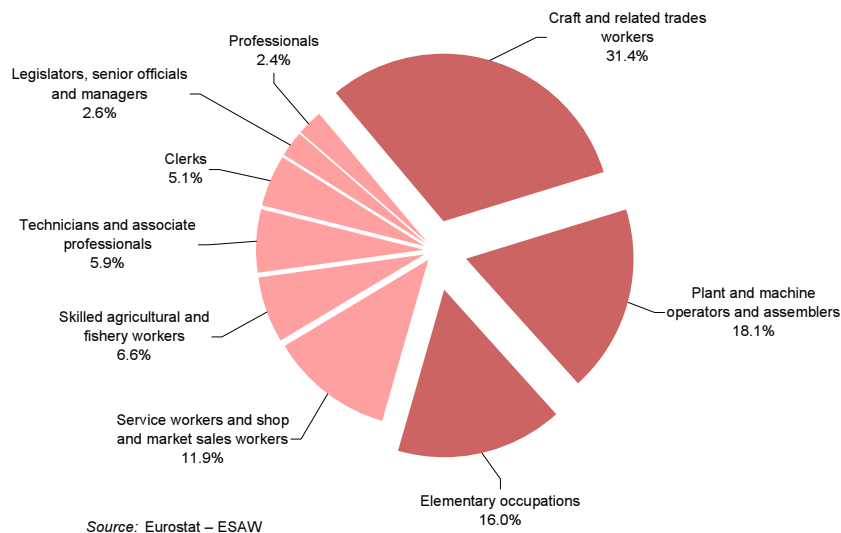


### Distribution of absence days by occupation of the victim

*'Craft and related trades workers', 'plant and machine operators and assemblers' and workers employed in 'elementary occupations' accounted for around two thirds of all absence days in 2005.*

In 2005, around 66% of absence days were concentrated in only three occupations (at one-digit level): 'craft and related trades workers' (31.4%), 'plant and machine operators and assemblers' (18.1%) and 'elementary occupations' (16.0% – see Figure 6.4). Moreover, 11.8% of non-fatal accidents involving 'legislators, senior officials and managers' led to 'more than six months of absence or to a permanent incapacity', while accidents leading to a permanent incapacity accounted for only 3.9% of all accidents at work. Furthermore, accidents involving 'legislators, senior officials and managers', 'professionals' and 'skilled agricultural and fishery workers' led to at least one month of absence in more than 30% of cases (see Annex A6.2).

**Figure 6.4** Distribution of total absence days by occupation of the victim (one-digit level), EU-15, 2005



Regarding the number of absence days following an accident at work by occupation of victims at one-digit level (see Figure 6.5), 'legislators, senior officials and managers' were on average incapacitated for 60 days per accident. In contrast, 'service workers and shop and market sales workers' and workers in 'elementary occupations' were absent from work for less than 35 days on average. At two-digit level, 'general managers' generally registered 49 days of absence per accident, followed by 'teaching professionals' (46 days) and 'skilled agricultural and fishery workers' (45 days). Conversely, 'other craft and related trades workers' and 'models, salespersons and demonstrators' were absent for 30 days on average following an accident at work, followed by 'labourers in mining, construction, manufacturing and transport' with 28 days of absence.

*Non-fatal accidents at work involving legislators, senior officials or managers led to two months of absence on average.*

*While accidents involving 'service workers or shop and market sales workers' and workers in 'elementary occupations' led to less than 35 days of absence on average.*

**Figure 6.5** Average number of absence days per accident (<sup>1</sup>) by occupation of victims (one-digit level), EU-15, 2005



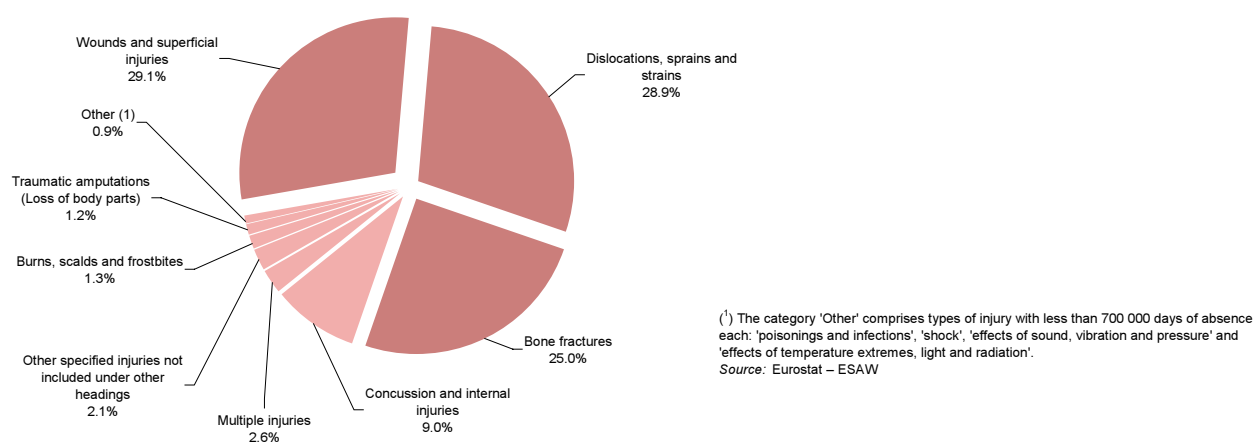
(<sup>1</sup>) Annual number of days lost computed by using the center of each class; 270 days were used for class 'six months of absence or in permanent incapacity'  
Source: Eurostat – ESAW

## 6.2 Distribution of absence days by type of injury

*Victims of 'wounds and superficial injuries', 'dislocations, sprains and strains' and 'bone fractures' accounted for around 83% of all absence days reported in 2005.*

Among all non-fatal accidents which occurred in 2005 at EU-15 level, around 83% of absence days were associated to only three types of injury at one-digit level: 29.1% of days lost were due to 'wounds and superficial injuries', 28.8% to 'dislocations, sprains and strains' and 24.9% to 'bone fractures' (see Figure 6.6). The period of absence from work is directly linked to the severity of the injury. For 'traumatic amputations', three victims out of four were absent during at least one month and one out of five during at least six months. Around two thirds of injured workers were incapacitated for more than one month after sustaining 'bone fractures'. On the other hand, more than 50% of victims of 'wounds and superficial injuries', 'burns, scalds and frostbites', 'poisonings and infections', 'drowning and asphyxiation', 'effects of sound, vibration, pressure' and 'effects of temperature extremes, light, radiation' were absent from work for less than a fortnight (see Table A6.3 in the Annex).

**Figure 6.6** Distribution of total number of absence days by type of injury (one-digit level), EU-15, 2005

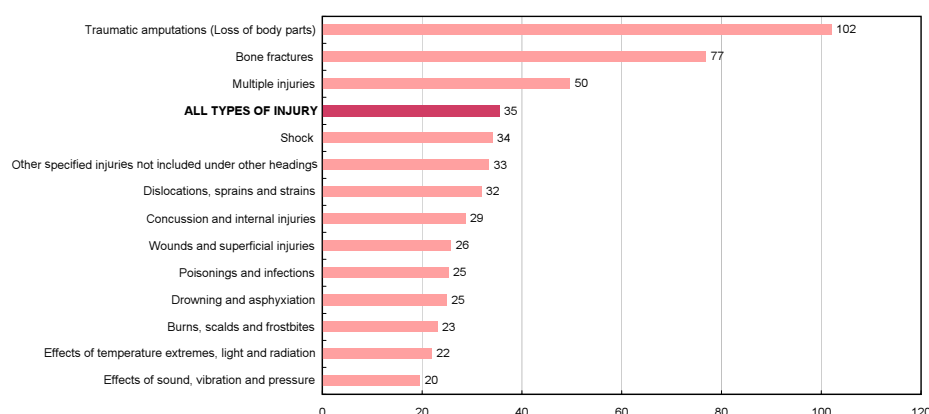


*'Traumatic amputations' led to 102 days of absence on average.*

*While 'burns, scalds and frostbites', 'effects of temperature extremes, light, radiation' and 'effects of sound, vibration, pressure' led to less than 24 days of absence.*

Considering the average number of days lost by type of injury at one-digit level (see Figure 6.7), 'traumatic amputations' led to 102 days of absence on average, followed by 'bone fractures' (77 days) and 'multiple injuries' (50 days). In contrast, 'burns, scalds and frostbites', 'effects of temperature extremes, light, radiation' and 'effects of sound, vibration, pressure' led to respectively 23, 22 and 20 days of absence on average. At two-digit level, 'open fractures' generally resulted in 65 days away from work, followed by 'closed fractures' (54 days) and 'drowning and non-fatal submersion' (50 days). However, 'effects of radiation (non-thermal)' led to only 17 days of absence, while 'acute hearing losses' and 'heat and sunstroke' (calculated on a basis of 71 cases only) led to an average of 16 days of absence (see Table A6.3 in the Annex).

**Figure 6.7** Average number of absence days per accident (<sup>1</sup>) by type of injury (one-digit level), EU-15, 2005

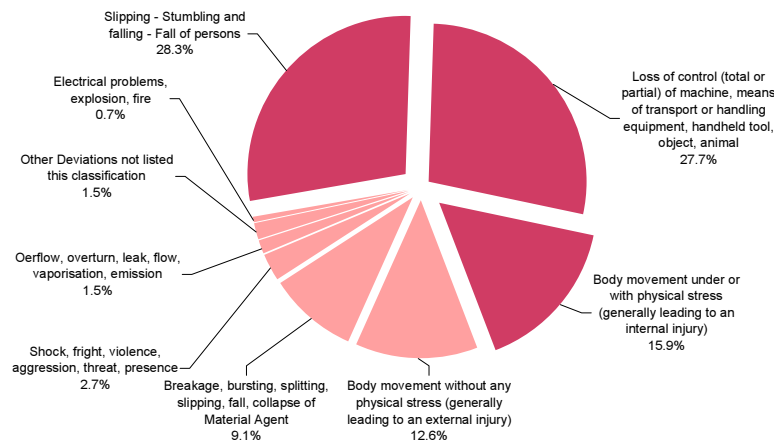


### 6.3 Distribution of absence days by deviation

Among all non-fatal accidents which occurred in 2005, approximately 72% of absence days were associated to only three types of deviation at one-digit level: 28.3% of days lost were associated to 'slipping, stumbling and falling, fall of persons', 27.7% to 'loss of control (total or partial) of machine, means of transport or handling equipment, handheld tool, object, animal' and 15.9% to 'body movement under or with physical stress generally leading to an internal injury' (see Figure 6.8). Furthermore, 38% of victims of accidents triggered by 'slipping, stumbling and falling, etc.' and 36% of victims of 'loss of control, etc.' were incapacitated for one month at least (see Table A6.4 in the Annex). By comparison, accidents at work involving one month of absence or more accounted for 29% of all deviations. In contrast, 27% of victims of the specific deviation 'overflow, overturn, leak, flow, vaporisation, emission' were absent during less than six days, while this represented 15% of occurrences for all deviations.

*The deviations 'slipping, stumbling and falling, fall of persons', 'loss of control, etc.' and 'body movement under or with physical stress, etc.' accounted for around 72% of days lost.*

**Figure 6.8** Distribution of total absence days by deviation (one-digit level), EU\_V, 2005



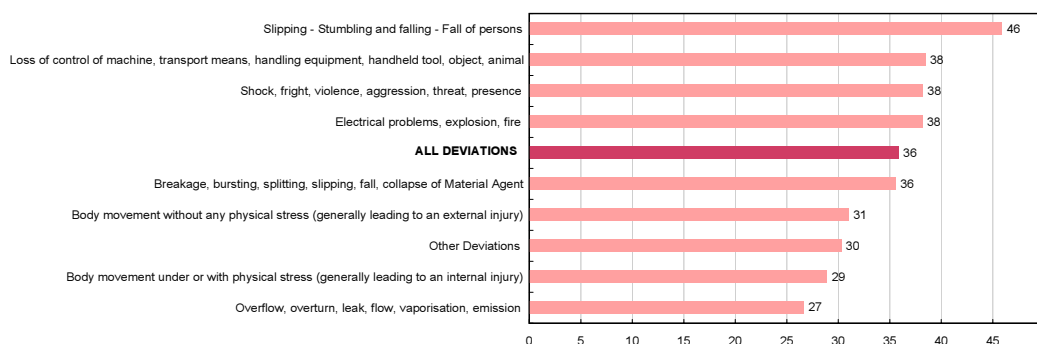
Source: Eurostat – ESAW

Regarding the number of days lost by deviation at one-digit level (see Figure 6.9), 'slipping, stumbling and falling, etc.' led to 46 days of absence on average, followed by 'loss of control, etc.', 'shock, fright, violence, etc.' and 'electrical problems, etc.' (38 days). In contrast, accidents involving a 'deviation by overflow, overturn, leak, flow, vaporisation, emission' led to 27 days of absence on average. At two-digit level, the deviation 'fall of person to a lower level' led to an average 57 days of absence, followed by 'slip, fall, collapse of Material Agent from below' (51 days) and 'explosion' (49 days). In comparison, 'walking on a sharp object', 'putting down, bending down' and 'pulverulent material, smoke generation, dust/particles in suspension/emission of' led to 25, 24 and 20 days of absence respectively (see Table A6.4 in the Annex).

*Accidents due to 'slipping, stumbling and falling, fall of persons' resulted in 46 days of absence on average ...*

*... while accidents triggered by 'overflow, overturn, leak, flow, vaporisation, emission' led to an average of 27 days of absence.*

**Figure 6.9** Average number of absence days per accident (\*) by deviation (one-digit level), EU\_V, 2005



(\*) Annual number of days lost computed by using the center of each class; 270 days were used for class 'six months of absence or in permanent incapacity'  
Source: Eurostat – ESAW

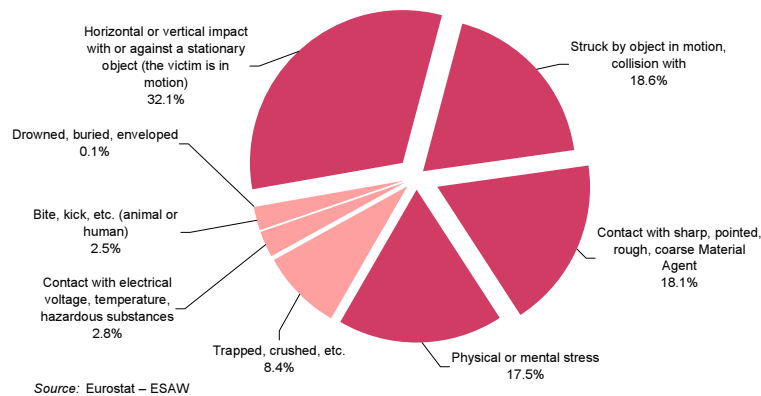


## 6.4 Distribution of absence days by contact – mode of injury

In 2005, around 86% of days lost were ascribed to accidents involving the modes of injury 'horizontal or vertical impact with or against a stationary object', 'struck by or collision with an object in motion', 'contact with sharp, pointed, rough, coarse Material Agent' and 'physical or mental stress'.

In 2005, around 86% of all absence days were associated to four contacts at one-digit level: 32.1% of days lost resulted from a 'horizontal or vertical impact with or against a stationary object (the victim was in motion)', 18.6% resulted from accidents in which the victim was 'struck by or collided with an object in motion', followed by 'contact with sharp, pointed, rough, coarse Material Agent' (18.1%) and 'physical or mental stress' (17.5% – see Figure 6.10). Furthermore, 41% of accidents at work involving the mode of injury 'trapped, crushed, etc.' and 36% of accidents associated to the contact 'horizontal or vertical impact with or against a stationary object' led to at least one month of absence (see Table A6.5 in the Annex). In comparison, accidents at work resulting in one month of absence or more accounted for 29% of all modes of injury involved in accidents at work. By contrast, 25% of victims of the specific contact 'drowned, buried, enveloped' and 23% of victims of 'contact with electrical voltage, temperature, hazardous substances' were absent from work for less than six days, while accidents resulting in less than six days of absence accounted for 16% of all modes of injury.

**Figure 6.10** Distribution of total absence days by contact – mode of injury (one-digit level), EU\_V, 2005

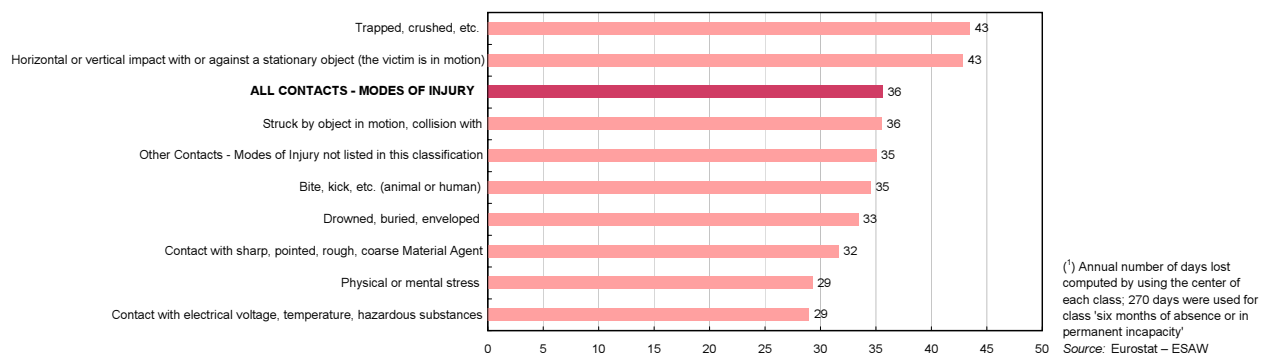


'Trapped, crushed, etc.' and 'horizontal or vertical impact with or against a stationary object' led to an average of 43 days of absence.

While 'physical or mental stress' and 'contact with electrical voltage, temperature, hazardous substances' generally led to less than 29 days of absence.

Considering the number of days lost per non-fatal accident at work by mode of injury at one-digit level (see Figure 6.11), 'trapped, crushed, etc.' and 'horizontal or vertical impact with or against a stationary object' led to an average of 43 days of absence. Conversely, non-fatal accidents involving a 'physical or mental stress' or a 'contact with electrical voltage, temperature, hazardous substances' generally resulted in 29 days of absence. At two-digit level, the mode of injury 'limb, hand or finger torn or cut off' generally led to 77 days of absence, followed by 'buried under solid' (59 days) and 'vertical motion, crash on or against (resulting from a fall)' (48 days). In contrast, 'contact with hazardous substances on/through skin or eyes', 'sting from insect or fish' and 'enveloped in, surrounded by gas or airborne particles' led on average to 25, 21 and 18 days of absence respectively (see Table A6.5 in the Annex).

**Figure 6.11** Average number of absence days per accident (¹) by contact – mode of injury (one-digit level), EU\_V, 2005



## 6.5 Distribution of absence days by Material Agent of the contact – mode of injury

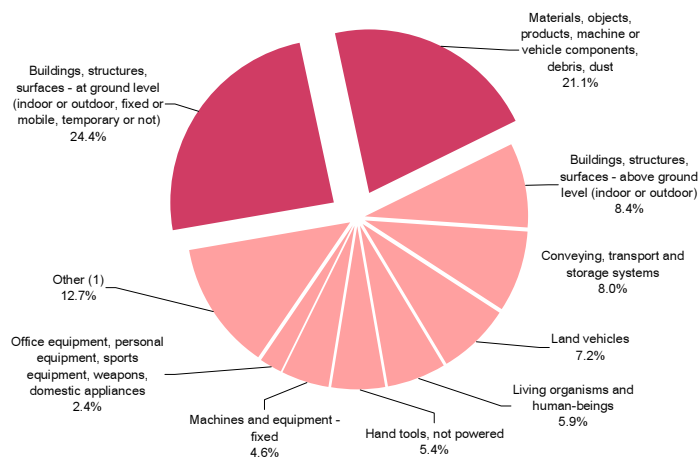
At one-digit level, only two Material Agents of the contact accounted for more than 45% of all absence days recorded in 2005: 24.4% of days lost involved 'buildings, structures, surfaces at ground level (indoor or outdoor, fixed or mobile, temporary or not)' and 21.1% involved 'materials, objects, products, machine or vehicle components, debris, dust' (see Figure 6.12).

Furthermore, accidents at work leading to 'more than six months of absence or a permanent incapacity' were overrepresented for 'buildings, structures, surfaces at ground level, etc.' and 'land vehicles' with 4.4% and 4.1% of occurrences respectively. In comparison, accidents at work resulting in more than six months of absence or permanent incapacity represented only 2.6% of occurrences for all Material Agents of the contact in 2005 (see Annex A6.10). In addition, 40.1% of non-fatal accidents involving 'buildings, structures, surfaces below ground level' led to at least one month or more of absence. In contrast, accidents at work involving one month of absence or more accounted for 27.9% of occurrences for all Material Agents of the contact.

Conversely, 50.6% of accidents involving the Material Agent 'hand tools, not powered' and 47.8% of accidents involving 'systems for the supply and distribution of materials, pipe networks' resulted in less than two weeks of absence (compared to 41.5% for all Material Agents).

*The Material Agents of the contact 'buildings, structures, surfaces at ground level' and 'materials, objects, products, machine or vehicle components, debris, dust' accounted for around 45% of days lost.*

**Figure 6.12**  
Distribution of total absence days by Material Agent of the contact – mode of injury (one-digit level)  
EU\_V, 2005



(1) The category 'Other' comprises Material Agents associated to contacts - modes of injury totalising less than 1 400 000 days of absence each: 'chemical, explosive, radioactive, biological substances', 'hand-held or hand-guided tools, mechanical', 'machines and equipment - portable or mobile', 'hand tools - without specification of power source', 'motors, systems for energy transmission and storage', 'systems for the supply and distribution of materials, pipe networks', 'physical phenomena and natural elements', 'buildings, structures, surfaces - below ground level (indoor or outdoor)', 'other transport vehicles', 'bulk waste', 'safety devices and equipment' and 'other material agents not listed in the classification'.

Source: Eurostat – ESAW

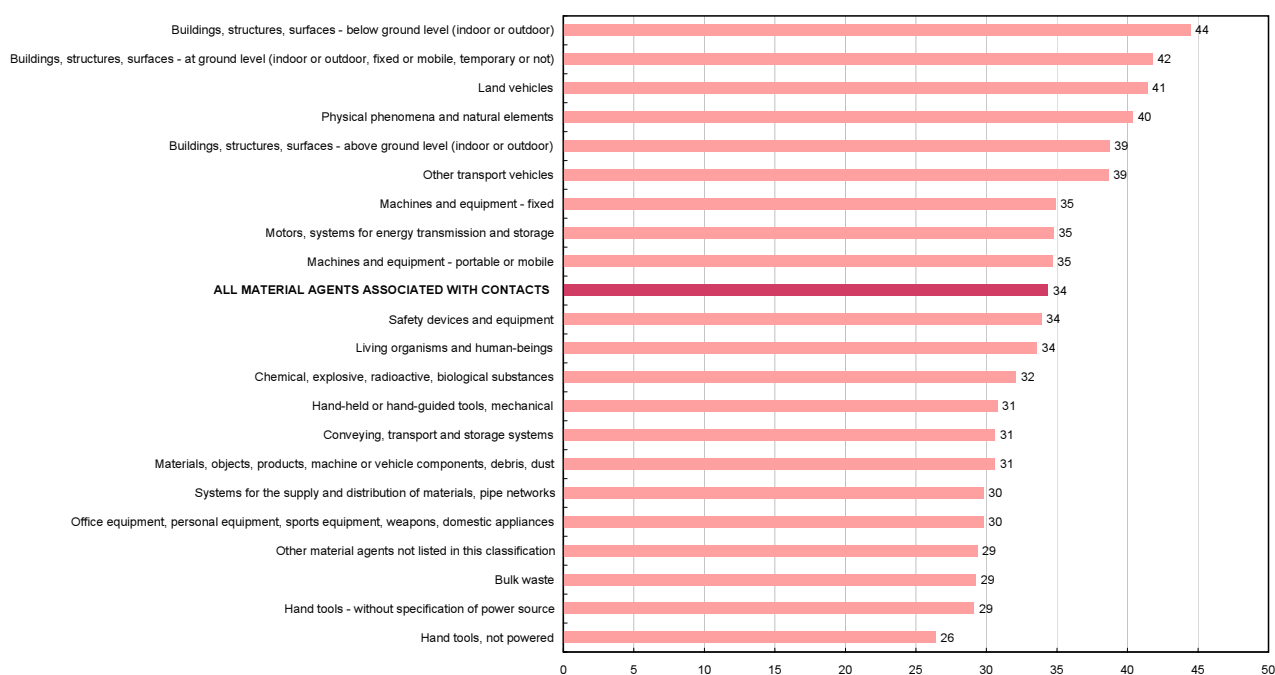
*Accidents involving 'buildings, structures, surfaces below ground level' led on average to 44 days of absence from work.*

*While accidents involving non-powered hand tools generally resulted in 26 days of absence.*

Considering the average number of days lost following a non-fatal accident at work by Material Agent of the contact (see Figure 6.13), accidents involving 'buildings, structures, surfaces below ground level' generally led to 44 days of absence, followed by 'buildings, structures, surfaces at ground level' (42 days) and 'land vehicles' (41 days). In contrast, non-fatal accidents involving 'bulk waste' or 'hand tools without specification of power source' led to an average of 29 days of absence, while accidents involving 'hand tools, not powered' led to 26 days of absence.

At two-digit level, accidents involving 'weapons' resulted in 60 days of absence on average (calculated on the basis of 286 cases only), followed by 'explosive or reactive substances (solid, liquid or gaseous)', with 53 days lost (482 cases) and 'underground areas, tunnels', with 50 days (1 085 cases). In contrast, accidents involving 'underwater environments' (39 cases), 'mechanical hand tools for kitchen work (except knives)' (939 cases) and 'hand tools, without specification of power source for medical and surgical work (sharp, cutting)' (128 cases) led to workers being incapacitated for 21 days, followed by 'hand tools, without specification of power source for kitchen work (except knives)', with 18 days of absence (655 cases). For more details, all two-digit breakdowns are available in Table A6.10 in the Annex.

**Figure 6.13**  
Average number of absence days per accident <sup>(1)</sup> by Material Agent of the contact – mode of injury (one-digit level), EU\_V, 2005



<sup>(1)</sup> Annual number of days lost computed by using the center of each class; 270 days were used for class 'six months of absence or in permanent incapacity'  
Source: Eurostat – ESAW



## 6.6 Age of victims involved in serious accidents at work

Following the detailed analysis of the number of days lost in relation to various criteria, this section will focus on the age of victims forced to leave their job prematurely and definitively because of an accident at work. Such events can be defined as fatal and non-fatal accidents at work leading to at least six months of absence or to a permanent incapacity. When returning to work after more than six months of absence, victims of accidents at work may in some cases be assigned to a different post within the company. This can be explained by the fact that someone may have been hired to compensate the injured worker's long-term absence, or by a disability resulting from the accident preventing the worker from resuming his or her former tasks.

The age of victims of accidents at work leading to at least six months of absence or to a permanent incapacity are presented according to the sector of economic activity of the employer and occupation of victims. As it was introduced in chapter 2, non-fatal accidents may be underreported, as Member States provide information on the estimated reporting levels, which is then used to adjust the reported numbers. As information on reporting levels is not yet available for all EU-27 countries, ESAW data on non-fatal accidents at work are published for EU-15 Member States only. For fatal accidents at work, the reporting is considered complete and EU-27 figures are available for 2005. Therefore, the following sections provide averages computed at EU-15 level for non-fatal accidents leading to at least six months of absence or to a permanent incapacity, while the average age of victims of fatal accidents at work was calculated at EU-27 level. This approach also affords a greater number of records for fatal accidents at work, thereby increasing the accuracy of results.

In addition, only breakdowns at one-digit level of NACE branches and occupations of victims were considered in the analysis. Breakdowns at two-digit level do not offer a sufficient number of occurrences, especially for fatal cases. The average ages are available for various variables and breakdowns in Annexes A6.1 to A6.10.

It is noteworthy that fatal accidents and cases of permanent incapacity mostly involve relatively young adults (43.0 and 43.2 years respectively), which means that, considering the average age of retirement and increasing life expectancy, a sizeable number of work years and years of life are lost prematurely.



## Distribution of age of victims in relation to sector of economic activity of the employer

In 2005, the average age of victims of fatal accidents at work was of 43.0 years, while the average age of victims of non-fatal accidents leading to at least six months of absence or to permanent incapacity was of 43.2 years.

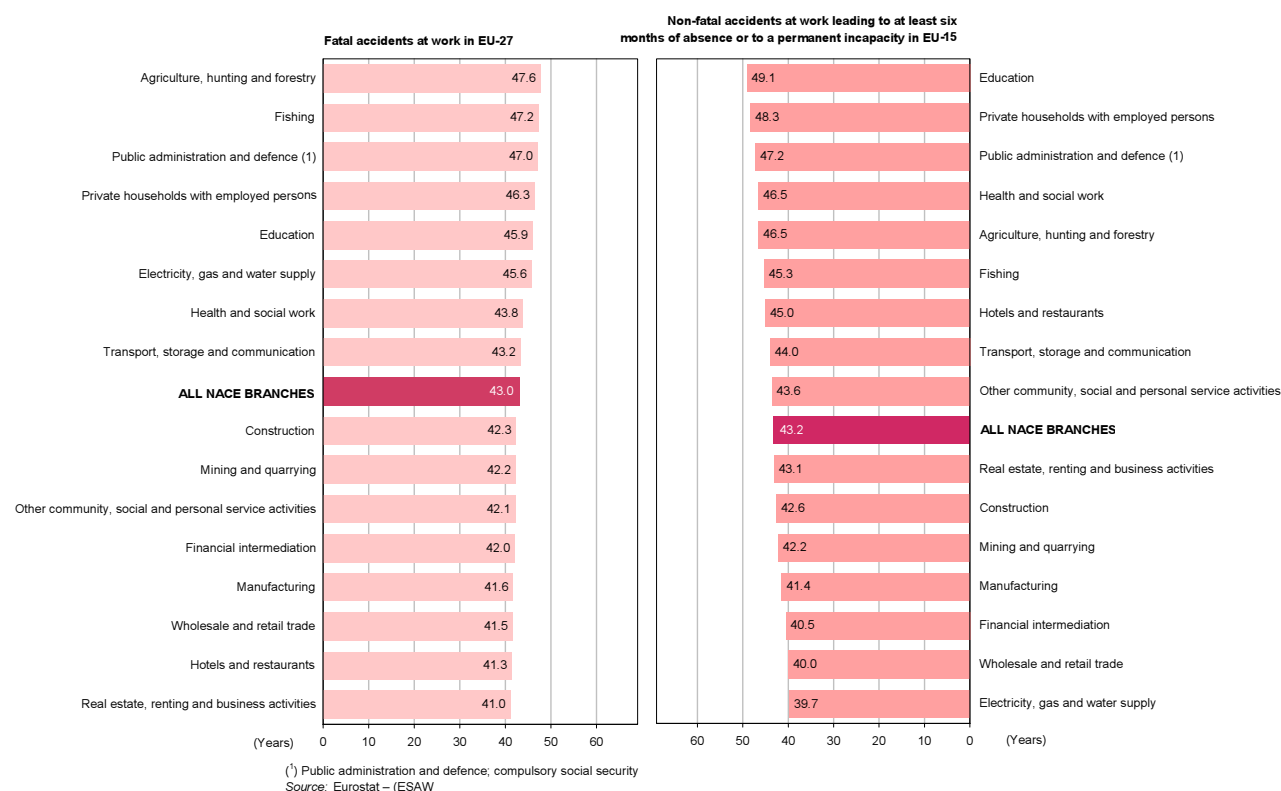
*The youngest victims of fatal accidents at work were employed in 'real estate, renting and business activities', with an average age of 41.0 years.*

*Concurrently, the youngest victims of non-fatal accidents at work leading to at least six months of absence or to permanent incapacity were mostly employed in the sector of 'electricity, gas and water supply', with an average age of 39.7 years.*

Regarding fatal accidents at work, the youngest victims were found in 'real estate, renting and business activities', with an average age of 41.0 years (on the basis of 332 cases) (see Figure 6.14). This was followed by 'hotels and restaurants' with an average of 41.3 years (72 cases), 'wholesale and retail trade' with 41.5 years (441 cases) and 'manufacturing' with 41.6 years (1 161 cases). The oldest victims were identified in 'agriculture, hunting and forestry' with an average age of 47.6 years (650 cases), 'fishing' with 47.2 years (32 cases) and 'public administration and defence' with 47.0 years (104 cases).

Concerning non-fatal accidents at work leading to at least six months of absence or to permanent incapacity, the youngest victims were employed in the sector of 'electricity, gas and water supply', and were on average 39.7 years old (on the basis of 1 032 cases). This was followed by 'wholesale and retail trade', with an average of 40.0 years (17 504 cases) and 'financial intermediation', with 40.5 years (1 326 cases). The oldest victims were identified in 'education', with an average age of 49.1 years (3 101 cases), followed by 'private households with employed persons', with 48.3 years (684 cases) and 'public administration and defence', with 47.2 years (7 237 cases).

**Figure 6.14**  
Average age of victims of accidents at work by sector of economic activity of the employer (one-digit level), 2005



## Distribution of age of victims in relation to occupation

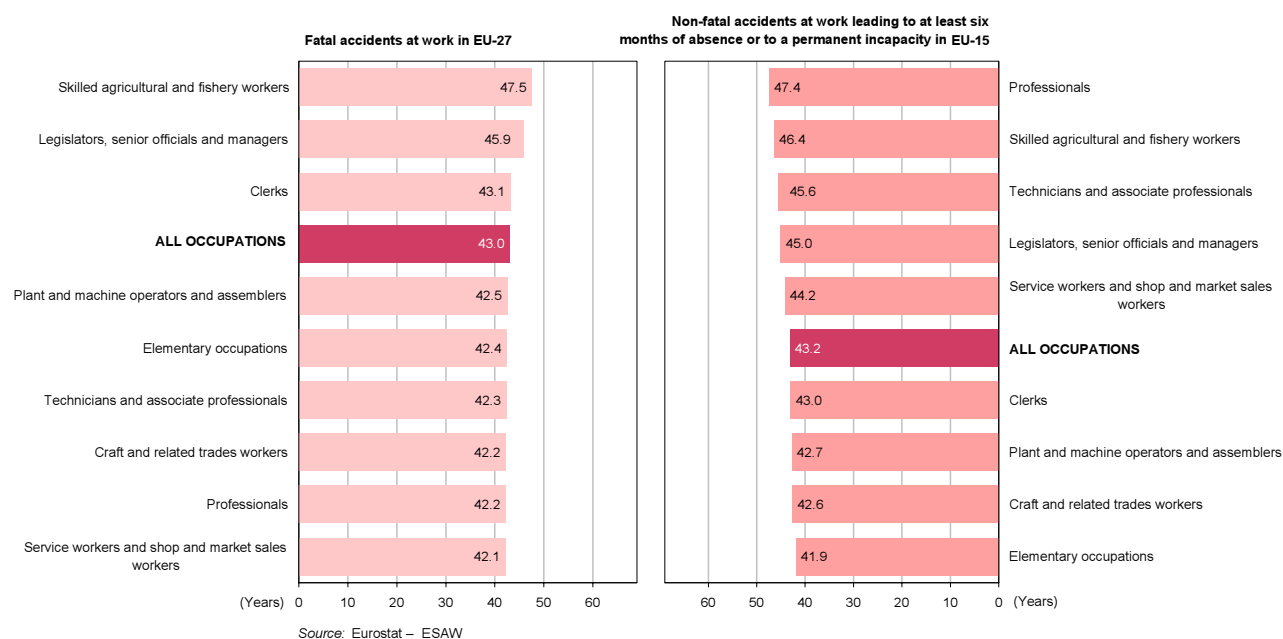
The youngest victims of fatal accidents at work were employed as 'service workers and shop and market sales workers' (on the basis of 163 cases) and were on average 42.1 years old (see Figure 6.15). This was followed by 'professionals' (134 cases) and 'craft and related trades workers' (1 726 cases), with an average of 42.2 years for both occupations. The oldest victims identified were 'skilled agricultural and fishery workers', with 47.5 years (446 cases) and 'legislators, senior officials and managers', with 45.9 years (228 cases).

Considering non-fatal accidents at work leading to at least six months of absence or to permanent incapacity, the youngest victims were on average 41.9 years old and were employed in 'elementary occupations' (17 177 cases), followed by 'craft and related trades workers', with 42.6 years (46 988 cases) and 'plant and machine operators and assemblers' with 42.7 years (27 530 cases). The oldest victims were employed as 'professionals', with 47.4 years (4 549 cases) and 'skilled agricultural and fishery workers', with 46.4 years (11 533 cases).

*The youngest victims of fatal accidents at work were 'service workers and shop and market sales workers', with an average age of 42.1 years.*

*Conversely, the youngest victims of non-fatal accidents at work leading to at least six months of absence or to a permanent incapacity were employed in 'elementary occupations' and were on average 41.9 years old.*

**Figure 6.15** Average age of victims of accidents at work by occupation of the victim (one-digit level), 2005





## Chapter 7 - Methodological notes





## Basic concepts and definitions of European Statistics on Accidents at Work – ESAW

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

In accordance with the Framework Directive, all cases of accidents at work leading to an absence of more than three calendar days<sup>1</sup> are included in the ESAW data. In practice, this means that an accident at work is included in the ESAW database if the person is unfit for work for more than three days, including Saturdays, Sundays or other days where the person is not usually working. It is generally considered that accidents resulting in more than three days' absence from work have a higher reporting level than accidents with less than four days' absence, which in turn affords better data quality.

A fatal accident is defined in ESAW as an accident leading to the death of a victim within one year of the accident.

A commuting accident is defined as an accident which occurs during the normal journey between the home, the place of work and the usual place where meals are taken. As for accidents at work, ESAW covers all cases of commuting accidents leading to an absence of more than three calendar days from work or to the death of the victim. However, as they are presented separately, data on commuting accidents are not included in data on accidents at work and are not used in this report.

A detailed description of the ESAW methodology is provided in "European statistics on accidents at work (ESAW) - Methodology - 2001 edition" - European Communities - Directorate General Employment and social affairs series - Catalogue No KE-36-019-60EN-C. Available (with addendums) at: <http://circa.europa.eu/Public/irc/dsis/hasaw/library>.

## Data collection and calculation of the indicators

Information is collected on the following variables: economic activity of the employer, occupation of the victim, age and sex of the victim, type of injury, part of body injured, time of the accident, size of the enterprise, employment status of the victim and days lost. Phase III of the ESAW methodology is gradually being implemented from the reference year (2001) onwards; in addition to the variables above, Phase III includes information concerning the circumstances and events leading to accidents at work.

Data collection started in 1994 (pilot collection in 1993). Data collection for the new Member States started in 2002, with 1998 as the earliest reference year:

- for the EU-15: 1994–2004;
- for the new Member States which joined on 1 May 2004: 1998–2004 (1994–2004 for some of them; Cyprus: 1999–2004);
- for some new Member States gender-specific data are available only from 2001 onwards.

The incidence rate reflects the risk of having an accident at work, i.e. the number of accidents at work occurring in a year for every 100 000 persons in employment. When calculating incidence rates, only the sectors of activity or occupations covered by national accident data collection systems are included in the denominator.

It is a fact that the frequency of work accidents is much higher in some branches compared to others. For this reason the industrial structure of a country will influence its total frequency of work accidents depending on its share of high-risk sectors. For example, a country where high-risk branches, such as agriculture, construction or transport, account for a higher share of the total workforce than compared to another Member State, but with the same frequency of accidents for each branch, would have a higher total national incidence rate.

To correct for this effect a "standardised" number of accidents at work per 100 000 persons in employment is calculated for every Member State by giving each branch the same weight at national level as in the European Union total ("standardised" incidence rate).

<sup>1</sup> The Framework Directive (Article 9) speaks of working days, not calendar days. However, for the ESAW methodology it was decided to follow the most common practice in the Member States, which is to use calendar days in calculating the number of days of absence from work.



Furthermore, in order to provide comparable incidence rates for all Member States, an additional standardised incidence rate is calculated for fatalities, which excludes road traffic accidents and accidents on board of any means of transport. This is due to the fact that a few Member States do not record road traffic accidents in the course of work as accidents at work (see section entitled "Groups covered by the national reporting systems" below), while fatalities caused by road traffic accidents account for an important share of the total number of fatal accidents. For this reason, comparisons of national incidence rates for fatalities would introduce a serious bias without this adjustment of the rates.

However, as explained below, despite these standardisations the differences observed in incidence rates between countries partly arise from discrepancies in reporting arrangements. However, the incidence rates are fully comparable within each of the two groups of Member States (insurance-based system and universal Social Security system), though they are not strictly comparable between the two groups. Moreover, trends are considered as highly comparable within each Member States.

### **Reporting procedures in the Member States: insurance and non-insurance-based systems**

Eurostat receives the ESAW data from either the Member States' national registers or other national bodies responsible for the collection of data on accidents at work. Two types of reporting procedures are prevalent in the various Member States of the European Union. In insurance-based systems (implemented in 10 Member States), the reporting procedures are mainly based on the notification of accidents to the insurer, public or private, according to the case. On the other hand, reporting procedures in the five remaining EU-15 Member States (Denmark, Ireland, the Netherlands, Sweden and the United Kingdom) are mainly based on the legal obligation of the employer to notify accidents to the relevant national authority, which is often the National Labour Inspection Service. Norway, which also provides data to Eurostat, belongs to the latter group. Switzerland operates an insurance-based system. In the new Member States (2004 and 2007 enlargements) reporting systems are mainly based on data provided by labour inspection, with complementary information provided by Social Security systems.

In insurance-based systems, the provision or refunding of care benefits and the payment of benefits in cash (daily subsistence allowances, pensions where applicable, etc.) resulting from accidents at work are conditional on reporting the accident to the public or private insurer. Additionally, in a number of countries, the benefits thus paid under the accidents at work insurance legislation are higher than in the case of non-occupational accidents. Insurance-based systems thus provide an economic incentive for the employer and the employee to notify accidents at work. Due to these various factors, the reporting levels for accidents at work are in general very high in insurance-based systems, and are usually considered to be around 100 per cent. However, the data coverage on accidents in these Member States is restricted to the actual coverage of insurance schemes. For example, some groups such as self-employed workers are rarely covered by the insurance system, and employees in the public sector or person employed in certain economic activities (such as fishing, mining, etc.) are covered by specific insurance schemes for which data are not always available (see section entitled "Groups covered by the national reporting systems" below).

Denmark, Ireland, the Netherlands, Sweden, the United Kingdom and Norway operate a system of universal social security coverage. In such systems the benefits provided to the victim of an accident at work do not depend on a preliminary reporting of the accident, except for specific benefits paid for the most serious accidents (pensions for permanent disability, etc.). Consequently, the economic incentive for notifying accidents at work is not very strong in non-insurance-based systems; but there is a legal obligation for the employer to notify accidents at work. In practice, only part of all accidents at work are actually reported, and systems based on the employer's legal requirement to notify work accidents to the authorities have a medium reporting level, usually ranging from 30 to 50 per cent on average for all branches of economic activity taken together. In this case estimates of the reporting levels are provided by the Member States, based either on an evaluation of the reporting procedures or on the basis of other data sources such as surveys. This information is used to correct the estimates of the total number of accidents published by Eurostat. For the new Member States that acceded the EU in 2004 and 2007, the reporting levels have not yet been systematically assessed, and efforts will be made in connection with the LFS 2007 ad hoc module for all Member States of the EU-27.

### **Groups covered by the national reporting systems**

All groups or sectors should in principle be covered by national legislation or other statutory arrangements that require accidents at work to be notified to the authorities or to a private or public insurance body in accordance with the law. However, not all data are compiled for statistical purposes. Data may either be in a format that precludes statistical analyses, or data files may be currently unavailable for the ESAW project. For this reason the term "coverage" in the following section should be understood as the coverage of data on accidents at work sent to Eurostat in accordance with the ESAW methodology.

## **Coverage of self-employed and family workers**

The coverage of such groups varies from one Member State to another. Some national reporting systems do not cover self-employed workers and family members. In particular, the agricultural sector is affected by the lack of coverage for the self-employed. Furthermore, in some Member States data coverage is limited because self-employed workers are excluded from the reporting and registration procedures; this is especially relevant for Member States with large shares of self-employed workers, such as Greece.

## **Branches and sectors covered – nine common branches**

The 1998 ESAW data for the EU-15 and Norway cover only nine branches of activity: agriculture, hunting and forestry; manufacturing; electricity, gas and water supply; construction; wholesale and retail trade and repairs; hotels and restaurants; transport and communication; financial intermediation; real estate, renting and business activities (NACE sections A, D, E, F, G, H, I, J and K). However, as explained above, as some groups of activity are excluded, the coverage is not yet complete for agriculture and transport: non-wage earners (the self-employed, family workers, etc.) in agriculture and workers in rail, sea and air transport are not covered everywhere.

ESAW incidence rates are thus only calculated on the basis of these nine branches where where average EU incidence rates can be observed. In 2005 the total number of persons in employment covered by ESAW in these nine branches common to all Member States stood at about 106 million for the EU-15 and about 130 million for the EU-27, around 70% of the total coverage of the ESAW data in the EU-15 and 77% of total coverage in the EU-27.

## **Actual coverage of the various types of accidents at work in the Member States**

Ireland and the United Kingdom do not cover data on road traffic and transport accidents in the course of work. The lack of coverage for this type of accident has a significant impact on the national numbers of fatalities. This is why ESAW data for fatalities broken down by Member States are presented excluding road traffic and transport accidents in the course of work.

Additionally, there are other national specificities for accidents with a medical origin or accidents occurring in public places or within the premises of another company (at a client company, at a business interview, on temporary assignment, etc.). However, accidents with a medical origin (e.g. heart attack, stroke) covered by Member States are excluded from the ESAW data sent to Eurostat.

Finally, in the UK members of the public are covered but are excluded from the ESAW data provided to Eurostat.

## **Reference population (based on the Labour Force Survey)**

A reference population for ESAW data is provided in order to calculate incidence rates for accidents at work. The reference population is based on the Labour Force Survey data and corresponds to the national coverage of ESAW data in each country. The advantages of using the European Labour Force Survey are the comparability of this source and the possibility of using more detailed information on national labour forces. However, this source does not provide information on employment in full-time equivalents (FTE). The reference year used for the extraction of the reference population from the LFS is the same as the reference year of the ESAW data.

In 2005, the population covered by the ESAW data, established on the basis of the LFS, stood at around 150 million persons in employment for the EU-15 and 183 million for the EU-27, which accounted for respectively 89% and 87% of the total workforce of the EU-15 and the EU-27.

## **ESAW harmonised data collection**

Despite the differences in the national reporting procedures and coverage, all ESAW data to be submitted to Eurostat are extracted by Member States **from their national data in accordance with the ESAW methodology**, its definition of an accident at work, etc. In particular, Member States only provide data for accidents at work resulting in more than three days' absence, excluding accidents of a medical origin, etc. Only minor aspects have not been fully harmonised.

Some discrepancies remain concerning the coverage of economic sectors, but Eurostat has harmonised the analysis by only taking into account the incidence of nine "common" branches (see above). This is also the case for the calculation of national fatality incidences by Eurostat, in which road traffic accidents are excluded for all Member States in order to ensure comparability with the two countries (Ireland and the United Kingdom) unable to cover road traffic accidents (see section entitled "Groups covered by the national reporting systems" above).



Finally, in the case of Member States that do not operate an insurance-based system, Eurostat estimates the number of accidents at work on the basis of the numbers of cases reported and detailed reporting levels (up-to-date breakdowns mainly by branch of economic activity) evaluated by the Member States and provided to Eurostat.

Nevertheless, the extent of the adjustment of the raw data actually needed for the latter countries is difficult to estimate. The discrepancies observed in the incidence rates (see definition above) of accidents at work between countries are therefore to some extent due to variations in reporting arrangements.

However, results for the main variables (such as sector of economic activity, age and sex, characteristics of the injury and its consequences, days lost) are highly consistent across all Member States, meaning that the aggregated data at EU level on the characteristics of accidents in terms of enterprises, victims, injury and consequences have a high quality and reliability level.

### Aggregation of data over several years to increase the relevance of data for fatal accidents at work

In addition to Phase I and Phase II variables, Phase III of the ESAW methodology is gradually being implemented from 2001 (the reference year) onwards. The volume of Phase III data provided by participating countries increases each year. Even by choosing 2005 as the year of reference for the analysis of these variables, the number of cases of fatal accidents at work remains quite small for some breakdowns. Therefore, in order to guarantee the accuracy and the relevance of results presented in this publication, occurrences of fatal accidents were aggregated over the period 2003-2005.

**Table 7.1**  
Number of fatal accidents at work from 2003 to 2005 by Phase III variables, EU\_V

Phase III variables	2003	2004	2005	Total
Workstation	959	1 272	2 379	4 610
Working environment	1 656	2 268	4 011	7 935
Working process	1 546	2 073	3 302	6 921
Specific Physical Activity	1 604	2 194	3 324	7 122
Material agent associated to SPA	1 282	1 809	2 704	5 795
Deviation	1 778	2 359	4 164	8 301
Material agent associated to Deviation	1 437	1 913	3 538	6 888
Contact - Mode of injury	1 788	2 419	4 341	8 548
Material agent associated to Contact	1 673	2 196	3 220	7 089

Source: Eurostat - ESAW

## Local unit of an enterprise

### Definition of the Local unit

This definition has relevance for the variables "economic activity of the employer" and "size of the enterprise". The "local unit" is a geographically identified location where the job is mainly carried out or can be said to be based. If a person works in more than one place (transport, construction, maintenance, surveillance, peripatetic work) or at home, the local unit is considered to be the place from where instructions emanate or from where the work is organised.

Normally, it consists of a single building, part of a building, or at most a self-contained group of buildings. The local unit of the enterprise therefore denotes the group of employees of the establishment who are geographically located at the same site.

A geographically identified place must be interpreted on a strict basis: two units belonging to the same enterprise at different locations (even if these local units are very close to each other) must be regarded as two discrete local units. However, a single local unit may be spread over several adjacent administrative areas. Moreover, the boundaries of the unit are determined by the boundaries of the site, which means for example that a public highway running through does not interrupt the continuity of the boundaries.



## Size of enterprise

The term “size of enterprise” can have various interpretations according to which database it is used in. For the ESAW methodology, however, this characteristic relates to the size of the local unit, as defined above. The term of “size of local unit” was therefore used in this publication to avoid any misunderstanding.

Moreover, the sector of activity “agriculture, hunting and forestry” (NACE A) has a high risk profile and comprises almost exclusively self-employed workers. A preliminary analysis was therefore carried out by comparing the distribution of Phase III variables by size of local unit:

- excluding NACE A in the computation process; and
- including all NACE branches.

The goal was to select the most appropriate and unbiased approach to present the results in the publication. In view of the general similarity between both distributions of local units (including or excluding NACE A), it was decided to conserve all NACE branches in the presentation of results.

## Accidents resulting in more than three days of absence from work

The Framework Directive specifically uses the concept of “absence from work of more than three working days”. However, as a large number of Member States are unable to make a distinction between working days and non-working days, and because absences from work are given in calendar days, the concept of “three calendar days”, or more simply “three days”, was used in the ESAW methodology.

The concept of “more” than three days of absence from work is to be understood in the following way in the ESAW methodology:

Only full working days of absence from work are considered, excluding the day of the accident. Consequently, “more than three days” means “at least four days”, which implies that only accidents with a resumption of work not before the fifth day after the day of the accident or later should be included. Following on from this, the “number of days lost” has to be counted beginning with four days lost if the resumption of work takes place the fifth day following the day of the accident, five days lost if the resumption of work takes place the sixth day, etc.

The number of days lost due to an accident at work is provided using a three-digit format, ranging from four to 182 days (inclusive) for accidents leading to less than six months’ absence. More general time frames for days lost are also provided should Member States be unable to provide an exact value. Finally, four additional code values are used for absences of six months or more and permanent incapacities, fatalities and unspecified cases. Furthermore, that ESAW data include all accidents at work where the person is unfit for work for more than three full days, including Saturdays, Sundays, public holidays, Bank holidays or other days where the person is not usually working. Only whole days are entered in the ESAW database. Victims of accidents at work incapacitated during at least six months (or 183 days) or in permanent incapacity are grouped under the same code in the ESAW database.

## Redistribution of unknowns

For some presentations of results, the class “unknown”, relating to the number of days lost, was redistributed among other classes according to their global distribution in the dataset.

Formula used for the class “4-6 days lost”:

$$N\_A01 = A01 + (UNK \times A01 / TOT)$$

with:

N\_A01: number of victims of accidents at work leading to 4-6 days lost with a redistribution of “unknown” codes;

A01: number of victims of accidents at work leading to 4-6 days lost;

UNK: number of victims of accidents at work leading to an unknown number of days lost;

TOT: total number of victims of non-fatal accidents at work leading to a known number of days lost.



### ***Number of absence days per accident***

In order to provide an annual number of absence days per accident, the median number of each class of days lost was multiplied by the associated number of victims for a given year. Then, the total number of days lost was computed and divided by the total number of accidents at work.

Formula used for the computation:

$$DLpa = [ (A01 \times 5) + (A02 \times 10) + (A03 \times 17) + (A04 \times 25) + (A05 \times 60) + (A06 \times 135) + (997 \times 270) ] / TOT$$

with:

DLpa: number of days lost per accident;

A01: number of victims of accidents at work leading to 4–6 days lost;

A02: number of victims of accidents at work leading to 7–13 days lost;

A03: number of victims of accidents at work leading to 14–20 days lost;

A04: number of victims of accidents at work leading to at least 21 days but less than 1 month lost;

A05: number of victims of accidents at work leading to at least 1 month but less than 3 months lost;

A06: number of victims of accidents at work leading to at least 3 months but less than 6 months lost;

997: number of victims of accidents at work leading to permanent incapacity or 183 or more days lost (6 months' absence or more). A value of 9 months (270 days) was used in the above calculations;

TOT: total number of victims of non-fatal accidents at work leading to a known number of days lost.



## Annex tables





## List of Annex tables

Table A1.1: .....	125
Number of accidents at work by economic activity, sex, age and year. EU-15, with more than 3 days' absence	
Table A1.2: .....	126
Number of fatal accidents at work by economic activity, sex, age and year, EU-15	
Table A1.3: .....	127
Incidence rate of accidents at work by economic activity, sex, age and year, EU-15, with more than 3 days' absence	
Table A1.4: .....	128
Incidence rate of fatal accidents at work by economic activity, sex, age and year, EU-15	
Table A1.5: .....	129
Incidence rate of accidents at work by size of local unit, year and severity, EU-15+NO	
Table A1.6: .....	130
Number of accidents at work by sector, years and number of days lost, EU-15+NO	
Table A1.7: .....	131
Number of accidents at work by type of injury, year and severity, EU-15+NO	
Table A1.8: .....	132
Structural indicators – Evolution of the standardised incidence rate of accidents at work by year 9 NACE branches, index 1998 = 100. Excluding road traffic and transport accidents in the course of work	
Table A1.9: .....	133
Number of accidents at work by economic activity and sex, 2005	
Table A1.10: .....	134
Number of accidents at work by occupation of the victim and sex, 2005	
Table A1.11: .....	135
Number of non-fatal accidents at work by occupation of the victim and sector of activity, EU-15, 2005	
Table A1.12: .....	136
Number of fatal accidents at work by occupation of the victim and sector of activity, EU-15, 2005	
Table A1.13: .....	137
Number of non-fatal accidents at work by part of body injured and type of injury, EU-15, 2005	
Table A1.14: .....	138
Number of fatal accidents at work by part of body injured and type of injury, EU-15, 2005	
Table A2.1: .....	139
Number of non-fatal accidents at work by deviation, EU_V, 2005	
Table A2.2: .....	140
Number of fatal accidents at work by deviation, EU_V, over the period 2003-2005	
Table A2.3: .....	141
Number of non-fatal accidents at work by contact – mode of injury, EU_V, 2005	
Table A2.4: .....	142
Number of fatal accidents at work by contact – mode of injury, EU_V, over the period 2003-2005	
Table A3.1: .....	143
Number of non-fatal accidents at work by specific physical activity, EU_V, 2005	
Table A3.2: .....	144
Number of fatal accidents at work by specific physical activity, EU_V, over the period 2003-2005	
Table A3.3: .....	145
Number of non-fatal accidents at work by working process, EU_V, 2005	
Table A3.4: .....	146
Number of fatal accidents at work by working process, EU_V, over the period 2003-2005	
Table A3.5: .....	147
Number of non-fatal accidents at work by working environment, EU_V, 2005	



Table A3.6: .....	148
Number of fatal accidents at work by working environment, EU_V, over the period 2003-2005	
Table A4.1: .....	149
Number of non-fatal accidents at work by deviation (two-digit level) and contact – mode of injury (one-digit level), EU_V, 2005	
Table A4.2: .....	150
Number of fatal accidents at work by deviation (two-digit level) and contact – mode of injury (one-digit level), EU_V, over the period 2003-2005	
Table A4.3: .....	151
Number of non-fatal accidents at work by contact – mode of injury (two-digit level) and deviation (one-digit level), EU_V, 2005	
Table A4.4: .....	152
Number of fatal accidents at work by contact – mode of injury (two-digit level) and deviation (one-digit level), EU_V, over the period 2003-2005	
Table A5.1: .....	153
Number of non-fatal accidents at work by material agent associated with the deviation and the variable deviation, EU_V, 2005	
Table A5.2: .....	157
Number of fatal accidents at work by material agent associated with the deviation and the variable deviation, EU_V, over the period 2003-2005	
Table A5.3: .....	161
Number of non-fatal accidents at work by material agent associated with the contact – mode of injury and the variable contact – mode of injury, EU_V, 2005	
Table A5.4: .....	165
Number of fatal accidents at work by material agent associated with the contact – mode of injury and the variable contact – mode of injury, EU_V, over the period 2003-2005	
Table A6.1: .....	169
Number of accidents at work by sector of activity and number of days lost; average age of victims, 2005	
Table A6.2: .....	170
Number of accidents at work by occupation of victims, size of local unit, sex and number of days lost; average age of victims, 2005	
Table A6.3: .....	171
Number of accidents at work by type of injury and number of days lost; average age of victims, 2005	
Table A6.4: .....	172
Number of accidents at work by deviation and number of days lost; average age of victims, EU_V	
Table A6.5: .....	173
Number of accidents at work by contact – mode of injury and number of days lost; average age of victims, EU_V	
Table A6.6: .....	174
Number of accidents at work by specific physical activity and number of days lost; average age of victims, EU_V	
Table A6.7: .....	175
Number of accidents at work by working process and number of days lost; average age of victims, EU_V	
Table A6.8: .....	176
Number of accidents at work by working environment and number of days lost; average age of victims, EU_V	
Table A6.9: .....	177
Number of accidents at work by Material Agent associated with the deviation and number of days lost; average age of victims, EU_V	
Table A6.10: .....	181
Number of accidents at work by Material Agent associated with the contact – mode of injury and number of days lost; average age of victims, EU_V	

**Table A1.1**  
**Number of accidents at work by economic activity, sex, age and year. EU-15, with more than 3 days' absence**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Evolution (%) 1995-2005
All NACE branches	4 820 451	4 757 611	4 620 395	4 678 586	4 786 898	4 815 629	4 702 295	4 408 616	4 176 286	3 976 093	3 983 881	-17.4
9 NACE branches <sup>(1)</sup>	4 010 491	3 963 702	3 894 210	3 947 552	4 058 272	4 078 455	3 976 954	3 688 403	3 485 050	3 312 867	3 279 812	-18.2
Males	3 278 277	3 209 750	3 153 967	3 191 385	3 251 269	3 252 664	3 170 928	3 036 492	2 862 119	2 721 641	2 688 182	-18.0
Females	578 239	599 966	585 775	602 190	633 899	667 023	663 910	651 215	622 310	590 603	591 039	2.2
18-24 years	848 725	667 968	652 151	673 149	707 120	725 056	693 029	625 532	568 524	526 728	512 790	-39.6
25-34 years	1 251 073	1 242 955	1 202 760	1 206 660	1 215 247	1 177 880	1 125 838	1 020 851	955 821	898 491	877 535	-29.9
35-44 years	837 259	872 712	873 193	901 507	945 924	1 007 349	1 001 287	945 744	907 107	875 334	871 956	4.1
45-54 years	685 471	706 850	708 585	717 266	731 519	719 025	708 320	676 149	640 962	616 535	628 020	-8.4
55-64 years	259 668	338 042	313 771	309 533	311 040	311 780	304 374	287 672	285 745	275 944	282 257	8.7
Agriculture, hunting and forestry	331 252	361 186	351 198	345 766	361 736	341 388	318 135	284 081	270 693	259 786	232 224	-29.9
Males	249 379	269 196	263 618	260 571	274 005	259 066	243 993	221 727	211 924	203 289	182 138	-27.0
Females	74 497	85 500	80 232	77 843	80 659	75 675	70 877	62 344	58 758	56 474	50 047	-32.8
Manufacturing	1 451 752	1 357 022	1 339 893	1 354 762	1 342 302	1 328 898	1 291 886	1 152 498	1 070 778	1 008 622	972 793	-33.0
Males	1 211 604	1 127 640	1 112 334	1 124 822	1 111 277	1 092 080	1 060 978	990 402	918 196	866 505	830 814	-31.4
Females	180 423	169 642	167 819	170 199	170 564	179 147	175 454	161 975	152 428	141 939	141 872	-21.4
Electricity, gas and water supply	19 964	19 734	20 239	19 505	16 459	17 125	15 521	20 639	20 973	20 297	20 488	2.6
Males	19 010	18 757	19 041	18 403	15 339	15 765	14 509	19 302	19 638	18 969	18 772	-1.3
Females	713	743	964	867	930	1 205	860	1 335	1 336	1 327	1 716	140.7
Construction	867 837	831 000	826 071	830 873	845 315	845 841	825 436	787 069	753 570	721 945	727 820	-16.1
Males	837 563	801 445	790 407	796 339	813 022	813 091	794 873	772 615	739 843	711 900	716 996	-14.4
Females	21 035	20 334	25 884	25 332	21 273	21 754	20 325	14 266	13 532	9 864	10 681	-49.2
Wholesale and retail repairs	507 607	491 424	483 731	498 926	525 071	542 168	532 306	543 498	516 166	491 272	498 887	-1.7
Males	364 980	350 412	346 134	355 704	369 333	380 570	371 372	382 344	357 173	338 286	343 220	-6.0
Females	119 814	118 179	114 810	120 373	131 123	141 468	143 018	161 059	158 907	152 952	155 610	29.9
Hotels and restaurants	177 572	176 472	180 859	187 850	201 328	213 511	206 702	200 722	197 381	192 461	197 174	11.0
Males	91 907	90 680	94 930	98 234	102 520	108 489	103 725	105 191	99 187	97 409	98 826	7.5
Females	82 411	82 507	82 651	86 307	95 076	102 659	101 120	95 528	98 177	95 046	98 345	19.3
Transport, storage and communication	412 293	438 973	436 954	440 143	446 649	449 487	440 659	345 219	315 673	315 945	316 866	-23.1
Males	365 868	380 004	378 615	379 392	381 493	384 022	376 677	300 065	278 923	273 164	276 699	-24.4
Females	34 747	47 291	46 676	49 105	52 872	53 622	53 081	45 148	36 716	42 755	40 139	15.5
Financial intermeditation, real estate, renting and business activities	242 214	240 411	255 265	269 727	319 412	340 038	346 310	354 678	339 815	302 539	313 560	29.5
Males	137 966	136 229	148 888	157 920	184 280	199 580	204 800	244 848	237 234	212 119	220 717	60.0
Females	64 599	64 531	66 739	72 164	81 402	91 492	99 176	109 561	102 457	90 246	92 630	43.4

(<sup>1</sup>) 9 NACE branches: A, D to K

NB: For some cases the sex or age is unknown. Therefore the total and the sum of categories may differ.

Source: Eurostat – ESAW



**Table A1.2**  
**Number of fatal accidents at work by economic activity, sex, age and year, EU-15**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Evolution (%) 1995-2005
<b>Including RTTA</b>												
All NACE branches	6 229	5 549	5 579	5 476	5 275	5 237	4 922	4 790	4 623	4 366	4 011	-35.6
9 NACE branches <sup>(1)</sup>	5 421	4 858	4 949	4 854	4 736	4 638	4 388	4 286	4 112	3 930	3 645	-32.8
Males	4 716	4 526	4 592	4 485	4 409	4 425	4 206	4 102	3 933	3 764	3 493	-25.9
Females	214	236	256	269	239	213	182	184	175	166	152	-29.0
18-24 years	540	449	431	423	417	412	329	372	309	314	319	-40.9
25-34 years	1 134	1 140	1 126	1 112	1 055	942	935	819	775	711	696	-38.6
35-44 years	1 105	1 085	1 150	1 127	1 086	1 153	1 062	1 073	1 005	975	889	-19.5
45-54 years	1 290	1 237	1 199	1 239	1 218	1 166	1 094	1 059	1 099	1 011	938	-27.3
55-64 years	706	705	764	693	695	717	680	680	659	683	599	-15.2
8 NACE branches <sup>(2)</sup>	4 462	4 017	4 056	3 971	3 844	3 753	3 508	3 495	3 415	3 225	2 991	-33.0
Agriculture, hunting and forestry	768	676	666	631	682	651	609	611	549	616	514	-33.1
Males	688	618	598	568	627	611	566	571	518	577	483	-29.8
Females	44	58	57	52	43	40	43	40	30	39	31	-29.5
Manufacturing	1 221	1 128	1 162	1 101	1 009	976	933	869	814	794	726	-40.5
Males	1 011	1 045	1 079	1 016	931	911	897	831	778	762	698	-31.0
Females	54	50	60	62	63	65	36	38	35	32	28	-48.1
Electricity, gas and water supply	55	67	44	39	37	42	46	48	50	51	39	-29.1
Males	54	65	42	35	36	40	44	47	47	50	38	-29.6
Females	:	:	:	:	:	:	:	:	:	:	:	:
Construction	1 491	1 349	1 361	1 330	1 266	1 279	1 220	1 188	1 240	1 112	1 054	-29.3
Males	1 417	1 322	1 300	1 274	1 227	1 274	1 211	1 185	1 232	1 107	1 050	-25.9
Females	8	14	31	26	13	5	9	:	8	5	4	-50.0
Wholesale and retail repairs	561	486	475	515	491	461	384	408	378	338	320	-43.0
Males	449	423	417	452	426	422	361	378	343	308	289	-35.6
Females	42	56	45	51	52	39	23	30	33	30	31	-26.2
Hotels and restaurants	84	53	67	66	75	73	49	51	61	61	62	-26.2
Males	67	41	52	44	63	62	34	37	48	46	47	-29.9
Females	16	12	15	22	12	11	15	14	13	15	15	-6.3
Transport, storage and communication	959	841	893	883	892	885	880	791	697	705	654	-31.8
Males	811	810	863	848	847	861	852	765	683	681	633	-21.9
Females	19	21	18	23	31	24	28	26	14	24	21	10.5
Financial intermediation, real estate, renting and business activities	282	258	281	289	284	271	267	320	323	253	276	-2.1
Males	219	202	241	248	252	244	241	288	284	233	255	16.4
Females	30	23	29	30	24	27	26	32	39	20	21	-30.0
<b>Excluding RTTA</b>												
8 NACE branches <sup>(2)</sup>	3 092	3 027	2 898	2 858	2 645	2 631	2 577	2 440	2 410	2 285	2 226	-28.0

RTTA (Road traffic and transport accidents) at work: road traffic accidents and accidents on board of any mean of transport in the course of work

(<sup>1</sup>) 9 NACE branches: A, D to K

(<sup>2</sup>) 8 NACE branches: A, D to K excluding transport branch

NB: For some cases the sex or age is unknown. Therefore the total and the sum of categories may differ.

For Ireland and the United Kingdom, RTTA data not available (except accidents in the transport branch other than traffic and means of transport)

Source: Eurostat – ESAW



**Table A1.3**  
**Incidence rate of accidents at work by economic activity, sex, age and year, EU-15, with more than 3 days' absence**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Evolution (%) 1995-2005
9 NACE branches <sup>(1)</sup>	4 266	4 229	4 106	4 089	4 088	4 016	3 841	3 529	3 329	3 176	3 098	-27.4
Males	5 534	5 458	5 291	5 268	5 253	5 160	4 918	4 616	4 431	4 189	3 956	-28.5
Females	1 864	1 924	1 865	1 890	1 909	1 952	1 899	1 807	1 746	1 627	1 558	-16.4
18-24 years	7 308	5 751	5 613	5 725	5 804	5 856	5 529	5 077	4 684	4 392	4 237	-42.0
25-34 years	4 419	4 390	4 210	4 179	4 118	4 029	3 881	3 590	3 426	3 299	3 217	-27.2
35-44 years	3 613	3 766	3 696	3 678	3 703	3 692	3 530	3 254	3 092	2 974	2 879	-20.3
45-54 years	3 450	3 558	3 548	3 543	3 521	3 424	3 252	3 073	2 897	2 761	2 794	-19.0
55-64 years	3 121	4 063	3 671	3 602	3 577	3 475	3 325	2 953	2 780	2 639	2 622	-16.0
Agriculture, hunting and forestry	6 123	6 771	6 647	6 790	7 060	6 625	6 159	5 193	5 048	5 068	4 560	-25.5
Males	7 097	7 637	7 443	7 557	7 897	7 512	6 972	6 091	5 967	5 978	5 255	-26.0
Females	4 141	4 983	4 870	5 061	5 193	4 768	4 577	3 606	3 469	3 529	3 077	-25.7
Manufacturing	4 962	4 660	4 607	4 492	4 471	4 421	4 298	3 895	3 701	3 564	3 505	-29.4
Males	6 067	5 653	5 576	5 421	5 389	5 289	5 141	4 855	4 598	4 433	4 156	-31.5
Females	2 183	2 079	2 077	2 049	2 053	2 142	2 097	1 975	1 915	1 828	1 827	-16.3
Electricity, gas and water supply	1 545	1 619	1 662	1 625	1 423	1 513	1 374	1 764	1 800	1 791	1 830	18.4
Males	1 883	1 975	1 986	1 973	1 711	1 783	1 659	2 131	2 207	2 163	2 127	13.0
Females	305	329	450	391	422	559	386	582	557	602	725	137.7
NACE E.40 <sup>(2)</sup>	1 368	1 383	1 461	1 410	1 215	1 216	1 072	1 283	1 394	1 379	1 400	2.3
NACE E.41 <sup>(3)</sup>	2 133	2 426	2 429	2 382	2 182	2 705	2 552	3 537	3 152	3 302	3 433	60.9
Construction	9 080	8 023	7 963	8 008	7 809	7 548	7 247	6 890	6 492	6 257	6 069	-33.2
Males	10 002	8 815	8 652	8 711	8 545	8 232	7 936	7 676	7 192	6 973	6 519	-34.8
Females	2 505	2 221	2 952	2 916	2 326	2 306	2 136	1 480	1 440	1 032	1 073	-57.2
Wholesale and retail repairs	2 523	2 431	2 394	2 451	2 496	2 524	2 438	2 469	2 297	2 191	2 184	-13.4
Males	3 541	3 404	3 410	3 495	3 540	3 573	3 448	3 511	3 243	3 088	2 904	-18.0
Females	1 350	1 317	1 281	1 334	1 384	1 449	1 431	1 596	1 536	1 467	1 411	4.5
Hotels and restaurants	3 645	3 532	3 365	3 590	3 711	3 790	3 551	3 282	3 219	3 041	2 943	-19.3
Males	4 255	4 099	4 040	4 352	4 468	4 456	4 125	3 947	3 753	3 557	3 303	-22.4
Females	3 265	3 154	2 946	3 149	3 300	3 479	3 291	2 979	3 051	2 862	2 653	-18.7
Transport, storage and communication	5 790	6 018	5 937	5 862	5 702	5 512	5 162	4 056	3 722	3 719	3 696	-36.2
Males	7 125	7 225	7 163	7 105	6 895	6 651	6 226	4 998	4 677	4 580	4 369	-38.7
Females	2 128	2 821	2 728	2 763	2 776	2 686	2 562	2 134	1 747	2 033	1 792	-15.8
Financial intermediation, real estate, renting and business activities	1 627	1 582	1 602	1 623	1 790	1 815	1 767	1 754	1 656	1 444	1 439	-11.6
Males	1 848	1 809	1 858	1 900	2 070	2 140	2 090	2 412	2 309	2 026	1 925	4.2
Females	969	935	938	978	1 024	1 095	1 136	1 214	1 121	958	897	-7.4

(<sup>1</sup>) 9 NACE branches: A, D to K

(<sup>2</sup>) Electricity, gas, steam and hot water supply

(<sup>3</sup>) Collection, purification and distribution of water

NB: For some cases the sex or age is unknown. Therefore the total and the sum of categories may differ.

Per 100 000 workers

Source: Eurostat – ESAW



**Table A1.4**  
**Incidence rate of fatal accidents at work by economic activity, sex, age and year, EU-15**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Evolution (%) 1995-2005
<b>Including RTTA</b>												
9 NACE branches <sup>(1)</sup>	5.9	5.3	5.2	5.0	4.8	4.6	4.2	4.1	3.9	3.8	3.4	-42.4
Males	8.0	7.7	7.7	7.4	7.1	7.0	6.6	6.3	6.1	5.9	5.1	-36.3
Females	0.7	0.8	0.8	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.4	-42.9
18-24 years	3.7	3.8	3.7	3.6	3.4	3.3	2.6	3.0	2.5	2.6	2.6	-29.7
25-34 years	4.1	4.2	3.9	3.9	3.6	3.2	3.2	2.9	2.8	2.6	2.6	-36.6
35-44 years	4.9	4.7	4.9	4.6	4.3	4.2	3.7	3.7	3.4	3.3	2.9	-40.8
45-54 years	6.9	6.3	6.0	6.1	5.9	5.6	5.0	4.8	5.0	4.5	4.2	-39.1
55-64 years	10.4	8.7	8.9	8.1	8.0	8.0	7.4	7.0	6.4	6.5	5.6	-46.2
Agriculture, hunting and forestry	13.8	12.9	12.6	12.4	13.3	12.6	11.8	11.2	10.2	12.0	10.1	-26.8
Males	18.6	17.5	16.9	16.5	18.1	17.7	16.2	15.7	14.6	17.0	13.9	-25.3
Females	2.4	3.4	3.5	3.4	2.8	2.5	2.8	2.3	1.8	2.4	1.9	-20.8
Manufacturing	4.2	3.9	4.0	3.7	3.4	3.2	3.1	2.9	2.8	2.8	2.6	-38.1
Males	5.0	5.2	5.4	4.9	4.5	4.4	4.3	4.1	3.9	3.9	3.5	-30.0
Females	0.6	0.6	0.7	0.7	0.8	0.8	0.4	0.5	0.4	0.4	0.4	-33.3
Electricity, gas and water supply	4.4	5.7	3.6	3.2	3.2	3.7	4.1	4.1	4.3	4.5	3.5	-20.5
Males	5.3	6.8	4.4	3.7	4.0	4.5	5.0	5.2	5.3	5.7	4.3	-18.9
Females	-	-	-	-	-	-	-	-	-	-	-	-
Construction	14.8	13.3	13.1	12.8	11.7	11.4	10.7	10.4	10.7	9.6	8.8	-40.5
Males	15.5	14.5	14.2	13.9	12.9	12.9	12.1	11.8	12.0	10.8	9.5	-38.7
Females	0.9	1.5	3.5	3.0	1.4	0.5	0.9	-	0.9	0.5	0.4	-55.6
Wholesale and retail repairs	2.9	2.5	2.4	2.5	2.3	2.1	1.8	1.9	1.7	1.5	1.4	-51.7
Males	4.4	4.1	4.1	4.4	4.0	4.0	3.4	3.5	3.1	2.8	2.4	-45.5
Females	0.5	0.6	0.5	0.6	0.5	0.4	0.2	0.3	0.3	0.3	0.3	-40.0
Hotels and restaurants	1.8	1.1	1.2	1.3	1.4	1.3	0.8	0.8	1.0	1.0	0.9	-50.0
Males	3.1	1.9	2.2	1.9	2.7	2.5	1.4	1.4	1.8	1.7	1.6	-48.4
Females	0.6	0.5	0.5	0.8	0.4	0.4	0.5	0.4	0.4	0.5	0.4	-33.3
Transport, storage and communication	13.7	12.0	12.1	11.8	11.4	10.9	10.3	9.3	8.2	8.3	7.6	-44.5
Males	15.3	15.4	16.3	15.9	15.3	14.9	14.1	12.7	11.5	11.4	10.0	-34.6
Females	1.2	1.3	1.1	1.3	1.6	1.2	1.4	1.2	0.7	1.1	0.9	-25.0
Financial intermeditation, real estate, renting and business activities	1.8	1.6	1.8	1.7	1.6	1.4	1.4	1.6	1.6	1.2	1.3	-27.8
Males	2.9	2.7	3.0	3.0	2.8	2.6	2.5	2.8	2.8	2.2	2.2	-24.1
Females	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.2	0.2	-50.0
<b>Excluding RTTA</b>												
8 NACE branches <sup>(2)</sup>	3.7	3.6	3.4	3.2	2.9	2.8	2.7	2.5	2.5	2.4	2.3	-37.8
18-24 years	2.4	2.6	1.8	1.8	1.5	2.9	2.3	2.6	2.4	2.3	2.5	4.2
25-34 years	2.7	2.8	1.9	1.9	1.6	2.8	2.8	2.5	2.5	2.2	2.2	-18.5
35-44 years	3.5	3.1	2.2	2.1	1.7	3.6	3.2	3.2	3.0	3.0	2.6	-25.7
45-54 years	4.5	4.2	2.8	3.0	2.6	5.0	4.4	4.4	4.5	4.1	3.7	-17.8
55-64 years	7.6	5.9	4.2	4.0	3.5	7.0	6.6	6.4	5.8	6.0	5.1	-32.9

RTTA (Road traffic and transport accidents) at work: road traffic accidents and accidents on board of any mean of transport in the course of work

(<sup>1</sup>) 9 NACE branches: A, D to K

(<sup>2</sup>) 8 NACE branches: A, D to K excluding transport branch

NB: For some cases the sex or age is unknown. Therefore the total and the sum of categories may differ.

Per 100 000 workers

For Ireland and the United Kingdom, RTTA data not available (except accidents in the transport branch other than traffic and means of transport)

Source: Eurostat – ESAW

**Table A1.5**  
**Incidence rate of accidents at work by size of local unit, year and severity, EU-15+NO**

	With more than 3 days of absence					With a fatal issue						
	2000	2001	2002	2003	2004	2005	2000	2001	2002	2003	2004	2005
<b>9 NACE branches<sup>(1)</sup></b>												
Total	4 019	3 839	3 527	3 327	3 171	3 096	4.6	4.2	4.1	3.9	3.8	3.4
1-9 employees	3 615	3 203	2 875	2 830	2 756	2 709	6.1	5.4	5.3	5.4	5.2	4.5
10-49 employees	4 686	4 253	4 133	4 077	4 033	3 781	5.4	4.5	4.5	4.6	4.4	4.0
50-249 employees	5 243	4 747	4 581	4 503	4 315	4 096	3.5	3.7	3.7	3.5	3.0	2.9
250 or + employees	4 202	3 630	3 271	3 080	3 088	3 393	2.9	2.5	2.1	1.8	1.8	2.2
<b>Agriculture, hunting and forestry</b>												
Total	6 610	6 144	5 183	5 038	5 056	4 557	12.8	11.9	11.2	10.4	12.2	10.3
1-9 employees	:	:	5 968	:	:	:	:	:	15.5	:	:	:
10-49 employees	:	:	5 697	:	:	:	:	:	9.3	:	:	:
50-249 employees	:	:	19 078	:	:	:	:	:	17.4	:	:	:
250 or + employees	:	:	18 095	:	:	:	:	:	9.0	:	:	:
<b>Manufacturing</b>												
Total	4 453	4 323	3 917	3 718	3 575	3 520	3.2	3.1	2.9	2.8	2.8	2.6
1-9 employees	4 608	4 313	3 698	3 732	3 658	3 377	5.0	4.8	4.6	4.6	4.5	3.7
10-49 employees	5 959	5 607	5 309	5 171	5 133	4 651	5.0	4.0	3.9	4.3	4.2	3.9
50-249 employees	5 042	4 642	4 419	4 291	4 109	4 044	2.5	2.4	2.5	2.5	2.4	2.3
250 or + employees	3 079	2 833	2 452	2 295	2 302	2 722	1.7	1.9	1.9	1.2	1.3	1.5
<b>Electricity, gas and water supply</b>												
Total	1 609	1 442	1 823	1 840	1 819	1 881	3.7	4.2	4.1	4.2	4.4	3.4
1-9 employees	:	:	778	906	958	1 172	:	:	3.4	:	:	:
10-49 employees	:	:	1 532	1 683	1 750	1 753	:	:	1.4	2.0	2.1	1.5
50-249 employees	:	:	2 363	2 488	2 504	2 518	:	:	1.5	4.7	4.4	2.5
250 or + employees	:	:	2 329	2 246	2 188	2 251	:	:	8.4	8.7	8.4	7.2
<b>Construction</b>												
Total	7 550	7 240	6 883	6 484	6 243	6 061	11.3	10.6	10.4	10.6	9.6	8.8
1-9 employees	7 743	6 709	6 331	6 313	6 190	6 404	12.8	11.2	11.4	12.3	10.9	10.9
10-49 employees	7 868	7 022	7 079	7 056	7 174	6 867	11.8	9.5	9.8	10.0	9.9	8.5
50-249 employees	8 669	7 729	7 902	7 770	7 747	6 814	9.0	11.2	11.7	10.8	9.2	8.4
250 or + employees	6 366	5 005	4 570	4 232	4 124	4 708	11.1	10.0	4.4	6.7	5.3	5.5
<b>Wholesale and retail trade</b>												
Total	2 510	2 425	2 454	2 283	2 177	2 170	2.1	1.7	1.8	1.7	1.5	1.4
1-9 employees	1 866	1 687	1 612	1 506	1 455	1 440	2.4	1.8	1.9	1.8	1.8	1.4
10-49 employees	3 447	3 134	3 314	3 188	3 063	2 975	3.0	2.2	2.5	2.3	2.0	2.0
50-249 employees	4 052	3 861	4 075	4 108	3 929	3 911	1.6	2.1	1.9	1.8	1.5	1.4
250 or + employees	6 037	5 306	5 811	5 535	5 807	6 216	2.4	1.5	1.5	1.1	0.8	2.0
<b>Hotels and restaurants</b>												
Total	3 772	3 532	3 268	3 203	3 023	2 927	1.3	0.8	0.8	1.0	1.0	0.9
1-9 employees	:	:	1 853	1 912	1 886	2 070	:	:	0.8	1.2	0.8	1.0
10-49 employees	:	:	3 856	3 880	3 803	3 655	:	:	0.5	0.7	0.7	0.6
50-249 employees	:	:	5 110	5 055	4 904	4 393	:	:	0.5	:	:	:
250 or + employees	:	:	24 823	27 219	25 883	17 191	:	:	3.9	:	6.5	:
<b>Transport, storage and communication</b>												
Total	5 515	5 149	4 053	3 731	3 723	3 704	10.8	10.2	9.2	8.2	8.2	7.6
1-9 employees	5 145	4 622	3 423	3 166	3 154	3 254	21.0	20.3	18.3	14.5	15.3	14.2
10-49 employees	5 278	4 823	4 103	3 713	3 801	3 871	11.9	11.3	11.3	10.9	11.1	9.3
50-249 employees	5 422	4 664	4 009	3 847	3 796	4 055	7.0	6.5	6.6	5.5	5.3	5.5
250 or + employees	6 196	5 254	4 169	4 096	4 475	3 996	5.3	3.8	2.1	2.7	3.4	2.9
<b>Financial intermediation; real estate, renting and business activities</b>												
Total	1 809	1 758	1 746	1 648	1 437	1 434	1.4	1.4	1.6	1.6	1.2	1.3
1-9 employees	897	855	827	875	742	722	1.5	1.2	1.5	1.4	1.3	1.3
10-49 employees	1 162	1 094	1 231	1 308	1 213	1 006	1.1	1.0	1.3	1.5	1.0	1.1
50-249 employees	3 549	3 371	3 377	3 359	3 073	2 638	1.9	2.6	2.6	2.6	1.6	1.6
250 or + employees	3 393	2 690	2 583	2 193	1 992	2 867	2.0	1.4	1.5	1.4	1.4	1.6

(<sup>1</sup>) 9 NACE branches: A, D to K

NB: Per 100 000 workers

Source: Eurostat – ESAW





**Table A1.7**  
**Number of accidents at work by type of injury, year and severity, EU-15+NO**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	Evolution (%) 1997-2005
<b>Non-fatal accidents leading to more than 3 days of absence</b>										
Wounds and superficial injuries	1 735 958	1 791 348	1 972 508	2 064 165	1 935 406	1 723 928	1 585 599	1 501 482	1 480 366	-14.7
Bone fractures	522 748	512 720	514 697	522 026	502 352	483 905	452 716	441 236	422 466	-19.2
Dislocations, sprains and strains	977 653	1 161 939	1 250 185	1 332 843	1 302 344	1 315 170	1 238 400	1 172 431	1 176 128	20.3
Traumatic amputations (Loss of body parts)	26 408	25 429	76 203	79 477	75 065	72 845	65 963	65 281	15 298	-42.1
Concussion and internal injuries	549 482	540 096	505 835	496 856	462 188	418 953	398 807	383 088	403 939	-26.5
Burns, scalds and frostbites	82 850	78 329	120 965	123 896	115 443	93 409	88 636	78 322	74 543	-10.0
Poisonings and infections	50 329	49 429	11 131	10 889	14 271	26 614	28 802	27 550	24 372	-51.6
Drowning and asphyxiation	5 991	8 039	3 430	3 266	2 625	2 296	2 490	2 447	2 097	-65.0
Effects of sound, vibration and pressure	874	960	2 252	2 350	4 930	1 666	2 362	2 812	2 614	199.1
Effects of temperature extremes, light and radiation	3 245	3 217	2 586	2 497	2 675	1 836	2 353	1 465	1 260	-61.2
Shock	659	1 276	8 880	12 218	9 013	9 083	11 282	12 800	14 454	2 093.3
Multiple injuries	7 883	9 053	9 143	51 945	62 531	68 083	68 652	65 844	68 368	767.3
Other <sup>(1)</sup>	170 396	156 041	166 854	127 998	119 634	96 716	77 667	113 558	96 032	-43.6
<b>Fatal accidents</b>										
Wounds and superficial injuries	709	747	729	802	586	512	453	436	399	-43.7
Bone fractures	1 152	1 087	1 035	1 002	813	574	752	740	726	-37.0
Dislocations, sprains and strains	90	78	35	30	24	22	15	22	21	-76.7
Traumatic amputations (Loss of body parts)	82	66	80	108	97	101	118	105	27	-67.1
Concussion and internal injuries	458	356	617	576	525	467	541	528	568	24.0
Burns, scalds and frostbites	101	73	119	119	108	65	68	68	75	-25.7
Poisonings and infections	47	39	16	20	35	76	139	136	122	159.6
Drowning and asphyxiation	112	106	147	133	91	101	112	119	127	13.4
Effects of sound, vibration and pressure	6	:	5	6	35	:	:	:	:	:
Effects of temperature extremes, light and radiation	29	31	:	6	6	11	6	10	:	:
Shock	39	30	75	62	63	56	59	56	59	51.3
Multiple injuries	629	551	488	782	934	1 218	798	726	835	32.8
Other <sup>(1)</sup>	953	1 091	1 252	1 127	950	839	812	823	637	-33.2

(<sup>1</sup>) Other specified injuries not included under other headings

Source: Eurostat – ESAW



**Table A1.8**  
**Structural indicators – Evolution of the standardised incidence rate of accidents at work by year**  
**9 NACE branches (1), index 1998 = 100**  
**Excluding road traffic and transport accidents in the course of work**

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Index of the number of fatal accidents at work per 100 thousand persons in employment (1998=100)												
EU-27	:	:	:	:	:	:	100	97	91	90	88	86
EU-15	122	116	113	106	100	91	88	85	80	78	75	74
Eurozone	123	113	110	102	100	88	86	83	78	78	73	72
BE	194	190	177	100	100	106	100	124	82	78	93	84
BG (3)(5)	122	116	120	116	100	96	100 <sup>b</sup>	104	85	83	84	85
CZ	110	103	112	116	100	76	96	96	87	84	78	71
DK	90	106	97	74	100	71	61	55	65	57	35	71
DE	168	136	159	123	100	109	95	89	112	105	100	82
EE		120	102	114	100	79	56	78	81	67	75	58
IE	66	71	56	120	100	:	:	:	100 <sup>b</sup>	121	84	117
EL	116	116	100	76	100	170	73	78	104	81	67	43
ES	127	127	107	115	100	91	85	81	79	67	59	64
FR	108	88	90	103	100	85	85	79	65	69	68	50
IT	106	96	82	84	100	68	66	62	42	57	50	52
CY	:	:	:	:	:	100	46 <sup>i</sup>	62 <sup>i</sup>	107 <sup>i</sup>	83 <sup>i</sup>	92 <sup>i</sup>	66 <sup>i</sup>
LV	:	:	:	:	100	115	90	140	123	66	98	74
LT	:	98	102	83	100	91	78	105	115	138	113	133
LU	:	113 <sup>j</sup>	271 <sup>i</sup>	184 <sup>i</sup>	100	40 <sup>i</sup>	149 <sup>i</sup>	37 <sup>i</sup>	52 <sup>i</sup>	70 <sup>i</sup>	20 <sup>i</sup>	57 <sup>i</sup>
HU	106	117	101	97	100	107	95	71	109	80	96	73
MT (6)	35 <sup>j</sup>	109 <sup>j</sup>	100 <sup>j</sup>	42 <sup>j</sup>	100	74 <sup>i</sup>	38 <sup>i</sup>	46 <sup>i</sup>	30 <sup>i</sup>	91 <sup>i</sup>	90 <sup>i</sup>	44 <sup>i</sup>
NL (6)	:	:	114	140	100	107	106	79	90	91	84	75
AT	104	131	118	104	100	100	100	94	100	94	107	94
PL (6)	:	:	:	109	100	83	96	92	89	90	86	81
PT	109	103	127	108	100	79	104	117	98	87	82	84
RO (3)	:	:	:	105	100	93	103	97	95	111	103	128
SI (6)	90	118	118	130	100	113	102	122	141	136	77	84
SK		96	109	81	100	89	71	71	65	75	64	64
FI	150	117	71	117	100	75	88	98 <sup>b</sup>	82	81	102	83
SE	162	177	162	169	100	85	85	105	91	89	81	131
UK(2)	106	100	119	100	100	88	106	92	85	70	90	88
NO(6)	:	:	:	:	100	56	88	74	72	75	88	102
TR (3)(5)	:	:	121	120	100	104	68 <sup>b</sup>	92	75	64	64	70
JP (3)(4)	130	135	132	114	100	109	103	98	91	90	88	82
US (3)(4)	121	111	108	106	100	98	93	93 <sup>i</sup>	88	89	91	89
Index of the number of serious accidents at work per 100 thousand persons in employment (1998=100)												
EU-27	:	:	:	:	:	:	100	96	88	84	80	78
Males	:	:	:	:	:	:	100	96	90	86	82	81
Females	:	:	:	:	:	:	100	98	94	90	86	85
EU-15	111	104	103	100	100	100	98	94	86	81	78	76
Males	113	105	104	100	100	100	98	93	88	83	80	75
Females	102	99	102	99	100	101	103	100	96	91	86	82

(1) 9 NACE branches: A, D to K (excluded 'Electricity, gas, water supply' in 1994)

(2) UK: Great Britain only

(3) Including road traffic and transports accidents in the course of work

(4) Sources other than ESAW: US: Bureau of Labour Statistics – US Department of Labour; JP: Annual Labour Standards Inspection Report and Annual Worker's Compensation Report, compiled by Japan Occupational Safety and Health Resource Center

(5) Incidence rate calculated for the total of all NACE branches

(6) For NL the incidence rate for fatalities cannot be calculated before 1997 due to high underestimation. The notification of an accident as fatal ranges from national registration procedures where the accident is registered as fatal when the victim died the same day. In practice, deaths occur in general within few days after the day of the accident and only the limitation to the "same day as the accident" involves a significant underestimation.

b: Break in time series

i: Little significant owing to small number of fatal accidents at work

Source: Eurostat – ESAW

**Table A1.9**  
Number of accidents at work by economic activity and sex, 2005

	Labour Force (x 1 000)				Fatal accident at work				Non-fatal accident at work	
	EU-15		EU-27		EU-15		EU-27		EU-15	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
All NACE branches	83 656	66 650	100 607	81 694	3 811	200	5 404	316	3 043 602	938 914
Agriculture, hunting and forestry	3 466	1 627	4 218	1 905	483	31	612	38	182 138	50 047
Agriculture, hunting and related service activities	3 255	1 598	3 830	1 848	410	28	477	34	161 713	47 672
Forestry, logging and related service activities	211	29	388	57	73	.	135	4	20 425	2 375
Fishing	68	22	88	27	26	.	31	.	6 050	429
Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing	68	22	88	27	26	.	31	.	6 050	429
Mining and quarrying	299	37	715	98	52	.	117	.	18 423	581
Mining and quarrying of energy producing materials	122	16	448	67	12	.	56	.	6 378	301
Mining and quarrying, except of energy producing materials	178	21	267	30	40	.	61	.	12 045	280
Manufacturing	19 992	7 764	25 149	11 369	698	28	1 091	70	830 778	141 872
Manufacture of food products, beverages and tobacco	1 988	1 367	2 715	1 970	94	7	150	13	111 961	48 710
Manufacture of textiles and textile products	592	988	825	2 090	14	4	21	23	18 090	11 922
Manufacture of leather and leather products	166	170	231	325	4	.	8	.	4 899	2 589
Manufacture of wood and wood products	700	135	1 093	229	59	.	96	.	53 327	3 988
Manufacture of pulp, paper and paper products; publishing and printing	1 501	834	1 710	1 011	27	.	42	.	42 613	12 773
Manufacture of coke, refined petroleum products and nuclear fuel	142	31	189	47	.	.	4	.	875	50
Manufacture of chemicals, chemical products and man-made fibres	1 256	645	1 451	811	33	6	61	9	21 762	7 298
Manufacture of rubber and plastic products	952	350	1 196	472	16	.	39	.	42 610	8 294
Manufacture of other non-metallic mineral products	876	234	1 157	355	93	.	131	.	58 338	4 955
Manufacture of basic metals and fabricated metal products	3 495	621	4 429	815	178	.	257	5	224 461	12 607
Manufacture of machinery and equipment n.e.c.	2 493	554	3 018	697	74	.	100	.	96 640	5 799
Manufacture of electrical and optical equipment	1 972	870	2 387	1 240	29	.	50	.	34 453	8 872
Manufacture of transport equipment	2 579	492	3 042	645	29	.	56	.	61 504	6 554
Manufacturing n.e.c.	1 281	472	1 704	663	47	.	76	5	59 245	7 461
Electricity, gas and water supply	883	237	1 454	409	38	.	85	.	18 772	1 716
Electricity, gas, steam and hot water supply	694	188	1 138	317	29	.	67	.	11 314	1 033
Collection, purification and distribution of water	188	49	316	92	9	.	18	.	7 458	683
Construction	10 998	996	13 002	1 207	1 050	4	1 460	6	716 996	10 681
Wholesale and retail trade	11 817	11 027	13 638	13 502	276	31	393	48	334 683	154 358
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	2 795	657	3 275	770	76	.	93	4	91 961	5 148
Wholesale trade and commission trade, except of motor vehicles and motorcycles	3 757	1 892	4 352	2 276	126	9	198	21	117 297	24 366
Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	5 265	8 478	6 011	10 455	74	19	102	23	125 425	124 844
Hotels and restaurants	2 992	3 707	3 344	4 327	47	15	56	16	98 546	98 117
Transport, storage and communication	6 334	2 240	7 988	2 885	633	21	866	30	276 699	40 138
Land transport; transport via pipelines	2 907	456	4 067	705	529	11	703	14	165 476	10 388
Water transport	77	25	139	32	9	.	18	.	4 024	761
Air transport	211	145	237	161	5	.	6	.	9 027	4 218
Supporting and auxiliary transport activities; activities of travel agencies	1 651	815	1 798	893	77	.	107	.	69 894	9 128
Post and telecommunications	1 489	799	1 746	1 094	13	7	32	11	28 278	15 643
Financial intermediation	2 573	2 575	2 783	3 017	15	.	25	8	8 415	10 794
Financial intermediation, except insurance and pension funding	1 635	1 634	1 769	1 953	9	.	18	4	5 361	7 201
Insurance and pension funding, except compulsory social security	477	541	530	639	.	.	.	4	2 397	2 722
Activities auxiliary to financial intermediator	461	400	485	425	5	.	5	.	657	871
Real estate, renting and business activities	8 892	7 752	9 819	8 458	240	18	308	24	212 191	81 797
Real estate activities	789	845	905	970	21	.	32	.	12 292	5 685
Renting of machinery and equipment without operator and of personal and household goods	289	127	305	135	14	.	17	.	9 990	1 082
Computer and related activities	1 853	574	2 006	625	5	.	9	.	5 867	2 360
Research and development	399	283	470	345	.	.	6	.	3 568	1 466
Other business activities	5 561	5 923	6 134	6 383	197	14	244	19	180 474	71 204
Public administration and defence; compulsory social security	5 225	4 905	6 634	6 092	58	10	83	21	89 797	68 495
Education	2 842	6 551	3 488	8 744	11	5	32	7	27 817	39 119
Health and social work	3 317	11 731	3 739	13 514	24	15	38	17	69 470	180 222
Other community, social and personal service activities	3 441	4 059	4 006	4 665	98	8	138	14	102 613	41 973
Sewage and refuse disposal, sanitation and similar activities	621	123	818	195	48	.	65	.	40 362	3 586
Activities of membership organizations n.e.c.	596	856	659	927	8	.	16	4	8 632	7 350
Recreational, cultural and sporting activities	1 553	1 390	1 785	1 680	25	.	35	4	35 610	13 557
Other service activities	670	1 690	743	1 863	17	5	22	5	18 009	17 480
Private households with employed persons	221	1 197	228	1 242	6	6	6	6	2 831	6 557
Extra-territorial organizations and bodies	75	47	80	50	.	.	.	.	503	189

NB: Because of the rounding used in the computation of breakdowns and missing values for the sector of activity and the sex, the sum of categories may differ slightly.

Source: Eurostat – ESAW/LFS



**Table A1.10**  
**Number of accidents at work by occupation of the victim and sex, 2005**

	Labour Force (x 1 000)				Fatal accident at work				Non-fatal accident at work	
	EU-15		EU-27		EU-15		EU-27		EU-15	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
<b>All occupations of victims</b>	<b>83 656</b>	<b>66 650</b>	<b>100 607</b>	<b>81 694</b>	<b>3 811</b>	<b>200</b>	<b>5 404</b>	<b>316</b>	<b>3 043 602</b>	<b>938 914</b>
Legislators, senior officials and managers	8 084	3 680	9 019	4 257	158	10	210	18	44 082	14 434
Legislators and senior officials	160	75	225	101	:	:	:	:	977	688
Corporate managers	5 034	2 138	5 726	2 579	74	:	118	9	19 078	7 829
General managers	2 889	1 467	3 066	1 577	63	5	71	5	19 019	4 795
Professionals	11 472	9 274	13 307	12 103	40	10	104	30	36 760	39 402
Physical, mathematical and engineering science professionals	4 456	833	5 120	1 051	22	:	53	4	11 400	1 489
Life science and health professionals	1 210	1 300	1 395	1 778	7	:	10	5	8 109	17 284
Teaching professionals	2 404	4 204	2 798	5 438	7	4	17	5	5 600	11 839
Other professionals	3 357	2 907	3 949	3 806	4	:	23	16	5 247	5 219
Technicians and associate professionals	12 398	13 285	14 313	16 134	98	20	185	38	93 654	106 540
Physical and engineering science associate professionals	5 003	1 050	5 920	1 414	36	:	81	6	31 300	4 642
Life science and health associate professionals	815	3 435	939	4 093	6	11	13	14	12 440	49 708
Teaching associate professionals	472	1 543	522	1 779	9	:	13	:	3 888	10 045
Other associate professionals	6 107	7 257	6 932	8 849	47	9	74	18	42 585	28 058
Clerks	5 791	13 035	6 536	14 999	74	16	97	24	93 694	84 283
Office clerks	4 942	10 412	5 588	11 882	46	12	64	19	74 358	50 007
Customer service clerks	850	2 623	948	3 115	28	4	32	5	14 726	26 452
Service workers and shop and market sales workers	6 058	14 382	7 343	17 153	79	30	123	40	198 051	276 910
Personal and protective services workers	3 899	9 335	4 745	10 516	51	19	83	23	124 021	172 612
Models, salespersons and demonstrators	2 159	5 047	2 597	6 636	27	11	35	14	56 381	89 146
Skilled agricultural and fishery workers	2 180	919	2 386	1 032	384	21	424	22	171 209	38 137
Craft and related trades workers	18 880	1 794	23 795	3 000	1 141	14	1 695	31	1 174 202	62 910
Extraction and building trades workers	8 876	324	10 512	363	684	:	916	:	570 619	8 061
Metal, machinery and related trades workers	7 277	232	9 777	377	339	:	616	4	388 854	10 562
Precision, handicraft, printing and related trades workers	765	257	897	363	17	:	27	:	37 454	4 778
Other craft and related trades workers	1 808	916	2 454	1 830	54	4	85	18	113 500	32 844
Plant and machine operators and assemblers	10 578	2 038	13 904	3 154	1 062	28	1 547	43	596 045	73 539
Stationary-plant and related operators	1 402	188	1 918	297	119	7	179	8	92 354	14 725
Machine operators and assemblers	3 368	1 574	4 179	2 526	229	10	271	21	230 751	47 997
Drivers and mobile-plant operators	5 714	228	7 713	280	714	11	1 097	14	251 744	10 766
Elementary occupations	7 743	7 956	9 273	9 552	533	28	775	47	499 755	197 074
Sales and services elementary occupations	3 362	6 562	4 026	7 784	111	16	152	22	151 508	133 682
Agricultural, fishery and related labourers	563	319	705	391	68	:	106	10	25 770	8 863
Labourers in mining, construction, manufacturing and transport	3 756	1 057	4 480	1 356	314	7	475	13	303 153	48 747

NB: Because of the rounding used in the computation of breakdowns and missing values for the occupation classification and the sex, the sum of categories may differ slightly.

Source: Eurostat – ESAW/LFS



**Table A1.11**

Number of non-fatal accidents at work by occupation of the victim and sector of activity, EU-15, 2005

	All INACE branches	Agriculture, hunting and forestry	Fishing	Mining and quarrying	Manufacturing	Electricity, gas and water supply	Construction	Wholesale and retail trade	Hotels and restaurants	Transport, storage and communication	Financial intermediation	Real estate, renting and business activities	Public administration and defence; compulsory social security	Education	Health and social work	Other community, social and personal service activities	Private households with employed persons	Extra-territorial organizations and bodies
All occupations of victims	3 983 882	232 224	6 479	19 006	972 756	20 488	727 820	489 097	196 667	316 866	19 209	294 202	158 301	67 012	250 050	144 722	9 388	692
Legislators, senior officials and managers	58 547	1 336	9	173	8 671	80	7 316	12 656	10 502	5 292	613	3 357	2 061	815	2 557	1 930	23	7
Legislators and senior officials	1 665	23	:	:	50	:	35	55	14	51	18	37	924	130	216	101	:	4
Corporate managers	26 908	560	:	100	3 668	33	2 381	5 901	3 268	4 349	446	1 725	718	604	1 412	1 382	21	:
General managers	23 844	231	6	70	3 911	18	4 397	5 562	6 860	544	132	841	97	56	177	381	:	:
Professionals	76 193	768	5	96	6 076	257	2 757	2 260	515	694	1 020	6 475	11 535	15 467	20 950	5 342	48	8
Physical, mathematical and engineering science professionals	12 888	74	:	81	3 783	211	2 050	987	68	370	105	3 039	681	248	240	646	44	:
Life science and health professionals	25 417	351	:	:	431	:	101	432	141	51	55	283	5 141	358	16 883	1 139	:	:
Teaching professionals	17 441	29	:	:	93	19	24	175	116	29	6	269	2 661	11 901	1 450	592	:	:
Other professionals	10 470	99	:	14	863	24	281	666	178	244	236	1 401	1 545	434	1 692	2 703	:	:
Technicians and associate professionals	200 446	3 370	256	293	18 633	913	4 950	19 018	2 077	5 961	3 902	12 878	13 547	10 243	76 166	24 503	73	23
Physical and engineering science associate professionals	35 992	117	124	257	11 549	551	3 293	3 974	320	3 079	227	5 640	1 873	897	1 058	2 254	:	:
Life science and health associate professionals	62 308	698	:	5	1 395	190	68	1 168	320	171	31	691	2 779	893	50 934	2 734	43	:
Teaching associate professionals	13 966	5	57	:	93	8	30	98	126	473	62	160	1 192	5 560	5 425	570	10	7
Other associate professionals	70 650	2 550	72	31	5 350	164	1 321	13 271	1 311	1 885	3 581	6 379	7 251	2 381	5 050	18 926	19	13
Clerks	178 060	430	34	212	23 397	1 177	4 655	47 292	2 659	34 728	8 180	17 967	17 964	2 496	6 586	5 836	9	41
Office clerks	124 443	309	32	158	18 963	569	3 040	29 873	838	29 657	3 300	11 892	13 601	1 801	3 846	3 580	:	36
Customer service clerks	41 183	101	:	49	3 626	342	1 339	16 049	1 505	4 236	4 332	4 075	1 968	270	1 214	1 696	:	4
Service workers and shop and market sales workers	475 096	2 560	43	115	17 476	250	1 562	138 822	126 073	11 653	1 726	18 458	39 515	11 857	77 525	18 422	1 857	46
Personal and protective services workers	296 748	1 839	31	70	4 474	222	922	9 658	114 667	9 921	526	13 236	33 368	11 739	75 793	15 437	1 852	40
Models, salespersons and demonstrators	145 546	78	12	45	11 662	25	323	121 404	5 085	858	298	1 945	144	118	238	965	4	5
Skilled agricultural and fishery workers	209 353	167 888	4 325	83	8 848	135	7 707	3 508	440	2 123	12	2 813	3 124	925	1 999	3 826	841	8
Craft and related trades workers	1 237 316	17 750	278	10 094	436 653	8 521	508 944	117 357	5 938	19 712	204	62 933	10 774	5 238	5 909	11 959	518	98
Extraction and building trades workers	578 763	956	69	8 412	64 465	4 165	437 419	10 102	1 280	2 632	44	29 278	6 984	2 615	2 432	4 475	442	71
Metal, machinery and related trades workers	399 505	1 959	118	1 579	216 591	3 880	46 210	73 593	884	12 840	92	25 852	2 403	1 572	1 508	4 358	68	19
Precision, handicraft, printing and related trades workers	42 237	40	:	51	35 737	67	1 435	2 184	53	303	15	1 123	203	145	147	316	4	:
Other craft and related trades workers	146 369	607	78	51	104 631	143	4 678	23 645	3 398	925	52	3 900	627	531	697	1 060	4	5
Plant and machine operators and assemblers	669 749	4 269	578	5 471	287 911	4 234	58 088	63 877	9 663	153 806	593	32 798	8 355	1 145	8 880	19 521	41	37
Stationary-plant and related operators	107 110	528	12	1 477	66 644	2 102	8 594	6 490	2 136	4 880	181	5 457	1 895	282	2 076	2 944	:	:
Machine operators and assemblers	278 791	1 140	94	1 130	187 481	1 356	22 712	20 707	4 321	8 563	307	13 991	2 942	583	3 500	4 896	8	9
Drivers and mobile-plant operators	262 602	2 601	472	2 857	31 569	776	25 218	35 126	3 206	128 490	105	12 010	2 832	280	3 301	10 721	32	25
Elementary occupations	697 096	30 995	856	2 107	125 407	2 357	109 492	64 928	33 272	68 068	1 281	116 387	36 762	11 821	36 898	44 850	3 862	168
Sales and services elementary occupations	285 292	966	33	169	21 562	1 429	5 767	21 881	29 787	23 701	1 110	73 371	25 311	9 953	26 473	36 834	3 599	118
Agricultural, fishery and related labourers	34 643	27 674	590	117	1 051	58	265	968	79	162	7	535	1 796	94	182	899	34	6
Labourers in mining, construction, manufacturing and transport	352 055	1 702	232	1 712	93 860	799	99 748	39 871	2 208	42 848	130	39 011	8 489	1 465	9 339	6 175	203	41

NB: Because of the rounding used in the computation of breakdowns and missing values for the occupation classification and the sector of activity, the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A1.12**  
**Number of fatal accidents at work by occupation of the victim and sector of activity, EU-15, 2005**

	All NACE branches	Agriculture, hunting and forestry	Fishing	Mining and quarrying	Manufacturing	Electricity, gas and water supply	Construction	Wholesale and retail trade	Hotels and restaurants	Transport, storage and communication	Financial intermediation	Real estate, renting and business activities	Public administration and defence, compulsory social security	Education	Health and social work	Other community, social and personal service activities	Private households with employed persons	Extrajuridical organizations and bodies
All occupations of victims	4 011	514	27	52	726	39	1 054	307	62	654	18	258	68	16	39	106	12	:
Legislators, senior officials and managers	168	14	:	:	29	:	25	32	8	25	4	19	:	:	:	5	:	:
Legislators and senior officials	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Corporate managers	77	4	:	:	15	:	11	13	:	20	:	7	:	:	:	4	:	:
General managers	68	10	:	:	9	:	11	19	5	:	:	7	:	:	:	:	:	:
Professionals	50	:	:	:	7	:	5	:	:	:	:	10	7	5	8	:	:	:
Physical, mathematical and engineering science professionals	23	:	:	:	5	:	5	:	:	:	:	9	:	:	:	:	:	:
Life science and health professionals	10	:	:	:	:	:	:	:	:	:	:	:	:	:	7	:	:	:
Teaching professionals	11	:	:	:	:	:	:	:	:	:	:	:	5	5	:	:	:	:
Other professionals	6	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Technicians and associate professionals	118	:	:	:	17	:	7	27	:	13	:	21	6	:	9	7	:	:
Physical and engineering science associate professionals	36	:	:	:	9	:	4	:	:	8	:	7	:	:	:	:	:	:
Life science and health associate professionals	17	:	:	:	:	:	:	6	:	:	:	:	:	:	5	:	:	:
Teaching associate professionals	9	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Other associate professionals	56	:	:	:	7	:	5	18	:	:	:	11	4	:	:	:	:	:
Clerks	90	:	:	:	22	:	7	15	:	17	9	9	4	:	:	4	:	:
Office clerks	58	:	:	:	12	:	5	10	:	14	4	6	:	:	:	:	:	:
Customer service clerks	32	:	:	:	10	:	:	5	:	:	5	:	:	:	:	:	:	:
Service workers and shop and market sales workers	109	:	:	:	4	:	:	33	25	6	:	10	11	:	7	7	:	:
Personal and protective services workers	70	:	:	:	:	:	:	4	20	5	:	9	11	:	7	7	:	:
Models, salespersons and demonstrators	38	:	:	:	:	:	:	29	5	:	:	:	:	:	:	:	:	:
Skilled agricultural and fishery workers	405	328	22	:	12	:	17	9	:	4	:	:	:	:	:	4	:	:
Craft and related trades workers	1 155	55	:	23	275	11	621	61	:	19	:	59	4	:	:	7	:	:
Extraction and building trades workers	685	4	:	19	60	5	542	5	:	:	:	31	:	:	:	4	:	:
Metal, machinery and related trades workers	340	:	:	:	162	6	73	44	:	12	:	26	:	:	:	:	:	:
Precision, handicraft, printing and related trades workers	18	:	:	:	14	:	18	:	:	:	:	:	:	:	:	:	:	:
Other craft and related trades workers	58	:	:	:	39	:	5	11	:	:	:	:	:	:	:	:	:	:
Plant and machine operators and assemblers	1 090	17	:	16	246	7	148	78	7	475	:	41	5	:	:	24	:	:
Stationary-plant and related operators	126	:	:	6	63	5	24	5	:	5	:	10	:	:	:	4	:	:
Machine operators and assemblers	239	:	:	:	110	:	51	22	4	18	:	9	:	:	:	8	:	:
Drivers and mobile-plant operators	725	13	:	8	73	:	73	51	:	452	:	22	4	:	:	12	:	:
Elementary occupations	561	71	:	8	79	:	172	35	12	46	:	68	13	:	6	36	:	:
Sales and services elementary occupations	127	:	:	:	13	:	127	9	12	10	:	37	5	:	:	26	:	:
Agricultural, fishery and related labourers	71	65	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Labourers in mining, construction, manufacturing and transport	321	:	:	8	60	:	152	21	:	36	:	26	4	:	:	5	:	:

NB: Because of the rounding used in the computation of breakdowns and missing values for the occupation classification and the sector of activity, the sum of categories may differ slightly.

Source: Eurostat – ESAW

**Table A1.13**  
**Number of non-fatal accidents at work by part of body injured and type of injury, EU-15, 2005**

	All types of injury	Wounds and superficial injuries	Bone fractures	Dislocations, sprains and strains	Traumatic amputations (Loss of body parts)	Concussion and internal injuries	Burns, scalds and frostbites	Poisonings and infections	Drowning and asphyxiation	Effects of sound, vibration and pressure	Effects of temperature extremes, light and radiation	Shock	Multiple injuries	Other specified injuries
All parts of body	3 983 882	1 452 874	417 214	1 163 896	14 615	403 940	72 782	24 174	2 098	2 613	1 260	12 679	68 368	80 817
Head	293 526	186 146	12 643	2 881	128	39 411	13 094	7 603	76	2 186	859	719	3 308	8 074
Head (Caput), brain and cranial nerves and vessels	91 302	53 778	3 180	766	5	29 245	425	879	:	:	5	152	868	818
Facial area	53 106	36 581	4 679	387	8	2 808	3 751	1 896	11	79	112	59	1 005	1 001
Eye(s)	94 102	70 647	512	414	22	3 263	8 178	4 450	4	32	725	50	391	4 026
Ear(s)	5 658	2 224	6	148	13	314	143	224	:	2 025	:	4	29	341
Teeth	6 089	3 863	652	61	77	308	17	110	:	:	:	:	16	829
Head, multiple sites affected	1 875	875	102	90	:	265	74	4	:	5	4	24	353	45
Other	9 131	3 252	2 985	175	:	1 795	298	24	9	18	:	155	122	267
Neck, inclusive spine and vertebra in the neck	100 002	12 365	1 524	75 376	:	5 284	456	277	36	27	6	125	526	2 447
Neck, inclusive spine and vertebra in the neck	67 430	6 522	1 226	53 568	:	3 526	273	264	14	9	:	33	252	1 238
Other	4 674	860	50	2 931	:	270	76	12	18	5	:	15	53	285
Back, including spine and vertebra in the back	432 480	80 021	13 331	265 149	17	51 248	918	115	5	79	25	268	2 093	11 404
Back, including spine and vertebra in the back	243 462	34 166	10 736	147 917	8	40 793	754	92	:	24	6	77	1 181	4 512
Other	29 842	6 166	461	17 493	5	2 611	66	8	4	12	11	55	114	2 176
Torso and organs	175 109	54 836	36 626	52 076	27	18 243	1 404	1 904	733	37	7	258	1 787	2 895
Rib cage, ribs including joints and shoulder blades	102 960	30 967	27 751	31 110	:	9 142	218	272	35	23	:	127	718	1 101
Chest area including organs	6 292	1 452	391	993	:	618	218	1 215	655	4	:	33	50	511
Pelvic and abdominal area including organs	24 312	6 917	1 680	6 663	18	7 106	465	348	11	:	:	16	158	585
Torso, multiple sites affected	3 270	981	297	1 328	:	233	73	13	:	4	:	20	160	59
Other	3 897	1 251	315	1 306	:	454	78	24	6	:	:	41	28	304
Upper Extremities	1 569 492	811 321	219 021	282 865	13 370	146 876	37 247	9 036	59	167	133	599	14 656	15 061
Shoulder and shoulder joints	146 312	32 648	8 904	70 589	54	27 011	960	152	:	16	4	88	833	2 976
Arm, including elbow	160 538	68 199	26 749	34 969	88	13 417	8 536	2 688	:	51	36	123	1 333	2 451
Hand	306 709	190 699	31 436	26 635	689	27 329	16 944	3 633	:	35	54	137	2 761	3 226
Finger(s)	688 186	436 397	94 711	53 393	12 370	67 078	6 425	2 091	:	40	27	153	6 997	4 485
Wrist	148 644	35 544	36 028	60 552	26	10 422	1 710	445	:	15	:	42	1 002	1 132
Multiple sites affected	6 676	1 923	768	2 288	10	135	571	10	4	:	5	9	596	142
Other	2 800	966	287	1 075	6	166	85	:	:	:	:	9	19	145
Lower Extremities	1 040 937	261 486	127 773	459 351	1 015	136 931	13 878	3 710	8	53	43	1 160	10 570	11 841
Hip and hip joint	29 338	10 633	2 156	6 612	5	8 480	463	62	:	5	:	13	106	544
Leg, including knee	359 607	123 532	22 992	140 446	152	52 824	3 242	1 189	:	29	11	225	3 054	6 878
Ankle	284 769	24 121	27 572	206 557	14	20 089	876	192	:	:	4	16	1 876	1 248
Foot	217 969	69 134	40 365	68 578	100	26 248	5 278	891	:	9	13	134	2 004	2 094
Toe(s)	51 797	13 968	26 509	4 017	203	5 498	218	46	:	4	:	32	525	322
Multiple sites affected	5 952	1 861	876	1 782	4	161	246	:	:	:	:	:	815	75
Other	6 366	1 632	461	3 278	7	502	93	7	:	:	:	15	32	266
Whole body and multiple sites	131 872	39 126	4 941	23 138	44	4 080	4 737	1 321	797	14	155	7 228	34 875	5 718
Whole body (Systemic effects)	12 172	407	44	136	:	1 848	226	758	759	:	51	5 486	149	1 319
Other	57 194	20 713	3 692	10 953	32	1 780	2 528	85	21	:	15	221	14 235	744
Other Parts of body injured	17 503	3 008	469	1 027	9	788	301	114	98	29	19	1 592	418	8 880

NB: Because of the rounding used in the computation of breakdowns and missing values for the part of body classification and the type of injury, the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A1.14**  
**Number of fatal accidents at work by part of body injured and type of injury, EU-15, 2005**

	All types of injury	Wounds and superficial injuries	Bone fractures	Dislocations, sprains and strains	Traumatic amputations (Loss of body parts)	Concussion and internal injuries	Burns, scalds and frostbites	Poisonings and infections	Drowning and asphyxiation	Effects of sound, vibration and pressure	Effects of temperature extremes, light and radiation	Shock	Multiple injuries	Other specified injuries
All parts of body	4 011	391	723	21	27	568	77	125	127	:	:	60	835	603
Head	1 069	182	474	:	6	233	:	33	:	:	:	:	54	36
Head (Caput), brain and cranial nerves and vessels	842	150	441	:	:	157	:	30	:	:	:	:	14	23
Facial area	11	:	:	:	:	:	:	:	:	:	:	:	:	:
Eye(s)	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Ear(s)	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Teeth	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Head, multiple sites affected	38	:	:	:	:	17	:	:	:	:	:	:	15	:
Other	5	:	:	:	:	:	:	:	:	:	:	:	:	:
Neck, inclusive spine and vertebra in the neck	86	13	51	4	:	6	:	:	:	:	:	:	:	7
Neck, inclusive spine and vertebra in the neck	68	10	46	:	:	5	:	:	:	:	:	:	:	:
Other	5	:	:	:	:	:	:	:	:	:	:	:	:	:
Back, including spine and vertebra in the back	83	6	20	4	:	39	:	4	:	:	:	:	:	:
Back, including spine and vertebra in the back	72	6	18	:	:	34	:	4	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Torso and organs	501	125	98	:	4	101	:	78	20	:	:	:	28	27
Rib cage, ribs including joints and shoulder blades	101	29	48	:	:	:	:	13	:	:	:	:	4	4
Chest area including organs	178	44	25	:	:	26	:	47	12	:	:	:	5	15
Pelvic and abdominal area including organs	106	41	21	:	:	20	:	18	:	:	:	:	:	4
Torso, multiple sites affected	13	:	:	:	:	5	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Upper Extremities	35	7	7	:	:	6	:	5	:	:	:	:	:	:
Shoulder and shoulder joints	12	4	:	:	:	:	:	:	:	:	:	:	:	:
Arm, including elbow	7	:	:	:	:	:	:	:	:	:	:	:	:	:
Hand	4	:	:	:	:	:	:	:	:	:	:	:	:	:
Finger(s)	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Wrist	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Multiple sites affected	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Lower Extremities	108	8	41	8	14	5	:	:	12	:	:	:	:	5
Hip and hip joint	10	:	8	:	:	:	:	:	:	:	:	:	:	:
Leg, including knee	39	5	17	:	12	:	:	:	:	:	:	:	:	:
Ankle	11	:	6	4	:	:	:	:	:	:	:	:	:	:
Foot	4	:	:	:	:	:	:	:	:	:	:	:	:	:
Toe(s)	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Multiple sites affected	4	:	:	:	:	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Whole body and multiple sites	1 346	34	31	:	:	169	68	:	69	:	:	58	610	257
Whole body (Systemic effects)	526	13	8	:	:	105	29	:	38	:	:	38	97	171
Other	333	9	15	:	:	39	13	:	5	:	:	4	224	12
Other Parts of body injured	238	6	:	:	:	:	:	:	7	:	:	:	14	198

NB: Because of the rounding used in the computation of breakdowns and missing values for the part of body classification and the type of injury, the sum of categories may differ slightly.

Source: Eurostat – ESAW



# Causes and circumstances of accidents at work in the EU

**Table A2.2**  
**Number of fatal accidents at work by deviation, EU\_V, over the period 2003-2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vapourisation, emission	Breakage, bursting, spitting, slipping, fall, collapse of Material Agent	Loss of control (1)	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>8 301</b>	<b>472</b>	<b>181</b>	<b>1 221</b>	<b>3 435</b>	<b>1 694</b>	<b>555</b>	<b>154</b>	<b>365</b>	<b>224</b>
<b>Gender</b>										
Male	7 859	459	175	1 197	3 207	1 627	522	147	320	205
Female	442	13	6	24	228	67	33	7	45	19
<b>Age</b>										
18-24 years	629	54	9	93	277	108	48	5	26	9
25-34 years	1 739	113	36	259	826	264	125	23	50	43
35-44 years	2 055	123	63	284	881	363	148	47	93	53
45-54 years	2 101	129	46	342	747	456	137	46	125	73
55-64 years	1 319	38	21	189	523	350	80	23	55	40
<b>Occupation (ISCO)</b>										
Legislators, senior officials and managers	213	6	:	16	120	37	8	:	15	8
Professionals	185	8	:	11	109	21	8	5	12	11
Technicians and associate professionals	270	12	6	10	160	25	16	7	26	8
Clerks	181	6	:	16	103	19	17	:	10	6
Service workers and shop and market sales workers	226	16	6	9	84	28	17	7	48	11
Skilled agricultural and fishery workers	581	16	5	108	213	127	57	16	31	8
Craft and related trades workers	2 661	229	71	519	682	844	152	43	60	61
Plant and machine operators and assemblers	2 479	89	57	284	1 423	264	175	43	93	51
Elementary occupations	1 215	76	29	198	431	275	92	22	56	36
<b>Sector of activity (NACE)</b>										
Agriculture, hunting and forestry	987	39	13	191	398	192	58	26	47	23
Fishing	89	:	:	6	25	25	2	:	:	:
Mining and quarrying	189	10	14	53	52	28	18	:	7	5
Manufacturing	1 668	128	68	240	687	285	124	29	57	50
Electricity, gas and water supply	103	25	4	8	20	23	:	:	10	9
Construction	2 249	139	37	456	607	771	117	36	49	37
Wholesale and retail trade	603	37	7	70	312	63	45	7	42	20
Hotels and restaurants	100	:	:	5	45	19	8	:	15	:
Transport, storage and communication	1 301	38	21	117	815	99	90	21	61	39
Financial intermediation	37	:	:	:	28	:	:	:	4	:
Real estate, renting and business activities	393	25	6	29	171	80	27	11	29	15
Public administration and defence, compulsory social security	180	15	:	16	91	21	8	:	14	12
Education	45	:	:	:	25	6	:	:	:	5
Health and social work	74	:	:	:	39	12	5	5	9	:
Other community, social and personal service activities	177	11	6	11	81	42	10	:	11	:
Private households with employed persons	8	:	:	:	:	4	:	:	:	:
Extra-territorial organizations and bodies	:	:	:	:	:	:	:	:	:	:
<b>Size of local unit</b>										
1-9 employees	2 100	103	39	313	889	472	131	30	92	31
10-49 employees	2 022	115	41	312	906	378	115	33	76	46
50-249 employees	1 286	70	41	190	537	209	101	25	64	49
250 or + employees	996	91	38	136	365	147	87	24	65	43
<b>Time of the accident</b>										
00:00 - 05:59	896	41	22	91	504	120	51	9	39	19
06:00 - 11:59	2 618	134	52	420	1 016	551	183	64	117	81
12:00 - 17:59	2 458	150	51	420	943	537	176	40	105	36
18:00 - 23:59	719	57	30	73	308	103	54	11	53	30
<b>Type of injury</b>										
Wounds and superficial injuries	752	11	5	119	334	140	70	22	46	5
Bone fractures	1 660	8	15	279	648	451	144	44	49	22
Dislocations, sprains and strains	30	:	:	:	11	11	:	:	:	:
Traumatic amputations (Loss of body parts)	111	:	:	16	44	18	18	:	5	5
Concussion and internal injuries	1 332	28	10	231	534	325	91	21	54	38
Burns, scalds and frostbites	184	128	19	:	16	8	4	:	:	6
Poisonings and infections	340	53	42	41	97	42	24	8	23	10
Drowning and asphyxiation	362	14	52	92	88	55	22	:	14	22
Effects of sound, vibration and pressure	4	:	:	:	:	:	:	:	:	:
Effects of temperature extremes, light and radiation	12	8	:	:	:	:	:	:	:	:
Shock	163	99	:	7	29	8	:	:	18	:
Multiple injuries	2 003	47	24	254	1 019	373	105	32	98	51
Other type of injuries	648	44	5	95	292	89	31	14	38	40
<b>Contact - Mode of injury</b>										
Contact with electrical voltage, temperature, hazardous substances	574	391	78	6	40	14	14	4	8	19
Drowned, buried, enveloped	329	11	43	135	36	43	43	:	9	8
Horizontal/vertical impact with/against stationary object (victim in motion)	2 154	12	7	228	492	1 266	90	24	17	18
Struck by object in motion, collision with	2 825	29	19	463	1 869	59	154	16	141	75
Contact with sharp, pointed, rough, coarse Material Agent	494	:	5	67	174	127	64	20	31	4
Trapped, crushed, etc.	1 191	9	17	261	623	60	149	16	36	20
Physical or mental stress	171	:	:	:	16	19	26	68	26	12
Bite, kick, etc. (animal or human)	105	:	:	:	21	:	:	:	80	:
Other Contacts	125	5	:	4	21	24	:	:	13	51

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

(<sup>1</sup>) Loss of control (total or partial) of machine, means of transport or handling equipment, handheld tool, object, animal

Source: Eurostat – ESAW



**Table A2.4**  
**Number of fatal accidents at work by contact – mode of injury, EU\_V, over the period 2003-2005**

	All contacts - Modes of injury	Contact with electrical voltage, temperature, hazardous substances	Drowned, buried, enveloped	Horizontal/vertica impact with/against stationary object (victim in motion)	Struck by object in motion, collision with	Contact with sharp, pointed, rough, coarse Material Agent	Trapped, crushed, etc.	Physical or mental stress	Bite, kick, etc. (animal or human)	Other Contacts
<b>Total</b>	<b>8 548</b>	<b>624</b>	<b>374</b>	<b>2 295</b>	<b>2 993</b>	<b>504</b>	<b>1 279</b>	<b>186</b>	<b>129</b>	<b>164</b>
<b>Gender</b>										
Male	8 091	599	366	2 196	2 767	483	1 242	175	109	154
Female	457	25	8	99	226	21	37	11	20	10
<b>Age</b>										
18-24 years	659	65	38	172	215	47	101	6	7	8
25-34 years	1 807	145	74	412	723	95	283	24	19	32
35-44 years	2 111	172	105	528	784	124	310	48	28	32
45-54 years	2 184	164	101	603	716	127	321	63	39	50
55-64 years	1 361	56	46	434	453	79	212	34	18	29
<b>Occupation (ISCO)</b>										
Legislators, senior officials and managers	230	11	6	64	95	10	24	7	12	:
Professionals	195	13	11	45	101	10	6	6	:	:
Technicians and associate professionals	292	18	10	69	145	9	17	15	5	4
Clerks	192	6	:	37	95	14	16	9	6	6
Service workers and shop and market sales workers	243	20	14	46	89	20	18	4	24	8
Skilled agricultural and fishery workers	624	22	56	132	137	53	130	19	43	32
Craft and related trades workers	2 599	269	116	954	658	158	345	50	7	42
Plant and machine operators and assemblers	2 570	150	71	505	1 150	172	430	43	16	33
Elementary occupations	1 277	104	75	358	412	46	227	24	11	20
<b>Sector of activity (NACE)</b>										
Agriculture, hunting and forestry	899	48	26	193	255	71	186	31	54	35
Fishing	98	:	63	:	18	4	7	:	:	:
Mining and quarrying	190	10	27	36	56	9	43	5	:	:
Manufacturing	1 739	175	50	390	616	122	301	45	10	30
Electricity, gas and water supply	111	37	8	17	29	4	8	:	:	4
Construction	2 335	165	121	957	571	115	331	34	6	35
Wholesale and retail trade	636	44	15	142	287	39	78	8	12	11
Hotels and restaurants	100	:	:	33	42	5	6	:	5	:
Transport, storage and communication	1 356	72	31	240	694	53	213	21	13	19
Financial intermediation	41	:	:	:	26	:	:	:	:	:
Real estate, renting and business activities	412	35	10	121	160	23	36	12	9	6
Public administration and defence; compulsory social security	190	11	6	40	73	10	21	10	7	12
Education	47	:	:	8	26	:	:	:	:	:
Health and social work	77	:	:	16	40	6	:	6	5	:
Other community, social and personal service activities	198	14	10	59	60	18	32	:	:	:
Private households with employed persons	8	:	:	:	:	:	:	:	:	:
Extra-territorial organizations and bodies	:	:	:	:	:	:	:	:	:	:
<b>Size of local unit</b>										
1-9 employees	2 142	132	79	635	767	167	281	29	26	26
10-49 employees	2 106	153	90	555	784	89	349	38	19	29
50-249 employees	1 355	115	70	331	506	52	212	34	15	20
250 or + employees	1 026	108	53	216	387	46	144	32	14	26
<b>Time of the accident</b>										
00:00 - 05:59	928	65	34	205	390	33	163	9	16	13
06:00 - 11:59	2 744	173	119	769	958	158	421	68	33	45
12:00 - 17:59	2 628	204	117	753	877	157	384	65	29	42
18:00 - 23:59	785	77	42	167	312	32	109	13	18	15
<b>Type of injury</b>										
Wounds and superficial injuries	736	10	10	175	272	117	98	21	24	9
Bone fractures	1 736	9	15	602	617	187	217	49	14	26
Dislocations, sprains and strains	30	:	:	13	7	:	:	4	:	:
Traumatic amputations (Loss of body parts)	116	:	:	26	32	9	44	:	:	:
Concussion and internal injuries	1 453	24	28	467	558	36	271	23	24	22
Burns, scalds and frostbites	183	167	:	:	4	:	:	:	:	4
Poisonings and infections	353	113	18	63	64	33	39	11	6	6
Drowning and asphyxiation	348	50	198	6	28	:	49	:	4	9
Effects of sound, vibration and pressure	8	:	:	:	:	:	:	:	:	:
Effects of temperature extremes, light and radiation	13	10	:	:	:	:	:	:	:	:
Shock	166	114	:	9	17	:	6	10	8	:
Multiple injuries	2 080	49	34	578	908	83	353	23	21	31
Other type of injuries	691	50	26	146	268	11	110	30	11	39

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW

















**Table A4.2**  
**Number of fatal accidents at work by deviation (two-digit level) and contact – mode of injury (one-digit level), EU\_V, over the period 2003-2005**

	All contacts - modes of injury	Contact with electrical voltage, temperature, hazardous substances	Drowned, buried, enveloped	Horizontal/vertical impact with/against stationary object (victim in motion)	Struck by object in motion, collision with	Contact with sharp, pointed, rough, coarse Material Agent	Trapped, crushed, etc.	Physical or mental stress	Bite, kick, etc. (animal or human)	Other Contacts
<b>Total</b>	<b>7 968</b>	<b>574</b>	<b>329</b>	<b>2 154</b>	<b>2 825</b>	<b>494</b>	<b>1 191</b>	<b>171</b>	<b>105</b>	<b>125</b>
Electrical problems, explosion, fire	460	391	11	12	29	:	9	:	:	5
Electrical problem due to equipment failure	38	38	:	:	:	:	:	:	:	:
Electrical problem - leading to direct contact	161	156	:	:	:	:	:	:	:	:
Explosion	98	56	4	4	23	:	6	:	:	:
Fire, flare up	71	67	:	:	:	:	:	:	:	:
Other	23	16	:	:	:	:	:	:	:	:
Overflow, overturn, leak, flow, vaporisation, emission	171	78	43	7	19	5	17	:	:	:
Solid state - overflowing, overturning	35	:	12	:	12	:	8	:	:	:
Liquid state - leaking, oozing, flowing, splashing, spraying	29	20	5	:	:	:	:	:	:	:
Gaseous state - vaporisation, aerosol formation, gas formation	60	39	19	:	:	:	:	:	:	:
Pulverulent material	8	:	4	:	:	:	:	:	:	:
Other	12	10	:	:	:	:	:	:	:	:
Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	1 167	6	135	228	463	67	261	:	:	4
Breakage of material - at joint, at seams	90	:	:	35	35	4	14	:	:	:
Breakage, bursting - causing splinters	80	:	:	20	41	9	5	:	:	:
Slip, fall, collapse of Material Agent - from above	640	:	92	54	304	26	161	:	:	:
Slip, fall, collapse of Material Agent - from below	117	:	23	67	11	6	7	:	:	:
Slip, fall, collapse of Material Agent - on the same level	84	:	:	15	26	9	31	:	:	:
Other	28	:	:	5	9	:	9	:	:	:
Loss of control (total or partial) of machine, means of transport or handling equipment, handheld tool, object, animal	3 292	40	36	492	1 869	174	623	16	21	21
of machine (including unwanted start-up) or of the material being worked by the machine	221	5	:	25	80	9	97	:	:	:
of means of transport or handling equipment, (motorised or not) or of hand-held tool (motorised or not) or of the material being worked by the tool	2 300	21	28	375	1 440	40	379	4	:	11
of object (being carried, moved, handled, etc.)	80	5	:	6	15	42	9	:	:	:
of animal	180	6	:	30	73	20	48	:	:	:
Other	28	:	:	4	:	:	:	:	19	:
Other	95	:	:	:	80	:	8	:	:	:
Slipping - Stumbling and falling - Fall of persons	1 614	14	43	1 266	59	127	60	19	:	24
Fall of person - to a lower level	1 218	6	25	1 026	36	70	33	7	:	14
Slipping - Stumbling and falling - Fall of person - on the same level	297	5	6	197	11	48	13	12	:	4
Other	18	:	4	4	4	:	4	:	:	:
Body movement without any physical stress (generally leading to an external injury)	542	14	43	90	154	64	149	26	:	:
Walking on a sharp object	4	:	:	:	:	:	:	:	:	:
Kneeling on, sitting on, leaning against	14	:	:	:	4	6	:	:	:	:
Being caught or carried away, by something or by momentum	258	:	34	20	94	9	100	:	:	:
Uncoordinated movements, spurious or untimely actions	207	8	7	56	30	44	40	21	:	:
Other	37	:	:	7	21	:	4	:	:	:
Body movement under or with physical stress (generally leading to an internal injury)	153	4	:	24	16	20	16	68	:	:
Lifting, carrying, standing up	52	:	:	8	5	6	:	25	:	:
Pushing, pulling	19	:	:	4	5	:	:	5	:	:
Putting down, bending down	8	:	:	:	:	:	:	5	:	:
Twisting, turning	12	:	:	4	:	:	:	4	:	:
Treading badly, twisting leg or ankle, slipping without falling	29	:	:	7	:	7	:	11	:	:
Other	20	:	:	:	:	4	10	:	:	:
Shock, fright, violence, aggression, threat, presence	361	8	9	17	141	31	36	26	80	13
Shock, fright	22	:	:	:	5	:	4	8	:	:
Violence, aggression, threat - between company employees subjected to the employer's authority	13	:	:	:	:	4	:	:	5	:
Violence, aggression, threat - from people external to the company towards victims performing their duties (bank hold-up, bus drivers, etc.)	73	:	:	:	14	23	:	:	30	4
Aggression, jostle - by animal	33	:	:	:	:	:	:	:	32	:
Presence of the victim or of a third person in itself creating a danger for oneself and possibly others	166	7	6	10	101	4	27	4	:	6
Other	33	:	:	:	11	:	:	9	6	:
Other Deviations not listed above in this classification	208	19	8	18	75	4	20	12	:	51

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A4.3**  
**Number of non-fatal accidents at work by contact – mode of injury (two-digit level) and deviation (one-digit level), EU\_V, 2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vapourisation, emission	Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	Loss of control of machine, means of transport or handling equipment, animal	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>2 883 268</b>	<b>18 441</b>	<b>61 148</b>	<b>269 502</b>	<b>757 830</b>	<b>644 381</b>	<b>428 014</b>	<b>578 644</b>	<b>74 052</b>	<b>51 256</b>
Contact with electrical voltage, temperature, hazardous substances	98 457	13 985	38 853	6 369	16 256	2 782	12 364	3 050	769	4 029
Indirect contact with a welding arc, spark, lightning (passive)	1 562	844	196	71	223	31	101	50	9	37
Direct contact with electricity, receipt of electrical charge in the body	5 334	4 465	42	75	445	38	178	47	16	28
Contact with naked flame or a hot or burning object or environment	39 038	4 752	12 799	1 685	7 950	706	9 048	1 212	233	653
Contact with a cold or frozen object or environment	2 513	62	269	300	319	958	235	264	15	91
Contact with hazardous substances - through nose, mouth via inhalation	4 042	264	3 178	97	226	9	84	39	66	79
Contact with hazardous substances - on/through skin or eyes	30 933	485	18 972	2 950	5 730	169	1 435	413	269	510
Contact with hazardous substances - through the digestive system by swallowing or eating (2)	289	18	100	31	30	8	29	12	20	41
Other	9 271	1 468	1 888	739	706	661	759	796	82	2 172
Drowned, buried, enveloped	3 357	151	1 492	662	288	228	263	158	31	84
Drowned in liquid	188	19	69	20	23	21	14	11	:	10
Buried under solid	636	6	132	298	86	22	55	18	6	13
Enveloped in, surrounded by gas or airborne particles	1 200	43	954	103	22	5	24	14	14	21
Other	1 015	76	255	193	98	133	143	83	5	29
Horizontal or vertical impact with or against a stationary object (the victim is in motion)	758 817	602	2 415	40 399	62 074	510 779	86 389	49 031	3 171	3 957
Vertical motion, crash on or against (resulting from a fall)	469 617	229	979	24 770	19 212	385 887	21 205	14 573	1 605	1 157
Horizontal motion, crash on or against	165 579	163	710	8 082	32 981	46 493	50 688	24 351	1 103	1 008
Other	61 138	104	142	2 405	2 329	47 087	4 874	3 621	126	450
Struck by object in motion, collision with	534 587	1 326	10 933	139 632	256 961	23 245	53 031	31 757	8 876	8 826
Struck - by flying object	67 693	500	5 712	21 703	28 441	1 244	5 986	2 194	1 047	866
Struck - by falling object	184 842	215	2 766	94 283	62 768	3 394	8 069	10 978	760	1 609
Struck - by swinging object	18 881	51	198	2 479	8 653	638	4 163	2 112	180	407
Struck - by rotating, moving, transported object, including vehicles	84 129	161	517	6 336	53 629	2 548	11 834	4 410	3 035	1 659
Collision with an object, including vehicles - collision with a person (the victim is moving)	63 095	68	213	1 847	41 739	4 094	8 204	3 138	2 587	1 205
Other	46 975	99	370	3 117	30 159	5 058	4 270	2 557	370	975
Contact with sharp, pointed, rough, coarse Material Agent	578 565	823	4 841	54 379	284 009	48 615	140 577	34 894	2 328	8 099
Contact with sharp Material Agent (knife, blade etc.)	237 857	248	624	18 881	163 986	3 303	40 627	7 103	658	2 427
Contact with pointed Material Agent (nail, sharp tool etc.)	58 949	71	435	6 719	31 135	1 765	15 283	2 604	239	698
Contact with hard or rough Material Agent	142 790	159	1 485	10 987	46 656	30 703	38 426	12 739	809	826
Other	20 967	113	751	3 513	4 080	3 312	5 194	2 777	169	1 058
Trapped, crushed, etc.	189 666	368	658	15 840	107 537	4 784	41 947	14 324	1 525	2 683
Trapped, crushed - in	37 986	110	118	1 607	24 378	1 016	8 262	2 037	222	236
Trapped, crushed - under	32 800	31	205	6 068	18 369	748	4 705	2 078	307	289
Trapped, crushed - between	89 859	161	211	4 677	52 175	1 259	22 285	7 165	752	1 174
Limb, hand or finger torn or cut off	5 676	32	26	468	3 232	398	1 129	243	51	97
Other	4 630	24	25	424	1 297	480	1 481	642	48	209
Physical or mental stress	599 206	994	985	7 651	23 188	36 062	81 946	436 878	7 256	4 246
Physical stress - on the musculoskeletal system	526 340	330	689	6 323	20 717	30 762	74 745	387 363	2 052	3 359
Physical stress - due to radiation, noise, light or pressure	2 218	508	125	148	333	53	216	519	149	167
Mental stress or shock	5 258	38	22	44	197	74	115	138	4 528	102
Other	27 295	56	50	289	349	1 147	1 807	23 278	148	171
Bite, kick, etc. (animal or human)	62 357	23	117	729	5 011	1 908	2 593	1 889	49 438	649
Bite	5 730	:	:	13	822	16	87	74	4 666	49
Sting from insect or fish	2 360	5	18	6	81	6	190	59	1 862	133
Blow, kick, head butt, strangulation	39 490	12	40	572	2 801	1 324	1 761	1 188	31 536	256
Other	4 728	4	21	90	273	320	267	176	3 475	102
Other Contacts - Modes of Injury not listed in this classification	58 256	169	854	3 841	2 506	15 978	8 904	6 663	658	18 683

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A4.4**  
**Number of fatal accidents at work by contact – mode of injury (two-digit level) and deviation (one-digit level), EU\_V, over the period 2003-2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vapourisation, emission	Breakage, bursting, spilling, slipping, fall, collapse of Material Agent	Loss of control of machine, means of transport or handling equipment, animal	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>7 968</b>	<b>460</b>	<b>171</b>	<b>1 167</b>	<b>3 292</b>	<b>1 614</b>	<b>542</b>	<b>153</b>	<b>361</b>	<b>208</b>
Contact with electrical voltage, temperature, hazardous substances	574	391	78	6	40	14	14	4	8	19
Indirect contact with a welding arc, spark, lightning (passive)	36	31	:	:	:	:	:	:	:	:
Direct contact with electricity, receipt of electrical charge in the body	249	214	:	:	15	6	8	:	:	:
Contact with naked flame or a hot or burning object or environment	136	98	11	:	16	5	:	:	:	:
Contact with a cold or frozen object or environment	:	:	:	:	:	:	:	:	:	:
Contact with hazardous substances - through nose, mouth via inhalation	67	9	46	:	:	:	:	:	4	5
Contact with hazardous substances - on/through skin or eyes	23	:	11	:	7	:	:	:	:	:
Contact with hazardous substances - through the digestive system by swallowing or eating (2)	4	:	:	:	:	:	:	:	:	:
Other	34	19	7	:	:	:	:	:	:	7
Drowned, buried, enveloped	329	11	43	135	36	43	43	:	9	8
Drowned in liquid	103	:	8	8	22	28	30	:	:	4
Buried under solid	146	:	8	109	9	5	7	:	:	:
Enveloped in, surrounded by gas or airborne particles	30	5	21	:	:	:	:	:	:	:
Other	11	:	:	4	:	:	:	:	:	:
Horizontal or vertical impact with or against a stationary object (the victim is in motion)	2 154	12	7	228	492	1 266	90	24	17	18
Vertical motion, crash on or against (resulting from a fall)	1 516	4	:	169	107	1 165	39	14	11	4
Horizontal motion, crash on or against	457	:	:	33	324	36	39	8	6	7
Other	53	:	:	6	13	20	8	:	:	:
Struck by object in motion, collision with	2 825	29	19	463	1 869	59	154	16	141	75
Struck - by flying object	120	19	5	45	34	:	8	:	6	:
Struck - by falling object	447	:	9	334	67	10	13	:	:	6
Struck - by swinging object	37	:	:	5	23	:	4	:	:	:
Struck - by rotating, moving, transported object, including vehicles	711	:	:	39	535	10	49	6	51	17
Collision with an object, including vehicles - collision with a person (the victim is moving)	1 069	:	:	15	875	19	50	:	69	37
Other	199	:	:	7	155	10	13	:	5	6
Contact with sharp, pointed, rough, coarse Material Agent	494	:	5	67	174	127	64	20	31	4
Contact with sharp Material Agent (knife, blade etc.)	92	:	:	10	38	9	16	:	16	:
Contact with pointed Material Agent (nail, sharp tool etc.)	43	:	:	7	14	:	7	:	10	:
Contact with hard or rough Material Agent	258	:	:	42	57	102	36	14	:	:
Other	13	:	:	:	:	:	:	:	:	:
Trapped, crushed, etc.	1 191	9	17	261	623	60	149	16	36	20
Trapped, crushed - in	128	:	:	17	77	10	21	:	:	:
Trapped, crushed - under	542	:	10	171	275	23	42	5	13	:
Trapped, crushed - between	324	:	5	42	159	12	73	9	17	7
Limb, hand or finger torn or cut off	15	4	:	:	:	:	:	:	:	:
Other	17	:	:	:	11	:	:	:	:	:
Physical or mental stress	171	:	:	:	16	19	26	68	26	12
Physical stress - on the musculoskeletal system	94	:	:	:	8	13	19	48	:	:
Physical stress - due to radiation, noise, light or pressure	4	:	:	:	:	:	:	:	:	:
Mental stress or shock	34	:	:	:	:	:	:	5	16	5
Other	28	:	:	:	4	:	:	12	:	5
Bite, kick, etc. (animal or human)	105	:	:	:	21	:	:	:	80	:
Bite	:	:	:	:	:	:	:	:	:	:
Sting from insect or fish	12	:	:	:	:	:	:	:	11	:
Blow, kick, head butt, strangulation	51	:	:	:	11	:	:	:	40	:
Other	21	:	:	:	:	:	:	:	16	:
Other Contacts - Modes of Injury not listed in this classification	125	5	:	4	21	24	:	:	13	51

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW

**Table A5.1a (continued over 4 pages)****Number of non-fatal accidents at work by material agent associated with the deviation and the variable deviation, EU\_V, 2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vaporisation, emission	Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	Loss of control of machine, means of transport or handling equipment, animal	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>2 331 770</b>	<b>14 692</b>	<b>56 988</b>	<b>247 660</b>	<b>671 878</b>	<b>490 307</b>	<b>335 275</b>	<b>432 190</b>	<b>51 272</b>	<b>31 508</b>
<b>Buildings, structures, surfaces - at ground level (indoor or outdoor, fixe or mobile, temporary or not)</b>	<b>434 043</b>	<b>899</b>	<b>1 886</b>	<b>24 675</b>	<b>20 995</b>	<b>227 573</b>	<b>61 724</b>	<b>92 459</b>	<b>1 310</b>	<b>2 522</b>
Building components, structural components - doors, walls, partitions etc. and intentional obstacles (windows, etc.)	52 258	263	533	7 270	9 913	5 028	18 124	10 038	424	665
Surfaces at ground level - ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank wit nails in)	344 743	446	912	13 728	8 997	207 313	37 743	73 875	699	1 030
Surfaces at ground level - floating	1 587	5	11	304	95	762	174	225	4	7
Other	3 563	51	42	445	209	1 336	607	724	12	137
<b>Buildings, structures, surfaces - above ground level (indoor or outdoor)</b>	<b>216 520</b>	<b>313</b>	<b>581</b>	<b>18 681</b>	<b>7 437</b>	<b>131 973</b>	<b>21 952</b>	<b>34 567</b>	<b>222</b>	<b>794</b>
Parts of building, above ground level - fixed (roofs, terraces, doors and windows, stairs, quays)	115 505	119	179	5 672	1 947	73 289	11 516	22 312	96	375
Structures, surfaces, above ground level - fixed (including gangways, fixed ladders, pylons)	13 843	56	110	1 909	939	6 607	2 074	2 043	27	78
Structures, surfaces, above ground level - mobile (including scaffolding, mobile ladders, cradles, elevating platforms)	58 896	90	119	6 950	2 398	38 577	4 896	5 703	54	109
Structures, surfaces, above ground level - temporary (including temporary scaffolding, harnesses, swings)	16 811	17	72	2 192	1 632	7 888	2 319	2 570	17	104
Structures, surfaces, above ground level - floating (including drilling platforms, scaffolding on barges)	451	:	10	51	34	159	99	89	:	5
Other	2 538	10	23	348	131	1 394	304	270	9	49
<b>Buildings, structures, surfaces - below ground level (indoor or outdoor)</b>	<b>10 386</b>	<b>52</b>	<b>253</b>	<b>1 386</b>	<b>651</b>	<b>5 022</b>	<b>1 063</b>	<b>1 825</b>	<b>40</b>	<b>94</b>
Excavations, trenches, wells, pits, escarpments, garage pits	6 757	17	81	694	474	3 431	771	1 230	28	31
Underground areas, tunnel	1 407	20	71	400	60	568	82	161	4	41
Underwater environments	110	:	50	9	6	25	13	6	:	:
Other	775	9	16	111	38	448	54	86	4	9
<b>Systems for the supply and distribution of materials, pipe networks</b>	<b>20 260</b>	<b>335</b>	<b>1 276</b>	<b>3 236</b>	<b>5 253</b>	<b>1 795</b>	<b>3 740</b>	<b>4 353</b>	<b>67</b>	<b>205</b>
Systems for the supply and distribution of materials, pipe networks - fixed - for gas, air, liquids, solids - including hoppers	11 832	208	887	1 881	3 142	933	2 392	2 287	39	63
Systems for the supply and distribution of materials, pipe networks - mobile	4 702	73	199	781	1 338	350	795	1 097	9	60
Sewers, drains	968	6	41	168	167	216	143	211	4	12
Other	918	20	58	141	181	121	131	231	7	28
<b>Motors, systems for energy transmission and storage</b>	<b>18 854</b>	<b>2 754</b>	<b>567</b>	<b>2 324</b>	<b>4 991</b>	<b>1 329</b>	<b>2 976</b>	<b>3 655</b>	<b>70</b>	<b>188</b>
Motors, power generators (thermal, electric, radiator)	6 249	399	286	744	2 112	161	1 075	1 384	21	67
Systems for energy transmission and storage (mechanical, pneumatic, hydraulic, electric, including batteries and accumulators)	10 002	2 025	189	1 215	2 273	918	1 642	1 645	25	70
Other	713	117	32	154	97	64	98	127	7	17
<b>Hand tools, not powered</b>	<b>223 360</b>	<b>685</b>	<b>2 070</b>	<b>15 478</b>	<b>149 767</b>	<b>4 609</b>	<b>27 513</b>	<b>19 318</b>	<b>741</b>	<b>3 179</b>
Hand tools, not powered - for sawing	5 567	7	63	350	4 218	62	625	170	8	64
Hand tools, not powered - for cutting, separating (including scissors, shears, secateurs)	93 600	114	259	3 782	74 445	530	10 756	2 460	269	985
Hand tools, not powered - for carving, slotting, chiselling, trimming, clipping, shearing	4 476	19	24	454	2 951	297	429	219	14	69
Hand tools, not powered - for scraping, polishing, buffing	3 524	6	84	266	2 165	49	525	360	:	66
Hand tools, not powered - for drilling, turning, screwing	26 476	66	113	1 780	20 694	176	1 771	1 659	25	192
Hand tools, not powered - for nailing, riveting stapling	27 666	18	112	2 030	20 783	118	2 838	1 318	92	357
Hand tools, not powered - for sewing, knitting	435	:	:	35	164	10	183	34	:	4
Hand tools, not powered - for welding, gluing	1 781	170	145	244	415	173	299	243	14	78
Hand tools, not powered - for extracting materials and working the ground (including farming tools)	4 778	9	35	366	1 551	185	691	1 865	33	43
Hand tools, not powered - for waxing, lubricating, washing, cleaning	3 807	17	145	301	600	488	817	1 366	22	51
Hand tools, not powered - for painting	1 105	:	55	72	267	90	241	334	17	26
Hand tools, not powered - for holding in place, grasping	8 566	22	134	1 394	4 132	391	952	1 400	23	118
Hand tools, not powered - for kitchen work (except knives)	5 045	74	336	782	1 953	83	863	865	15	74
Hand tools, not powered - for medical and surgical work - sharp, cutting	9 172	8	30	236	6 553	10	2 034	162	54	85
Hand tools, not powered - for medical and surgical work - non-cutting, others	655	:	22	115	234	17	171	84	:	9
Other	5 432	23	99	907	1 690	418	766	1 228	43	258

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.1b (continued)**
**Number of non-fatal accidents at work by material agent associated with the deviation and the variable deviation, EU\_V, 2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vapourisation, emission	Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	Loss of control of machine, means of transport or handling equipment, animal	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>2 331 770</b>	<b>14 692</b>	<b>56 988</b>	<b>247 660</b>	<b>671 678</b>	<b>490 307</b>	<b>335 275</b>	<b>432 190</b>	<b>51 272</b>	<b>31 508</b>
Hand-held or hand-guided tools, mechanical	64 879	866	1 576	5 050	42 819	1 327	6 517	5 416	210	1 096
Mechanical hand tools - for sawing	7 315	33	205	367	5 602	50	769	177	11	101
Mechanical hand tools - for cutting, separating (including scissors, shears, secateurs)	8 575	68	89	557	6 132	125	959	430	44	171
Mechanical hand tools - for carving, slotting, chiselling, (hedge cutting see 09.02) trimming, clipping, shearing	919	9	19	112	489	20	150	79	22	19
Mechanical hand tools - for scraping, polishing, buffing (including disc cutters)	11 502	104	221	699	9 415	58	600	307	10	88
Mechanical hand tools - for drilling, turning, screwing	11 959	43	88	914	8 867	89	995	841	15	107
Mechanical hand tools - for nailing, riveting, stapling	4 266	43	26	195	3 272	35	343	297	27	28
Mechanical hand tools - for sewing, knitting	237	:	:	20	111	5	62	24	:	10
Mechanical hand tools - for welding, gluing	3 272	357	400	282	1 432	55	358	258	14	116
Mechanical hand tools - for extracting materials and working the ground (including farming tools, concrete breakers)	2 140	6	27	249	1 105	57	163	510	:	22
Mechanical hand tools - for waxing, lubricating, washing, cleaning (including high-pressure vacuum cleaner)	1 790	35	117	131	697	150	269	361	6	24
Mechanical hand tools - for painting	312	5	46	15	101	16	39	84	:	6
Mechanical hand tools - for holding in place, grasping	1 634	8	26	281	604	44	347	290	5	29
Mechanical hand tools - for kitchen work (except knives)	1 220	10	41	91	628	36	293	85	5	31
Mechanical hand tools - for heating (including driers, flame guns irons)	707	50	40	53	192	21	178	163	:	10
Mechanical hand tools - for medical and surgical work - sharp, cutting	170	:	:	8	102	5	35	7	:	11
Mechanical hand tools - for medical and surgical work - non-cutting, others	82	:	:	13	23	14	6	20	:	:
Pneumatic guns (without specification of tool)	521	17	15	64	334	17	45	24	:	4
Other	1 621	16	37	196	635	105	213	318	9	92
Hand tools - without specification of power source	15 987	343	342	1 847	7 348	492	2 315	2 680	70	550
Hand tools, without specification of power source - for sawing	897	16	14	65	572	30	132	47	:	21
Hand tools, without specification of power source - for cutting, separating (including scissors, shears, secateurs)	3 214	40	44	264	2 039	31	436	226	23	111
Hand tools, without specification of power source - for carving, slotting, chiselling, trimming, clipping, shearing	402	4	10	45	246	:	52	26	:	16
Hand tools, without specification of power source - for scraping, polishing, buffing	877	17	16	142	453	9	115	84	5	36
Hand tools, without specification of power source - for drilling, turning, screwing	2 095	4	16	260	1 252	20	246	248	7	42
Hand tools, without specification of power source - for nailing, riveting, stapling	595	:	7	76	352	6	61	68	:	21
Hand tools, without specification of power source - for sewing, knitting	102	13	:	5	51	:	15	14	:	:
Hand tools, without specification of power source - for welding, gluing	917	175	82	68	343	12	112	86	:	38
Hand tools, without specification of power source - for extracting materials and working the ground (including farming tools)	302	:	4	34	87	12	65	93	:	:
Hand tools, without specification of power source - for waxing, lubricating, washing, cleaning	413	:	15	34	77	40	92	144	:	7
Hand tools, without specification of power source - for painting	121	:	7	20	17	14	35	23	:	:
Hand tools, without specification of power source - for holding in place, grasping	815	:	21	177	267	44	104	185	4	11
Hand tools, without specification of power source - for kitchen work (except knives)	553	11	32	53	205	12	133	98	:	8
Hand tools, without specification of power source - for medical and surgical work - sharp, cutting	89	:	:	5	46	:	7	12	:	17
Hand tools, without specification of power source - for medical and surgical work - non-cutting, others	122	:	:	24	24	:	54	16	:	:
Other	1 096	9	12	100	289	48	152	434	5	47
Machines and equipment - portable or mobile	36 464	297	648	3 336	12 331	6 144	5 955	6 706	208	839
Portable or mobile machines - for extracting materials or working the ground - mines, quarries and plant for building and civil engineering works	10 991	94	241	1 075	4 311	1 715	1 931	1 486	57	81
Portable or mobile machines - for working the ground, farming	9 928	49	62	676	3 214	3 036	1 517	1 264	30	80
Portable or mobile machines (not for working the ground) - for construction sites	1 871	20	56	188	777	142	235	385	13	55
Mobile floor cleaning machines	1 356	:	32	121	408	132	302	330	4	25
Other	2 997	23	52	389	760	290	540	726	29	188

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.1d (continued)**

**Number of non-fatal accidents at work by material agent associated with the deviation and the variable deviation, EU\_V, 2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vapourisation, emission	Breakage, bursting, spilling, slipping, fall, collapse of Material Agent	Loss of control of machine, means of transport or handling equipment, animal	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>2 331 770</b>	<b>14 692</b>	<b>56 988</b>	<b>247 660</b>	<b>671 878</b>	<b>490 307</b>	<b>335 275</b>	<b>432 190</b>	<b>51 272</b>	<b>31 508</b>
Chemical, explosive, radioactive, biological substances	32 809	1 375	22 284	1 315	3 645	1 541	1 362	659	143	485
Substances - caustic, corrosive (solid, liquid or gaseous)	9 779	66	7 945	259	887	76	340	61	16	129
Substances - harmful, toxic (solid, liquid or gaseous)	2 783	54	2 212	79	151	20	123	25	28	91
Substances - flammables (solid, liquid or gaseous)	3 767	587	1 315	170	1 393	86	124	43	27	22
Substances - explosive, reactive (solid, liquid or gaseous)	710	283	302	16	28	:	62	9	5	:
Gases, vapours with no specific effects (inert for life forms, suffocating)	2 009	130	1 562	51	77	82	62	21	14	10
Substances - radioactive	13	:	10	:	:	:	:	:	:	0
Substances - biological	3 310	33	2 638	156	149	38	200	36	19	41
Substances, materials - with no specific risk (water, inert materials...)	7 709	26	4 616	456	720	1 082	357	365	12	75
Other	711	46	394	54	55	38	25	38	5	56
Safety devices and equipment	4 774	95	144	1 021	943	433	1 064	819	57	198
Safety devices - on machines	1 154	32	44	314	305	61	228	134	6	30
Protective devices - individual	1 385	17	80	244	293	89	359	175	12	116
Emergency devices and equipment	509	25	5	109	47	37	128	121	16	21
Other	936	12	:	223	157	133	180	197	16	15
Office equipment, personal equipment, sports equipment, weapons, domestic appliances	66 079	389	705	10 657	11 511	7 286	18 237	15 775	824	695
Furniture	26 687	29	104	3 743	3 679	3 597	7 501	7 656	106	272
Equipment - computer, office automation, reprographic, communications	2 981	53	13	391	531	215	894	814	26	44
Equipment - for teaching, writing, drawing - including typewriters, stamping machines, enlargers, time-recorders	1 313	4	7	251	392	59	331	243	20	6
Items and equipment for sports and game	4 717	4	5	259	1 106	512	1 565	1 019	168	79
Weapons	740	32	:	5	392	:	36	11	244	17
Personal items, clothing	2 179	45	33	268	274	271	602	603	54	29
Musical instruments	242	:	:	35	27	14	32	133	:	:
Domestic-type equipment, tools, objects, linen (professional use)	19 481	163	488	4 654	3 916	1 494	5 451	3 072	100	143
Other	2 338	5	12	403	312	368	590	558	39	51
Living organisms and human-beings	104 515	100	402	5 047	12 705	7 259	12 927	25 197	39 719	1 159
Trees, plants, crops	13 325	35	151	3 509	2 719	1 694	2 683	2 143	168	223
Animals - domestic and for breeding	18 530	18	26	273	7 678	711	739	847	8 080	158
Animals - wild animals, insects, snakes	2 907	6	25	20	254	29	188	97	2 166	122
Micro-organisms	68	:	11	:	4	4	11	:	10	22
Infectious viral agents	289	:	20	15	12	9	42	63	92	33
Humans	52 848	28	153	896	1 186	3 182	7 989	17 264	21 616	534
Other	257	:	:	21	45	38	38	54	45	12
Bulk waste	7 856	45	569	1 575	1 223	1 093	1 447	1 705	81	118
Bulk waste - from raw materials, products, materials, objects	3 492	16	148	1 015	435	390	738	670	25	55
Bulk waste - from chemicals	241	6	130	26	38	31	:	7	:	:
Bulk waste - from biological substances, plants, animals	1 952	9	195	302	422	322	303	343	37	19
Other	493	:	21	66	56	91	169	62	:	23
Physical phenomena and natural elements	12 036	799	771	893	1 063	6 332	841	690	210	437
Physical phenomena - noise, natural radiation, light, light arcs, pressurisation, depressurisation, pressure	697	142	174	35	52	25	95	18	50	106
Natural and atmospheric elements (including stretches of water, mud, rain, hail, snow, ice, wind, etc.)	8 299	23	246	595	767	5 551	462	399	75	181
Natural disasters (including floods, volcanic eruptions, earthquakes, tidal waves, fire, conflagration)	1 068	546	233	43	36	69	67	27	12	35
Other	943	25	73	115	108	338	79	106	29	70
Other material agents not listed in this classification	37 205	310	832	4 284	2 788	6 594	6 342	9 019	582	6 454

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW

**Table A5.2a (continued over 4 pages)**

**Number of fatal accidents at work by material agent associated with the deviation and the variable deviation, EU\_V, over the period 2003-2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vaporisation, emission	Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	Loss of control of machine, means of transport or handling equipment, animal	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>6 782</b>	<b>370</b>	<b>161</b>	<b>1 029</b>	<b>2 912</b>	<b>1 321</b>	<b>446</b>	<b>123</b>	<b>281</b>	<b>139</b>
Buildings, structures, surfaces - at ground level (indoor or outdoor, fixe or mobile, temporary or not)	519	4	10	103	60	262	45	23	5	7
Building components, structural components - doors, walls, partitions etc. and intentional obstacles (windows, etc.)	114	:	:	57	9	28	10	4	:	:
Surfaces at ground level - ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank wit nails in)	361	:	6	41	49	203	33	19	4	4
Surfaces at ground level - floating	4	:	:	:	:	:	:	:	:	:
Other	4	:	:	:	:	:	:	:	:	:
Buildings, structures, surfaces - above ground level (indoor or outdoor)	917	25	:	153	15	682	20	10	:	7
Parts of building, above ground level - fixed (roofs, terraces, doors and windows, stairs, quays)	374	:	:	67	:	283	10	4	:	:
Structures, surfaces, above ground level - fixed (including gangways, fixed ladders, pylons)	121	6	:	21	5	84	:	:	:	:
Structures, surfaces, above ground level - mobile (including scaffolding, mobile ladders, cradles, elevating platforms)	198	9	:	22	:	153	6	:	:	:
Structures, surfaces, above ground level - temporary (including temporary scaffolding, harnesses, swings)	158	:	:	31	:	123	:	:	:	:
Structures, surfaces, above ground level - floating (including drilling platforms, scaffolding on barges)	6	:	:	:	:	:	:	:	:	:
Other	6	:	:	:	:	:	:	:	:	:
Buildings, structures, surfaces - below ground level (indoor or outdoor)	129	4	10	65	6	39	:	:	:	:
Excavations, trenches, wells, pits, escarpments, garage pits	89	:	6	52	4	23	:	:	:	:
Underground areas, tunnels	20	:	4	10	:	:	:	:	:	:
Underwater environments	:	:	:	:	:	:	:	:	:	:
Other	11	:	:	:	:	7	:	:	:	:
Systems for the supply and distribution of materials, pipe networks	52	8	6	15	:	12	6	:	:	:
Systems for the supply and distribution of materials, pipe networks - fixed - for gas, air, liquids, solids - including hoppers	34	5	6	10	:	7	:	:	:	:
Systems for the supply and distribution of materials, pipe networks - mobile	8	:	:	:	:	:	:	:	:	:
Sewers, drains	:	:	:	:	:	:	:	:	:	:
Other	5	:	:	:	:	:	:	:	:	:
Motors, systems for energy transmission and storage	164	116	:	5	12	10	14	:	:	:
Motors, power generators (thermal, electric, radiator)	34	18	:	:	5	:	:	:	:	:
Systems for energy transmission and storage (mechanical, pneumatic, hydraulic, electric, including batteries and accumulators)	120	93	:	:	7	6	10	:	:	:
Other	5	:	:	:	:	:	:	:	:	:
Hand tools, not powered	101	11	:	18	40	8	10	4	5	:
Hand tools, not powered - for sawing	4	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for cutting, separating (including scissors, shears, secateurs)	24	:	:	:	16	:	:	:	:	:
Hand tools, not powered - for carving, slotting, chiselling, trimming, clipping, shearing	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for scraping, polishing, buffing	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for drilling, turning, screwing	14	:	:	:	9	:	:	:	:	:
Hand tools, not powered - for nailing, riveting staplin	13	:	:	4	6	:	:	:	:	:
Hand tools, not powered - for sewing, knitting	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for welding, gluin	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for extracting materials and working the ground (including farming tools)	8	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for waxing, lubricating, washing, cleaning	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for painting	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for holding in place, grasping	9	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for kitchen work (except knives)	4	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for medical and surgical work - sharp, cutting	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for medical and surgical work - non-cutting, others	:	:	:	:	:	:	:	:	:	:
Other	12	:	:	:	:	4	:	:	:	:

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.2b (continued)**  
**Number of fatal accidents at work by material agent associated with the deviation and the variable deviation, EU\_V, over the period 2003-2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vapourisation, emission	Breakage, bursting, spilling, slipping, fall, collapse of Material Agent	Loss of control of machine, means of transport or handling equipment, animal	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>6 782</b>	<b>370</b>	<b>161</b>	<b>1 029</b>	<b>2 912</b>	<b>1 321</b>	<b>446</b>	<b>123</b>	<b>281</b>	<b>139</b>
Hand-held or hand-guided tools, mechanical	46	11	:	11	17	4	:	:	:	:
Mechanical hand tools - for sawing	4	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for cutting, separating (including scissors, shears, secateurs)	7	:	:	:	5	:	:	:	:	:
Mechanical hand tools - for carving, slotting, chiselling, (hedge cutting see 09.02) trimming, clipping, shearing	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for scraping, polishing, buffing (including disc cutters)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for drilling, turning, screwing	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for nailing, riveting, stapling	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for sewing, knitting	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for welding, gluing	7	5	:	:	:	:	:	:	:	:
Mechanical hand tools - for extracting materials and working the ground (including farming tools, concrete breakers)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for waxing, lubricating, washing, cleaning (including high-pressure vacuum cleaner)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for painting	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for holding in place, grasping	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for kitchen work (except knives)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for heating (including driers, flame guns irons)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for medical and surgical work - sharp, cutting	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for medical and surgical work - non-cutting, others	:	:	:	:	:	:	:	:	:	:
Pneumatic guns (without specification of tool)	:	:	:	:	:	:	:	:	:	:
Other	4	:	:	:	:	:	:	:	:	:
Hand tools - without specification of power source	9	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for sawing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for cutting, separating (including scissors, shears, secateurs)	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for carving, slotting, chiselling, trimming, clipping, shearing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for scraping, polishing, buffing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for drilling, turning, screwing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for nailing, riveting, stapling	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for sewing, knitting	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for welding, gluing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for extracting materials and working the ground (including farming tools)	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for waxing, lubricating, washing, cleaning	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for painting	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for holding in place, grasping	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for kitchen work (except knives)	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for medical and surgical work - sharp, cutting	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for medical and surgical work - non-cutting, others	:	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
Machines and equipment - portable or mobile	304	8	:	29	195	20	31	6	7	5
Portable or mobile machines - for extracting materials or working the ground - mines, quarries and plant for building and civil engineering works	124	5	:	13	72	:	20	:	6	:
Portable or mobile machines - for working the ground, farming	139	:	:	12	99	17	7	:	:	:
Portable or mobile machines (not for working the ground) - for construction sites	7	:	:	:	:	:	:	:	:	:
Mobile floor cleaning machines	:	:	:	:	:	:	:	:	:	:
Other	5	:	:	:	:	:	:	:	:	:

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW





**Table A5.2c (continued)**  
**Number of fatal accidents at work by material agent associated with the deviation and the variable deviation, EU\_V, over the period 2003-2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vaporisation, emission	Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	Loss of control of machine, means of transport or handling equipment, animal	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>6 782</b>	<b>370</b>	<b>161</b>	<b>1 029</b>	<b>2 912</b>	<b>1 321</b>	<b>446</b>	<b>123</b>	<b>281</b>	<b>139</b>
Machines and equipment - fixed	190	29	8	17	85	10	29	:	7	:
Fixed machines for extracting materials or working the ground	6	:	:	:	5	:	:	:	:	:
Machines for preparing materials, crushing, pulverising, filtering, separating, mixing, blending	30	4	:	:	12	:	8	:	:	:
Machines for processing materials - chemical processes (reactive, fermenting processes)	:	:	:	:	:	:	:	:	:	:
Machines for processing materials - hot processes (ovens, driers, kilns)	19	8	4	:	:	:	:	:	:	:
Machines for processing materials - cold processes (production of cold)	:	:	:	:	:	:	:	:	:	:
Machines for processing materials - other processes	:	:	:	:	:	:	:	:	:	:
Forming machines - by pressing, crushing	20	:	:	:	14	:	:	:	:	:
Forming machines - by calendaring, rolling, cylinder presses (including paper presses)	4	:	:	:	:	:	:	:	:	:
Forming machines - by injection, extrusion, blowing, spinning, moulding, melting, casting	9	:	:	:	4	:	:	:	:	:
Machine tools - for planing, milling, surface treatment, grinding, polishing, turning, drilling	15	:	:	:	8	:	:	:	:	:
Machine tools - for sawing	10	:	:	:	5	:	:	:	:	:
Machine tools - for cutting, splitting, clipping (including die cutters, shearing machines, clippers, oxygen cutting equipment)	7	:	:	:	4	:	:	:	:	:
Machines for surface treatment - cleaning, washing, drying, painting, printing	:	:	:	:	:	:	:	:	:	:
Machines for surface treatment - galvanising, electrolytic surface treatment	:	:	:	:	:	:	:	:	:	:
Assembling machines (welding, gluing, nailing, screwing, riveting, spinning, wiring, sewing, stapling)	9	6	:	:	:	:	:	:	:	:
Packing machines, wrapping machines (filling, labelling, closing...)	4	:	:	:	:	:	:	:	:	:
Other machines for specific industries (miscellaneous monitoring and testing machines)	7	:	:	:	:	:	:	:	:	:
Specific machines used in farming which are not included with the above machines	13	:	:	:	9	:	:	:	:	:
Other	13	:	:	:	5	:	:	:	:	:
Conveying, transport and storage systems	492	19	11	108	183	80	62	12	13	4
Fixed conveyors, continuous handling equipment and systems - belts, escalators, cableways, conveyors, etc.)	49	:	:	5	15	9	13	:	:	:
Elevators, lifts - hoists, bucket elevators, jacks, etc.	76	:	:	18	18	27	12	:	:	:
Fixed cranes, mobile cranes, vehicle-mounted cranes, overhead travelling cranes, hoisting devices with suspended load	110	7	:	30	42	18	6	:	5	:
Mobile handling devices, handling trucks (powered or not) - barrows, pallet trucks, etc.	129	:	:	23	76	5	18	:	:	:
Lifting equipment, securing, gripping and miscellaneous handling devices (including slings, hooks, ropes...)	27	:	:	12	5	:	4	:	:	:
Storage systems, packaging equipment, containers (silos, tanks - fixed - tanks, vats, containers, etc.	22	5	:	5	:	4	:	:	:	:
Storage systems, packaging equipment, containers - mobile	21	:	:	4	6	7	:	:	:	:
Storage accessories, shelving, pallet racks, pallets	17	:	:	5	7	:	:	:	:	:
Miscellaneous packaging, small and medium-sized, mobile (skips, miscellaneous containers, bottles, crates, extinguishers...)	14	4	:	:	:	4	:	:	:	:
Other	4	:	:	:	:	:	:	:	:	:
Land vehicles	2 444	9	9	54	2 016	73	121	10	91	61
Vehicles - heavy: lorries, buses, coaches (passenger transport)	875	:	5	27	691	33	55	7	36	19
Vehicles - light: goods or passengers	1 221	4	:	18	1 054	11	57	:	46	27
Vehicles - two or three wheels, powered or not	162	:	:	:	160	8	6	:	:	4
Other land vehicles: skis, roller-skates	:	:	:	:	:	:	:	:	:	:
Other	35	:	:	:	21	:	:	:	:	10
Other transport vehicles	193	:	:	6	94	33	29	4	19	:
Vehicles - on rails, including suspended monorails: goods	40	:	:	:	13	7	12	:	4	:
Vehicles - on rails, including suspended monorails: passengers	52	:	:	:	26	:	8	:	12	:
Vehicles - nautical: goods	13	:	:	:	:	:	:	:	:	:
Vehicles - nautical: passengers	5	:	:	:	:	:	:	:	:	:
Vehicles - nautical: fishing	33	:	:	:	12	17	:	:	:	:
Vehicles - aerial: goods	10	:	:	:	10	:	:	:	:	:
Vehicles - aerial: passenger	17	:	:	:	15	:	:	:	:	:
Other	4	:	:	:	:	:	:	:	:	:
Materials, objects, products, machine or vehicle components, debris, dust	593	15	18	332	107	39	49	24	:	7
Building materials - large and small: prefabricated shells, formwork, girders, beams, bricks, tiles, etc.	176	:	4	115	21	20	10	:	:	:
Machine components, vehicle components: chassis, crankcase, levers, wheels, etc.	75	11	:	35	10	5	8	4	:	:
Machined parts or components, machine tools (including fragments and chips from these material agents)	64	:	:	22	28	:	8	:	:	:
Joining devices: nuts, bolts, screws, nails, etc.	14	:	:	9	:	:	:	:	:	:
Particles, dust, splinters, fragments, splashes, shards, other debris	32	:	8	20	:	:	:	:	:	:
Farm products (including seeds, straw, other farm products)	8	:	:	6	:	:	:	:	:	:
Products for use in farming and breeding (including fertilisers, animal feeds)	7	:	:	4	:	:	:	:	:	:
Stored products - including objects and packaging in storage areas	26	:	:	15	5	:	:	:	:	:
Stored products - in rolls, coils	8	:	:	5	:	:	:	:	:	:
Loads - transported by a mechanical handling or conveying device	18	:	:	7	5	:	:	:	:	:
Loads - suspended from a hoisting device, a crane	35	:	:	19	11	:	:	:	:	:
Loads - handled by hand	27	:	:	5	10	:	:	9	:	:
Other	35	:	:	15	:	4	10	:	:	:

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.2d (continued)**
**Number of fatal accidents at work by material agent associated with the deviation and the variable deviation, EU\_V, over the period 2003-2005**

	All deviations	Deviation due to electrical problems, explosion, fire	Deviation by overflow, overturn, leak, flow, vapourisation, emission	Breakage, bursting, splitting, slipping, fall, collapse of Material Agent	Loss of control of machine, means of transport or handling equipment, animal	Slipping - Stumbling and falling - Fall of persons	Body movement without any physical stress (generally leading to an external injury)	Body movement under or with physical stress (generally leading to an internal injury)	Shock, fright, violence, aggression, threat, presence	Other Deviations
<b>Total</b>	<b>6 782</b>	<b>370</b>	<b>161</b>	<b>1 029</b>	<b>2 912</b>	<b>1 321</b>	<b>446</b>	<b>123</b>	<b>281</b>	<b>139</b>
Chemical, explosive, radioactive, biological substances	147	58	67	5	:	4	:	:	5	4
Substances - caustic, corrosive (solid, liquid or gaseous)	6	:	:	:	:	:	:	:	:	:
Substances - harmful, toxic (solid, liquid or gaseous)	38	:	30	:	:	:	:	:	:	:
Substances - flammables (solid, liquid or gaseous)	26	20	6	:	:	:	:	:	:	:
Substances - explosive, reactive (solid, liquid or gaseous)	29	26	:	:	:	:	:	:	:	:
Gases, vapours with no specific effects (inert for life forms, suffocating)	25	:	18	:	:	:	:	:	:	:
Substances - radioactive	:	:	:	:	:	:	:	:	:	:
Substances - biological	:	:	:	:	:	:	:	:	:	:
Substances, materials - with no specific risk (water, inert materials...)	6	:	:	:	:	:	:	:	:	:
Other	10	:	7	:	:	:	:	:	:	:
Safety devices and equipment	18	6	:	6	:	:	:	:	:	:
Safety devices - on machines	:	:	:	:	:	:	:	:	:	:
Protective devices - individual	9	:	:	:	:	:	:	:	:	:
Emergency devices and equipment	:	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
Office equipment, personal equipment, sports equipment, weapons, domestic appliances	36	:	:	:	8	7	:	5	8	:
Furniture	7	:	:	:	:	:	:	:	:	:
Equipment - computer, office automation, reprographic, communications	:	:	:	:	:	:	:	:	:	:
Equipment - for teaching, writing, drawing - including typewriters, stamping machines, enlargers, time-recorders	:	:	:	:	:	:	:	:	:	:
Items and equipment for sports and game	11	:	:	:	5	:	:	4	:	:
Weapons	12	:	:	:	:	:	:	:	7	:
Personal items, clothing	:	:	:	:	:	:	:	:	:	:
Musical instruments	:	:	:	:	:	:	:	:	:	:
Domestic-type equipment, tools, objects, linen (professional use)	4	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
Living organisms and human-beings	261	:	:	65	45	24	12	9	100	4
Trees, plants, crops	91	:	:	53	10	13	5	:	4	:
Animals - domestic and for breeding	30	:	:	:	20	:	:	:	8	:
Animals - wild animals, insects, snakes	16	:	:	:	:	:	:	:	12	:
Micro-organisms	:	:	:	:	:	:	:	:	:	:
Infectious viral agents	:	:	:	:	:	:	:	:	:	:
Humans	96	:	:	:	12	7	6	6	62	:
Other	:	:	:	:	:	:	:	:	:	:
Bulk waste	14	:	:	8	:	:	:	:	:	:
Bulk waste - from raw materials, products, materials, objects	8	:	:	6	:	:	:	:	:	:
Bulk waste - from chemicals	:	:	:	:	:	:	:	:	:	:
Bulk waste - from biological substances, plants, animals	:	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
Physical phenomena and natural elements	98	36	:	12	15	4	6	:	5	15
Physical phenomena - noise, natural radiation, light, light arcs, pressurisation, depressurisation, pressure	12	10	:	:	:	:	:	:	:	:
Natural and atmospheric elements (including stretches of water, mud, rain, hail, snow, ice, wind, etc.)	35	:	:	5	11	:	4	:	:	7
Natural disasters (including floods, volcanic eruptions, earthquakes, tidal waves, fire, conflagration)	32	22	:	:	:	:	:	:	:	:
Other	10	:	:	:	:	:	:	:	:	4
Other material agents not listed in this classification	55	:	:	12	8	7	4	:	5	12

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.3a (continued over 4 pages)**  
**Number of non-fatal accidents at work by material agent associated with the contact – mode of injury and the variable contact – mode of injury, EU\_V, 2005**

	All contacts - modes of injury	Contact with electrical voltage, temperature, hazardous substances	Drowned, buried, enveloped	Horizontal/vertical impact with/against stationary object (victim in motion)	Struck by object in motion, collision with	Contact with sharp, pointed, rough, coarse Material Agent	Trapped, crushed, etc.	Physical or mental stress	Bite, kick, etc. (animal or human)	Other Contacts
<b>Total</b>	<b>1 870 489</b>	<b>63 471</b>	<b>2 493</b>	<b>501 600</b>	<b>353 369</b>	<b>327 105</b>	<b>100 049</b>	<b>430 977</b>	<b>43 239</b>	<b>48 186</b>
<b>Buildings, structures, surfaces - at ground level (indoor or outdoor, fixe or mobile, temporary or not)</b>	<b>374 906</b>	<b>2 344</b>	<b>405</b>	<b>224 511</b>	<b>29 781</b>	<b>43 848</b>	<b>8 041</b>	<b>54 773</b>	<b>1 598</b>	<b>9 605</b>
Building components, structural components - doors, walls, partitions etc. and intentional obstacles (windows, etc.)	46 201	431	119	12 174	11 906	8 246	4 299	8 003	274	749
Surfaces at ground level - ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank wit nails in)	287 370	1 518	231	194 363	13 283	31 452	2 689	36 628	1 153	6 053
Surfaces at ground level - floating	1 116	12	8	466	158	131	32	196	12	101
Other	2 875	42	14	980	391	335	72	575	18	448
<b>Buildings, structures, surfaces - above ground level (indoor or outdoor)</b>	<b>138 522</b>	<b>650</b>	<b>195</b>	<b>86 929</b>	<b>12 295</b>	<b>9 956</b>	<b>3 099</b>	<b>20 350</b>	<b>591</b>	<b>4 457</b>
Parts of building, above ground level - fixed (roofs, terraces, doors and windows, stairs, quays)	78 076	345	79	51 582	4 840	5 041	1 356	11 705	377	2 751
Structures, surfaces, above ground level - fixed (including gangways, fixed ladders, pylons)	15 075	95	59	8 755	1 771	1 452	516	1 920	55	452
Structures, surfaces, above ground level - mobile (including scaffolding, mobile ladders, cradles, elevating platforms)	28 417	61	17	19 162	2 717	1 752	723	3 369	52	564
Structures, surfaces, above ground level - temporary (including temporary scaffolding, harnesses, swings)	8 630	61	13	3 416	1 663	924	319	1 934	76	224
Structures, surfaces, above ground level - floating (including drilling platforms, scaffolding on barges)	403	4	:	156	81	40	21	84	4	10
Other	4 335	43	7	2 565	608	275	112	491	5	229
<b>Buildings, structures, surfaces - below ground level (indoor or outdoor)</b>	<b>7 089</b>	<b>61</b>	<b>118</b>	<b>3 575</b>	<b>923</b>	<b>624</b>	<b>343</b>	<b>1 089</b>	<b>20</b>	<b>336</b>
Excavations, trenches, wells, pits, escarpments, garage pits	4 451	23	78	2 573	419	291	278	638	14	137
Underground areas, tunnels	1 082	11	24	375	256	146	16	172	:	82
Underwater environment	39	:	8	8	9	:	:	5	:	4
Other	813	14	5	374	124	71	29	119	:	75
<b>Systems for the supply and distribution of materials, pipe networks</b>	<b>19 007</b>	<b>1 510</b>	<b>41</b>	<b>3 505</b>	<b>4 690</b>	<b>3 113</b>	<b>1 355</b>	<b>4 482</b>	<b>64</b>	<b>247</b>
Systems for the supply and distribution of materials, pipe networks - fixed - for gas, air, liquids, solids - including hoppers	10 922	1 039	15	1 971	2 714	1 976	686	2 409	42	70
Systems for the supply and distribution of materials, pipe networks - mobile	3 853	229	11	494	1 174	570	312	1 001	17	45
Sewers, drains	1 260	33	5	558	155	132	110	243	:	23
Other	1 057	86	6	200	245	147	88	249	:	35
<b>Motors, systems for energy transmission and storage</b>	<b>16 733</b>	<b>2 823</b>	<b>21</b>	<b>2 906</b>	<b>3 072</b>	<b>2 143</b>	<b>1 719</b>	<b>3 833</b>	<b>37</b>	<b>179</b>
Motors, power generators (thermal, electric, radiator)	5 260	495	12	552	1 108	899	568	1 554	14	58
Systems for energy transmission and storage (mechanical, pneumatic, hydraulic, electric, including batteries and accumulators)	9 073	1 818	6	1 998	1 500	995	962	1 720	17	57
Other	1 015	342	:	143	173	83	39	202	:	32
<b>Hand tools, not powered</b>	<b>130 809</b>	<b>2 421</b>	<b>129</b>	<b>8 517</b>	<b>22 632</b>	<b>69 948</b>	<b>4 593</b>	<b>20 101</b>	<b>418</b>	<b>2 050</b>
Hand tools, not powered - for sawing	3 797	32	10	143	330	3 005	62	186	:	26
Hand tools, not powered - for cutting, separating (including scissors, shears, secateurs)	48 369	162	22	550	1 736	43 554	242	1 779	56	268
Hand tools, not powered - for carving, slotting, chiselling, trimming, clipping, shearing	2 394	39	4	409	465	1 163	131	155	:	25
Hand tools, not powered - for scraping, polishing, buffing	2 053	45	5	87	255	1 184	30	402	6	39
Hand tools, not powered - for drilling, turning, screwing	11 271	107	5	809	3 066	4 598	391	2 154	26	115
Hand tools, not powered - for nailing, riveting staple	15 532	68	12	1 513	6 781	3 619	2 004	1 229	141	165
Hand tools, not powered - for sewing, knitting	510	:	:	16	23	411	10	45	:	:
Hand tools, not powered - for welding, gluing	1 472	471	10	209	219	181	60	275	4	43
Hand tools, not powered - for extracting materials and working the ground (including farming tools)	4 086	27	4	323	859	579	123	2 075	21	75
Hand tools, not powered - for waxing, lubricating, washing, cleaning	2 988	158	8	318	268	403	26	1 707	16	84
Hand tools, not powered - for painting	798	44	:	96	105	145	16	348	:	39
Hand tools, not powered - for holding in place, grasping	5 414	82	:	763	1 725	1 010	436	1 282	25	90
Hand tools, not powered - for kitchen work (except knives)	3 613	692	5	202	705	1 068	104	784	8	45
Hand tools, not powered - for medical and surgical work - sharp, cutting	1 803	20	4	26	91	1 559	22	51	5	25
Hand tools, not powered - for medical and surgical work - non-cutting, others	420	14	:	45	97	130	41	83	5	5
Other	4 592	100	8	638	1 208	917	208	1 257	29	227

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.3b (continued)**  
**Number of non-fatal accidents at work by material agent associated with the contact – mode of injury and the variable contact – mode of injury, EU\_V, 2005**

	All contacts - modes of injury	Contact with electrical voltage, temperature, hazardous substances	Drowned, buried, enveloped	Horizontal/vertical impact with/against stationary object (victim in motion)	Struck by object in motion, collision with	Contact with sharp, pointed, rough, coarse Material Agent	Trapped, crushed, etc.	Physical or mental stress	Bite, kick, etc. (animal or human)	Other Contacts
<b>Total</b>	<b>1 870 489</b>	<b>63 471</b>	<b>2 493</b>	<b>501 600</b>	<b>353 369</b>	<b>327 105</b>	<b>100 049</b>	<b>430 977</b>	<b>43 239</b>	<b>48 186</b>
Hand-held or hand-guided tools, mechanical	38 279	1 941	55	2 213	7 350	17 678	1 809	6 416	74	743
Mechanical hand tools - for sawing	3 235	33	:	68	279	2 552	105	165	:	33
Mechanical hand tools - for cutting, separating (including scissors, shears, secateurs)	6 786	99	5	147	564	5 383	127	369	9	83
Mechanical hand tools - for carving, slotting, chiselling, (hedge cutting see 09.02) trimming, clipping, shearing	496	19	:	27	78	271	30	61	:	9
Mechanical hand tools - for scraping, polishing, buffing (including disc cutters)	3 610	84	14	109	726	2 180	114	322	:	60
Mechanical hand tools - for drilling, turning, screwing	6 121	56	:	301	1 702	2 180	306	1 413	16	144
Mechanical hand tools - for nailing, riveting, stapling	2 109	18	:	124	768	650	125	381	11	31
Mechanical hand tools - for sewing, knitting	228	6	:	20	26	104	31	37	:	4
Mechanical hand tools - for welding, gluing	2 007	866	19	124	241	312	68	343	:	33
Mechanical hand tools - for extracting materials and working the ground (including farming tools, concrete breakers)	1 611	15	:	130	453	188	72	710	6	36
Mechanical hand tools - for waxing, lubricating, washing, cleaning (including high-pressure vacuum cleaner)	1 016	90	6	134	199	118	29	410	:	27
Mechanical hand tools - for painting	242	48	:	23	23	27	6	107	:	7
Mechanical hand tools - for holding in place, grasping	1 234	23	:	168	328	249	202	251	:	12
Mechanical hand tools - for kitchen work (except knives)	936	75	:	27	88	615	33	79	:	17
Mechanical hand tools - for heating (including driers, flame guns irons)	715	294	:	30	87	31	26	233	4	10
Mechanical hand tools - for medical and surgical work - sharp, cutting	95	:	:	:	6	76	:	8	:	:
Mechanical hand tools - for medical and surgical work - non-cutting, others	70	5	:	15	15	8	7	18	:	:
Pneumatic guns (without specification of tool)	255	10	:	17	99	60	30	37	:	:
Other	1 333	45	:	151	354	306	91	326	5	53
Hand tools - without specification of power source	27 489	923	26	1 239	8 461	10 641	560	5 012	35	592
Hand tools, without specification of power source - for sawing	2 127	6	:	28	710	1 229	22	112	4	16
Hand tools, without specification of power source - for cutting, separating (including scissors, shears, secateurs)	8 089	48	:	95	2 609	4 840	52	305	9	128
Hand tools, without specification of power source - for carving, slotting, chiselling, trimming, clipping, shearing	475	:	:	22	165	226	11	43	:	:
Hand tools, without specification of power source - for scraping, polishing, buffing	1 591	36	:	24	471	853	25	158	:	23
Hand tools, without specification of power source - for drilling, turning, screwing	3 334	31	:	139	1 050	986	95	976	:	55
Hand tools, without specification of power source - for nailing, riveting stapling	2 386	8	:	80	1 576	327	39	295	:	61
Hand tools, without specification of power source - for sewing, knitting	79	13	:	6	5	29	11	15	:	:
Hand tools, without specification of power source - for welding, gluing	820	415	5	21	106	95	8	140	:	30
Hand tools, without specification of power source - for extracting materials and working the ground (including farming tools)	586	5	:	33	107	37	13	388	:	:
Hand tools, without specification of power source - for waxing, lubricating, washing, cleaning	889	30	:	199	71	57	10	498	:	23
Hand tools, without specification of power source - for painting	97	11	:	9	15	15	:	40	:	4
Hand tools, without specification of power source - for holding in place, grasping	766	9	:	99	248	117	57	224	:	10
Hand tools, without specification of power source - for kitchen work (except knives)	654	84	:	37	89	316	19	101	:	6
Hand tools, without specification of power source - for medical and surgical work - sharp, cutting	128	4	:	6	10	72	:	21	:	12
Hand tools, without specification of power source - for medical and surgical work - non-cutting, others	422	61	:	8	44	215	:	47	:	41
Other	2 140	66	:	166	539	437	43	819	10	58
Machines and equipment - portable or mobile	29 147	738	35	5 762	7 112	4 943	2 914	6 702	100	841
Portable or mobile machines - for extracting materials or working the ground - mines, quarries and plant for building and civil engineering works	6 467	198	12	1 496	1 857	794	680	1 284	33	113
Portable or mobile machines - for working the ground, farming	8 199	89	5	2 077	1 556	1 874	959	1 459	37	143
Portable or mobile machines (not for working the ground) - for construction sites	1 719	47	:	231	420	402	177	393	:	45
Mobile floor cleaning machines	1 055	27	:	194	237	80	78	396	7	34
Other	3 287	75	:	558	859	456	378	773	:	182

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.3d (continued)**  
**Number of non-fatal accidents at work by material agent associated with the contact – mode of injury and the variable contact – mode of injury, EU\_V, 2005**

	All contacts - modes of injury	Contact with electrical voltage, temperature, hazardous substances	Drowned, buried, enveloped	Horizontal/vertica impact with/against stationary object (victim in motion)	Struck by object in motion, collision with	Contact with sharp, pointed, rough, coarse Material Agent	Trapped, crushed, etc.	Physical or mental stress	Bite, kick, etc. (animal or human)	Other Contacts
<b>Total</b>	<b>1 870 489</b>	<b>63 471</b>	<b>2 493</b>	<b>501 600</b>	<b>353 369</b>	<b>327 105</b>	<b>100 049</b>	<b>430 977</b>	<b>43 239</b>	<b>48 186</b>
Chemical, explosive, radioactive, biological substances	39 997	22 563	262	13 995	999	543	73	823	25	714
Substances - caustic, corrosive (solid, liquid or gaseous)	7 340	6 652	40	90	248	130	26	42	:	110
Substances - harmful, toxic (solid, liquid or gaseous)	2 453	2 179	53	8	61	43	:	17	4	87
Substances - flammables (solid, liquid or gaseous)	2 919	2 743	11	46	56	24	5	18	:	16
Substances - explosive, reactive (solid, liquid or gaseous)	482	374	:	23	19	6	:	37	:	17
Gases, vapours with no specific effects (inert for life forms, suffocating)	1 403	1 074	82	116	46	19	18	26	:	21
Substances - radioactive	17	10	:	:	:	:	:	6	:	:
Substances - biological	575	271	4	145	24	56	5	34	:	34
Substances, materials - with no specific risk (water, inert materials...)	20 464	6 198	48	12 773	413	192	11	551	13	265
Other	2 227	1 535	11	423	71	33	:	55	:	95
Safety devices and equipment	3 701	140	4	782	850	666	491	614	22	132
Safety devices - on machines	1 097	20	:	232	322	229	210	74	:	9
Protective devices - individual	878	72	:	123	171	214	81	149	10	56
Emergency devices and equipment	236	6	:	46	65	26	20	65	:	6
Other	852	27	:	238	148	95	131	164	9	39
Office equipment, personal equipment, sports equipment, weapons, domestic appliances	51 940	845	24	12 514	10 040	6 970	2 410	17 514	295	1 328
Furniture	30 100	108	10	9 104	5 425	3 829	1 775	9 093	107	649
Equipment - computer, office automation, reprographic, communications	2 808	99	:	335	403	173	80	1 607	13	97
Equipment - for teaching, writing, drawing - including typewriters, stamping machines, enlargers, time-recorders	725	19	:	100	156	163	73	198	:	13
Items and equipment for sports and game	2 913	4	:	385	1 461	184	64	751	20	43
Weapons	279	9	:	:	76	51	:	71	51	15
Personal items, clothing	2 167	75	:	493	233	245	54	887	44	135
Musical instruments	121	:	:	12	35	6	:	63	:	:
Domestic-type equipment, tools, objects, linen (professional use)	5 647	367	:	536	865	1 572	147	2 046	22	89
Other	4 666	93	5	1 150	964	388	76	1 732	24	234
Living organisms and human-beings	113 794	644	27	9 356	7 806	3 280	2 065	46 940	37 807	5 869
Trees, plants, crops	10 076	290	4	1 772	3 602	2 193	397	1 656	38	124
Animals - domestic and for breeding	14 910	33	:	1 357	740	378	701	949	10 594	155
Animals - wild animals, insects, snakes	1 630	24	:	31	101	90	6	69	1 277	31
Micro-organisms	97	35	:	:	:	15	:	7	11	27
Infectious viral agents	41 356	88	:	3 905	120	65	5	19 757	12 968	4 448
Humans	38 419	137	16	1 771	2 687	346	475	21 582	10 518	887
Other	355	7	:	49	40	41	4	74	96	43
Bulk waste	4 346	398	13	532	862	1 126	125	1 117	20	153
Bulk waste - from raw materials, products, materials, objects	1 762	79	8	231	430	500	57	395	5	57
Bulk waste - from chemicals	168	135	:	8	6	8	:	:	:	6
Bulk waste - from biological substances, plants, animals	893	83	:	114	133	229	21	275	7	29
Other	354	19	:	55	70	110	9	55	:	35
Physical phenomena and natural elements	12 339	1 776	69	6 047	836	520	135	1 652	44	1 260
Physical phenomena - noise, natural radiation, light, light arcs, pressurisation, depressurisation, pressure	565	244	:	15	24	5	:	216	:	59
Natural and atmospheric elements (including stretches of water, mud, rain, hail, snow, ice, wind, etc.)	7 929	421	33	5 257	508	322	63	485	18	822
Natural disasters (including floods, volcanic eruptions, earthquakes, tidal waves, fire, conflagration)	954	790	11	36	36	11	4	29	:	36
Other	851	74	8	221	125	83	27	152	17	144
Other material agents not listed in this classification	46 123	1 694	60	7 804	7 020	5 203	2 015	13 994	351	7 982

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.4a (continued over 4 pages)****Number of fatal accidents at work by material agent associated with the contact – mode of injury and the variable contact – mode of injury, EU\_V, over the period 2003-2005**

	All contacts - modes of injury	Contact with electrical voltage, temperature, hazardous substances	Drowned, buried, enveloped	Horizontal/vertical impact with/against stationary object (victim in motion)	Struck by object in motion, collision with	Contact with sharp, pointed, rough, coarse Material Agent	Trapped, crushed, etc.	Physical or mental stress	Bite, kick, etc. (animal or human)	Other Contacts
<b>Total</b>	<b>7 004</b>	<b>507</b>	<b>303</b>	<b>1 902</b>	<b>2 505</b>	<b>451</b>	<b>1 054</b>	<b>106</b>	<b>75</b>	<b>101</b>
Buildings, structures, surfaces - at ground level (indoor or outdoor, fixed or mobile, temporary or not)	1 173	13	24	797	96	140	73	16	:	13
Building components, structural components - doors, walls, partitions etc. and intentional obstacles (windows, etc.)	130	:	8	40	24	7	48	:	:	:
Surfaces at ground level - ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank with nails in)	969	6	13	719	62	122	21	14	:	11
Surfaces at ground level - floating	7	:	:	5	:	:	:	:	:	:
Other	6	:	:	4	:	:	:	:	:	:
Buildings, structures, surfaces - above ground level (indoor or outdoor)	582	23	10	415	50	20	41	9	:	13
Parts of building, above ground level - fixed (roofs, terraces, doors and windows, stairs, quays)	227	:	5	169	15	10	12	6	:	9
Structures, surfaces, above ground level - fixed (including gangways, fixed ladders, pylons)	109	5	:	74	13	:	10	:	:	:
Structures, surfaces, above ground level - mobile (including scaffolding, mobile ladders, cradles, elevating platforms)	124	10	:	93	8	4	7	:	:	:
Structures, surfaces, above ground level - temporary (including temporary scaffolding, harnesses, swings)	66	:	:	49	6	:	5	:	:	:
Structures, surfaces, above ground level - floating (including drilling platforms, scaffolding on barges)	:	:	:	:	:	:	:	:	:	:
Other	20	:	:	11	4	:	4	:	:	:
Buildings, structures, surfaces - below ground level (indoor or outdoor)	115	:	49	39	7	:	15	:	:	:
Excavations, trenches, wells, pits, escarpments, garage pits	96	:	43	35	:	:	13	:	:	:
Underground areas, tunnel:	10	:	:	:	:	:	:	:	:	:
Underwater environments	:	:	:	:	:	:	:	:	:	:
Other	6	:	:	:	:	:	:	:	:	:
Systems for the supply and distribution of materials, pipe networks	43	11	:	4	14	:	7	:	:	:
Systems for the supply and distribution of materials, pipe networks - fixed - for gas, air, liquids, solids - including hoppers	28	5	:	4	8	:	5	:	:	:
Systems for the supply and distribution of materials, pipe networks - mobile	9	4	:	:	4	:	:	:	:	:
Sewers, drains	:	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
Motors, systems for energy transmission and storage	192	152	:	9	8	5	12	:	:	:
Motors, power generators (thermal, electric, radiator)	29	19	:	:	:	:	:	:	:	:
Systems for energy transmission and storage (mechanical, pneumatic, hydraulic, electric, including batteries and accumulators)	142	117	:	6	6	:	7	:	:	:
Other	11	10	:	:	:	:	:	:	:	:
Hand tools, not powered	80	11	:	8	13	40	4	:	:	:
Hand tools, not powered - for sawing	4	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for cutting, separating (including scissors, shears, secateurs)	24	:	:	:	:	23	:	:	:	:
Hand tools, not powered - for carving, slotting, chiselling, trimming, clipping, shearing	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for scraping, polishing, buffing	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for drilling, turning, screwing	9	:	:	:	:	5	:	:	:	:
Hand tools, not powered - for nailing, riveting, stapling	10	:	:	:	:	4	:	:	:	:
Hand tools, not powered - for sewing, knitting	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for welding, gluing	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for extracting materials and working the ground (including farming tools)	7	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for waxing, lubricating, washing, cleaning	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for painting	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for holding in place, grasping	7	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for kitchen work (except knives)	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for medical and surgical work - sharp, cutting	:	:	:	:	:	:	:	:	:	:
Hand tools, not powered - for medical and surgical work - non-cutting, others	:	:	:	:	:	:	:	:	:	:
Other	4	:	:	:	:	:	:	:	:	:

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.4b (continued)**  
**Number of fatal accidents at work by material agent associated with the contact – mode of injury and the variable contact – mode of injury, EU\_V, over the period 2003-2005**

	All contacts - modes of injury	Contact with electrical voltage, temperature, hazardous substances	Drowned, buried, enveloped	Horizontal/vertical impact with/against stationary object (victim in motion)	Struck by object in motion, collision with	Contact with sharp, pointed, rough, coarse Material Agent	Trapped, crushed, etc.	Physical or mental stress	Bite, kick, etc. (animal or human)	Other Contacts
<b>Total</b>	<b>7 004</b>	<b>507</b>	<b>303</b>	<b>1 902</b>	<b>2 505</b>	<b>451</b>	<b>1 054</b>	<b>106</b>	<b>75</b>	<b>101</b>
Hand-held or hand-guided tools, mechanical	37	8	:	:	14	5	:	:	:	:
Mechanical hand tools - for sawing	4	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for cutting, separating (including scissors, shears, secateurs)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for carving, slotting, chiselling, (hedge cutting see 09.02) trimming, clipping, shearing	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for scraping, polishing, buffing (including disc cutters)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for drilling, turning, screwing	4	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for nailing, riveting, stapling	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for sewing, knitting	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for welding, gluing	5	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for extracting materials and working the ground (including farming tools, concrete breakers)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for waxing, lubricating, washing, cleaning (including high-pressure vacuum cleaner)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for painting	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for holding in place, grasping	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for kitchen work (except knives)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for heating (including driers, flame guns irons)	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for medical and surgical work - sharp, cutting	:	:	:	:	:	:	:	:	:	:
Mechanical hand tools - for medical and surgical work - non-cutting, others	:	:	:	:	:	:	:	:	:	:
Pneumatic guns (without specification of tool)	:	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
Hand tools - without specification of power source	17	:	:	:	6	4	:	:	:	:
Hand tools, without specification of power source - for sawing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for cutting, separating (including scissors, shears, secateurs)	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for carving, slotting, chiselling, trimming, clipping, shearing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for scraping, polishing, buffing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for drilling, turning, screwing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for nailing, riveting, stapling	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for sewing, knitting	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for welding, gluing	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for extracting materials and working the ground (including farming tools)	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for waxing, lubricating, washing, cleaning	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for painting	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for holding in place, grasping	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for kitchen work (except knives)	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for medical and surgical work - sharp, cutting	:	:	:	:	:	:	:	:	:	:
Hand tools, without specification of power source - for medical and surgical work - non-cutting, others	:	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
Machines and equipment - portable or mobile	344	4	4	38	112	17	162	:	:	4
Portable or mobile machines - for extracting materials or working the ground - mines, quarries and plant for building and civil engineering works	146	:	:	15	55	:	68	:	:	:
Portable or mobile machines - for working the ground, farming	170	:	:	20	48	14	81	:	:	4
Portable or mobile machines (not for working the ground) - for construction sites	:	:	:	:	:	:	:	:	:	:
Mobile floor cleaning machines	:	:	:	:	:	:	6	:	:	:
Other	9	:	:	:	:	:	:	:	:	:

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW





**Table A5.4c (continued)**

**Number of fatal accidents at work by material agent associated with the contact – mode of injury and the variable contact – mode of injury, EU\_V, over the period 2003-2005**

	All contacts - modes of injury	Contact with electrical voltage, temperature, hazardous substances	Drowned, buried, enveloped	Horizontal/vertical impact with/against stationary object (victim in motion)	Struck by object in motion, collision with	Contact with sharp, pointed, rough, coarse Material Agent	Trapped, crushed, etc.	Physical or mental stress	Bite, kick, etc. (animal or human)	Other Contacts
<b>Total</b>	<b>7 004</b>	<b>507</b>	<b>303</b>	<b>1 902</b>	<b>2 905</b>	<b>451</b>	<b>1 054</b>	<b>106</b>	<b>75</b>	<b>101</b>
<b>Machines and equipment - fixed</b>	<b>200</b>	<b>33</b>	<b>:</b>	<b>18</b>	<b>30</b>	<b>44</b>	<b>66</b>	<b>4</b>	<b>:</b>	<b>4</b>
Fixed machines for extracting materials or working the ground	7	:	:	:	:	:	4	:	:	:
Machines for preparing materials, crushing, pulverising, filtering, separating, mixing, blending	39	4	:	4	4	7	19	:	:	:
Machines for processing materials - chemical processes (reactive, fermenting processes)	:	:	:	:	:	:	:	:	:	:
Machines for processing materials - hot processes (ovens, driers, kilns)	20	10	:	4	:	:	:	:	:	:
Machines for processing materials - cold processes (production of cold)	:	:	:	:	:	:	:	:	:	:
Machines for processing materials - other processes	7	:	:	:	:	:	:	:	:	:
Forming machines - by pressing, crushing	16	:	:	:	:	:	10	:	:	:
Forming machines - by calendaring, rolling, cylinder presses (including paper presses)	6	:	:	:	:	:	:	:	:	:
Forming machines - by injection, extrusion, blowing, spinning, moulding, melting, casting	5	:	:	:	:	:	:	:	:	:
Machine tools - for planing, milling, surface treatment, grinding, polishing, turning, drilling	14	:	:	:	5	:	4	:	:	:
Machine tools - for sawing	12	:	:	:	:	7	:	:	:	:
Machine tools - for cutting, splitting, clipping (including die cutters, shearing machines, clippers, oxygen cutting equipment)	5	:	:	:	:	:	:	:	:	:
Machines for surface treatment - cleaning, washing, drying, painting, printing	4	:	:	:	:	:	:	:	:	:
Machines for surface treatment - galvanising, electrolytic surface treatment	:	:	:	:	:	:	:	:	:	:
Assembling machines (welding, gluing, nailing, screwing, riveting, spinning, wiring, sewing, stapling)	6	4	:	:	:	:	:	:	:	:
Packing machines, wrapping machines (filling, labelling, closing...)	7	:	:	:	:	:	:	:	:	:
Other machines for specific industries (miscellaneous monitoring and testing machines)	:	:	:	:	:	:	:	:	:	:
Specific machines used in farming which are not included with the above machines	6	:	:	:	:	:	:	:	:	:
Other	21	:	:	:	6	8	:	:	:	:
<b>Conveying, transport and storage systems</b>	<b>466</b>	<b>18</b>	<b>16</b>	<b>97</b>	<b>137</b>	<b>22</b>	<b>163</b>	<b>10</b>	<b>:</b>	<b>:</b>
Fixed conveyors, continuous handling equipment and systems - belts, escalators, cableways, conveyors, etc.)	44	:	:	12	8	4	17	:	:	:
Elevators, lifts - hoists, bucket elevators, jacks, etc.	55	:	:	16	12	5	20	:	:	:
Fixed cranes, mobile cranes, vehicle-mounted cranes, overhead travelling cranes, hoisting devices with suspended load	95	6	:	17	37	4	27	:	:	:
Mobile handling devices, handling trucks (powered or not) - barrows, pallet trucks, etc.	146	:	:	23	47	:	69	:	:	:
Lifting equipment, securing, gripping and miscellaneous handling devices (including slings, hooks, ropes...)	26	:	:	10	10	:	:	:	:	:
Storage systems, packaging equipment, containers (silos, tanks - fixed - tanks, vats, containers, etc.	33	:	11	7	:	:	9	:	:	:
Storage systems, packaging equipment, containers - mobile	21	:	:	5	4	:	9	:	:	:
Storage accessories, shelving, pallet racks, pallets	13	:	:	:	5	:	6	:	:	:
Miscellaneous packaging, small and medium-sized, mobile (skips, miscellaneous containers, bottles, crates, extinguishers...)	18	5	:	:	4	:	:	:	:	:
Other	9	:	:	:	5	:	:	:	:	:
<b>Land vehicles</b>	<b>2 209</b>	<b>14</b>	<b>10</b>	<b>292</b>	<b>1 544</b>	<b>42</b>	<b>263</b>	<b>15</b>	<b>:</b>	<b>27</b>
Vehicles - heavy: lorries, buses, coaches (passenger transport)	896	8	5	148	559	11	151	6	:	8
Vehicles - light: goods or passengers	1 090	4	4	97	869	21	79	6	:	8
Vehicles - two or three wheels, powered or not	56	:	:	14	36	:	:	:	:	:
Other land vehicles: skis, roller-skates	5	:	:	:	:	:	:	:	:	:
Other	37	:	:	4	25	:	:	:	:	4
<b>Other transport vehicles</b>	<b>153</b>	<b>4</b>	<b>21</b>	<b>17</b>	<b>77</b>	<b>5</b>	<b>24</b>	<b>:</b>	<b>:</b>	<b>4</b>
Vehicles - on rails, including suspended monorails: goods	33	:	:	:	17	:	13	:	:	:
Vehicles - on rails, including suspended monorails: passengers	46	:	:	:	39	:	5	:	:	:
Vehicles - nautical: goods	11	:	5	:	:	:	:	:	:	:
Vehicles - nautical: passengers	:	:	:	:	:	:	:	:	:	:
Vehicles - nautical: fishing	19	:	14	:	:	:	:	:	:	:
Vehicles - aerial: goods	8	:	:	:	6	:	:	:	:	:
Vehicles - aerial: passenger	10	:	:	6	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
<b>Materials, objects, products, machine or vehicle components, debris, dust</b>	<b>658</b>	<b>17</b>	<b>53</b>	<b>79</b>	<b>255</b>	<b>60</b>	<b>173</b>	<b>15</b>	<b>:</b>	<b>4</b>
Building materials - large and small: prefabricated shells, formwork, girders, beams, bricks, tiles, etc.	205	:	21	26	72	9	72	:	:	:
Machine components, vehicle components: chassis, crankcase, levers, wheels, etc.	126	:	:	24	46	12	39	:	:	:
Machined parts or components, machine tools (including fragments and chips from these material agents )	73	:	:	5	29	22	17	:	:	:
Joining devices: nuts, bolts, screws, nails, etc.	12	:	:	:	4	:	:	:	:	:
Particles, dust, splinters, fragments, splashes, shards, other debris	48	5	13	:	17	8	4	:	:	:
Farm products (including seeds, straw, other farm products)	12	:	:	:	7	:	:	:	:	:
Products for use in farming and breeding (including fertilisers, animal feeds)	7	4	:	:	:	:	:	:	:	:
Stored products - including objects and packaging in storage areas	22	:	:	:	7	:	9	:	:	:
Stored products - in rolls, coils	19	:	:	:	13	:	4	:	:	:
Loads - transported by a mechanical handling or conveying device	17	:	:	:	11	:	:	:	:	:
Loads - suspended from a hoisting device, a crane	29	:	:	:	19	:	9	:	:	:
Loads - handled by hand	32	:	:	4	12	:	6	7	:	:
Other	27	:	7	4	7	:	:	:	:	:

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW



**Table A5.4d (continued)**
**Number of fatal accidents at work by material agent associated with the contact – mode of injury and the variable contact – mode of injury, EU\_V, over the period 2003-2005**

	All contacts - modes of injury	Contact with electrical voltage, temperature, hazardous substances	Drowned, buried, enveloped	Horizontal/vertica impact with/against stationary object (victim in motion)	Struck by object in motion, collision with	Contact with sharp, pointed, rough, coarse Material Agent	Trapped, crushed, etc.	Physical or mental stress	Bite, kick, etc. (animal or human)	Other Contacts
<b>Total</b>	<b>7 004</b>	<b>507</b>	<b>303</b>	<b>1 902</b>	<b>2 505</b>	<b>451</b>	<b>1 054</b>	<b>106</b>	<b>75</b>	<b>101</b>
Chemical, explosive, radioactive, biological substances	181	123	40	:	:	:	6	:	:	5
Substances - caustic, corrosive (solid, liquid or gaseous)	13	8	:	:	:	:	:	:	:	:
Substances - harmful, toxic (solid, liquid or gaseous)	40	34	5	:	:	:	:	:	:	:
Substances - flammables (solid, liquid or gaseous)	23	22	:	:	:	:	:	:	:	:
Substances - explosive, reactive (solid, liquid or gaseous)	28	22	:	:	:	:	4	:	:	:
Gases, vapours with no specific effects (inert for life forms, suffocating)	36	20	11	:	:	:	:	:	:	:
Substances - radioactive	:	:	:	:	:	:	:	:	:	:
Substances - biological	:	:	:	:	:	:	:	:	:	:
Substances, materials - with no specific risk (water, inert materials...)	27	6	17	:	:	:	:	:	:	:
Other	6	:	:	:	:	:	:	:	:	:
Safety devices and equipment	13	5	:	4	:	:	:	:	:	:
Safety devices - on machines	:	:	:	:	:	:	:	:	:	:
Protective devices - individual	4	:	:	:	:	:	:	:	:	:
Emergency devices and equipment	:	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
Office equipment, personal equipment, sports equipment, weapons, domestic appliances	47	:	:	5	17	16	:	:	:	5
Furniture	9	:	:	:	4	:	:	:	:	:
Equipment - computer, office automation, reprographic, communications	:	:	:	:	:	:	:	:	:	:
Equipment - for teaching, writing, drawing - including typewriters, stamping machines, enlargers, time-recorders	:	:	:	:	:	:	:	:	:	:
Items and equipment for sports and game	11	:	:	:	7	:	:	:	:	:
Weapons	18	:	:	:	:	8	:	:	:	4
Personal items, clothing	:	:	:	:	:	:	:	:	:	:
Musical instruments	:	:	:	:	:	:	:	:	:	:
Domestic-type equipment, tools, objects, linen (professional use)	:	:	:	:	:	:	:	:	:	:
Other	5	:	:	:	:	:	:	:	:	:
Living organisms and human-beings	239	4	:	39	80	17	21	9	63	4
Trees, plants, crops	123	:	:	28	68	7	19	:	:	:
Animals - domestic and for breeding	34	:	:	:	:	:	:	:	29	:
Animals - wild animals, insects, snakes	14	:	:	:	:	:	:	:	11	:
Micro-organisms	:	:	:	:	:	:	:	:	:	:
Infectious viral agents	16	4	:	:	:	:	:	:	4	:
Humans	40	:	:	4	4	8	:	6	16	:
Other	:	:	:	:	:	:	:	:	:	:
Bulk waste	11	:	5	:	:	:	:	:	:	:
Bulk waste - from raw materials, products, materials, objects	:	:	:	:	:	:	:	:	:	:
Bulk waste - from chemicals	:	:	:	:	:	:	:	:	:	:
Bulk waste - from biological substances, plants, animals	4	:	:	:	:	:	:	:	:	:
Other	:	:	:	:	:	:	:	:	:	:
Physical phenomena and natural elements	158	56	54	13	18	:	6	11	:	:
Physical phenomena - noise, natural radiation, light, light arcs, pressurisation, depressurisation, pressure	13	12	:	:	:	:	:	:	:	:
Natural and atmospheric elements (including stretches of water, mud, rain, hail, snow, ice, wind, etc.)	77	4	49	5	12	:	:	5	:	:
Natural disasters (including floods, volcanic eruptions, earthquakes, tidal waves, fire, conflagration)	45	34	:	4	:	:	:	:	:	:
Other	15	4	:	:	4	:	:	4	:	:
Other material agents not listed in this classification	86	5	6	19	22	7	12	6	:	8

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Source: Eurostat – ESAW





**Table A6.2**  
**Number of accidents at work by occupation of victims, size of local unit, sex and number of days lost;  
 average age of victims, 2005**

	Number of accidents at work per category of days lost at the EU-15 level										Averaged age of victims at the EU-15 level for:		Number of fatal accidents at the EU-27 level	Averaged age of victims of fatal accidents at the EU-27 level <sup>(2)</sup>	
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity <sup>(1)</sup>	Fatal accidents	Permanent incapacity <sup>(1)</sup>	Fatal accidents				
<b>Total</b>	<b>3 983 882</b>	<b>765 897</b>	<b>1 050 601</b>	<b>603 470</b>	<b>568 995</b>	<b>703 811</b>	<b>136 206</b>	<b>154 902</b>	<b>4 011</b>			<b>43.2</b>	<b>43.2</b>	<b>5 720</b>	<b>43.0</b>
<b>Occupation of the victim (ISCO)</b>															
Legislators, senior officials and managers	58 547	12 897	9 342	7 282	5 813	13 032	3 298	6 904	168			45.0	45.9	228	45.9
Legislators and senior officials	1 665	268	386	217	350	333	73	39	:			44.7	:	:	:
Corporate managers	26 909	5 249	5 390	3 732	3 569	6 120	1 759	1 090	77			46.9		127	
General managers	23 844	3 082	5 481	3 313	3 357	5 084	2 142	1 385	68			46.6		76	
Professionals	76 193	15 935	13 819	12 052	10 662	17 020	2 157	4 549	50			47.4	40.2	134	42.2
Physical, mathematical and engineering science professionals	12 889	2 311	3 286	1 696	2 368	2 355	527	347	23			41.2		57	
Life science and health professionals	25 416	4 459	6 113	3 707	4 822	4 784	744	787	10			45.9		15	
Teaching professionals	17 441	3 645	3 216	2 584	2 462	3 583	706	1 245	11			48.5		22	
Other professionals	10 472	1 832	2 507	1 414	1 895	1 974	502	348	6			44.0		39	
Technicians and associate professionals	200 446	45 366	40 260	32 314	24 612	39 660	7 371	10 862	118			45.6	42.2	223	42.3
Physical and engineering science associate professionals	35 993	7 806	9 142	5 359	4 927	6 210	1 434	1 115	36			42.0		87	
Life science and health associate professionals	62 308	11 304	15 295	9 783	10 028	11 546	2 355	1 997	17			44.9		27	
Teaching associate professionals	13 968	4 109	2 326	2 497	1 381	2 698	586	372	9			42.9		13	
Other associate professionals	70 650	11 632	17 859	10 125	11 122	13 918	3 622	2 371	56			42.0		92	
Clerks	178 061	31 679	42 226	26 833	25 509	37 007	6 578	8 228	90			43.0	43.0	121	43.1
Office clerks	124 442	23 551	31 592	18 478	18 095	22 913	5 190	4 623	58			42.9		83	
Customer service clerks	41 182	6 844	10 749	6 226	6 333	7 625	1 568	1 835	32			43.5		37	
Service workers and shop and market sales workers	475 095	97 642	122 075	73 641	68 581	80 628	15 441	17 087	109			44.2	42.9	163	42.1
Personal and protective services workers	296 745	53 991	82 875	46 080	47 897	47 494	11 305	7 102	70			42.4		106	
Models, salespersons and demonstrators	145 545	26 642	44 439	21 647	23 662	21 189	4 781	3 185	38			39.5		49	
Skilled agricultural and fishery workers	209 351	27 416	49 744	37 150	30 313	44 488	8 707	11 533	405			46.4	48.1	446	47.5
Craft and related trades workers	1 237 312	246 153	335 614	180 858	176 746	210 621	40 331	46 988	1 155			42.6	41.6	1 726	42.2
Extraction and building trades workers	578 762	100 231	163 833	82 527	93 023	95 524	22 633	20 992	685			42.1		917	
Metal, machinery and related trades workers	399 504	76 202	120 059	58 820	56 509	62 618	12 914	12 382	340			41.3		620	
Precision, handicraft, printing and related trades workers	42 237	6 775	12 550	6 497	6 454	7 143	1 157	1 661	18			42.7		28	
Other craft and related trades workers	146 367	26 802	44 707	21 653	23 350	21 867	4 319	3 669	58			41.4		103	
Plant and machine operators and assemblers	669 752	118 568	175 495	104 265	93 488	127 099	23 307	27 530	1 090			42.7	42.9	1 590	42.5
Stationary-plant and related operators	107 110	18 280	31 002	16 442	14 735	19 143	3 174	4 334	126			42.6		187	
Machine operators and assemblers	278 791	51 077	81 836	42 735	39 641	46 008	7 754	9 740	239			41.5		292	
Drivers and mobile-plant operators	262 604	38 471	64 532	40 295	40 862	53 795	13 128	11 520	725			43.2		1 111	
Elementary occupations	697 097	125 539	202 990	102 331	115 686	108 818	24 556	17 177	561			41.9	42.7	822	42.4
Sales and services elementary occupations	285 294	46 827	78 060	43 345	45 853	49 883	12 507	8 820	127			44.0		174	
Agricultural, fishery and related labourers	34 646	5 094	9 149	5 096	6 963	6 039	1 039	1 266	71			44.7		116	
Labourers in mining, construction, manufacturing and transport	352 055	69 621	106 526	49 114	60 840	48 855	10 391	6 708	321			38.5		488	
<b>Size of local unit</b>															
1-9 employees	711 365	120 350	191 602	104 618	105 437	131 838	27 913	29 606	1 039			41.9	41.6	1 303	41.5
10-49 employees	898 152	170 587	249 464	130 071	135 588	147 444	30 545	34 454	853			43.0	41.8	1 308	42.0
50-249 employees	755 792	147 739	202 068	114 946	105 620	133 574	25 580	26 265	477			43.2	42.7	962	42.6
250 or + employees	645 820	120 991	169 351	95 937	102 250	113 002	21 936	22 353	333			42.8	42.5	775	43.3
<b>Gender of the victim</b>															
Males	3 043 602	584 745	817 153	454 693	434 006	533 610	102 625	116 769	3 811			42.8	43.2	5 404	43.1
Females	938 913	180 818	233 072	148 591	134 839	169 955	33 548	38 090	200			44.6	42.2	316	41.3

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(1) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

(2) According to a too small number of records for some categories, averages are displayed only at 1-digit level for ISCO

Source: Eurostat – ESAW



**Table A6.3**  
**Number of accidents at work by type of injury and number of days lost; average age of victims, 2005**

	Number of accidents at work per category of days lost at the EU-15 level									Averaged age of victims at the EU-15 level for:		Number of fatal accidents at the EU-27 level	Averaged age of victims of fatal accidents at the EU-27 level <sup>(3)</sup>
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity <sup>(1)</sup>	Fatal accidents	Permanent incapacity <sup>(1)</sup>	Fatal accidents <sup>(2)</sup>		
<b>Total</b>	3 983 882	765 897	1 050 601	603 470	568 995	703 811	136 206	154 902	4 011	43.2	43.2	5 720	43.0
Wounds and superficial injuries	1 452 874	307 121	497 704	223 174	190 324	174 952	31 175	28 423	391	42.0	42.4	436	42.2
Superficial injuries	375 282	87 969	113 857	50 505	56 676	47 780	11 623	6 871	76	42.3		91	
Open wounds	231 209	43 730	88 531	37 095	27 733	25 811	4 574	3 734	17	39.1		36	
Other	52 008	12 251	16 572	7 040	6 882	6 364	1 270	1 629	12	38.2		14	
Bone fractures	417 214	11 758	28 339	45 627	74 569	165 844	40 222	50 855	723	43.7	43.1	913	42.9
Closed fractures	146 398	8 330	12 083	22 151	28 336	56 895	12 889	5 714	102	42.2		174	
Open fractures	13 692	579	898	1 766	3 207	4 694	1 520	1 028	58	39.6		109	
Other	5 266	365	609	702	1 360	1 615	413	203	5	39.1		25	
Dislocations, sprains and strains	1 163 896	201 783	318 367	181 604	197 932	194 097	42 246	27 867	21	42.4	49.7	25	47.5
Dislocations and subluxations	51 494	8 875	13 140	7 178	10 736	8 596	1 819	1 150		40.9			
Sprains and strains	382 323	72 655	103 597	62 433	66 262	59 156	11 542	6 678	9	40.4		10	
Other	245 848	44 106	71 326	35 975	36 874	39 022	11 867	6 679	5	42.2		5	
Traumatic amputations (Loss of body parts)	14 615	338	596	1 053	1 653	6 229	1 716	3 030	27	39.9	40.9	74	42.8
Concussion and internal injuries	403 940	83 668	116 063	57 247	70 483	56 771	10 968	8 740	568	42.2	43.5	1 012	43.0
Concussion and intracranial injuries	191 628	69 834	28 682	32 957	21 259	25 238	4 869	8 789	88	41.7		211	
Internal injuries	140 255	23 670	39 418	18 652	31 099	21 322	4 073	2 021	311	41.7		481	
Other	5 933	1 178	1 554	801	1 341	844	144	71	18	43.1		47	
Burns, scalds and frostbites	72 781	16 991	23 307	11 986	10 823	7 412	1 271	991	77	38.7	39.8	158	40.0
Burns and scalds (thermal)	39 396	8 698	12 811	6 884	5 697	4 086	679	541	32	38.7		96	
Chemical burns (corrosions)	10 824	3 310	3 151	1 324	1 507	1 125	248	159		41.4		7	
Frostbites	216	52	55	40	28	24	9	7		48.0			
Other	1 549	374	401	234	348	143	32	17		38.5			
Poisonings and infections	24 174	6 094	7 768	4 177	2 742	2 474	253	665	125	40.7	40.4	162	41.8
Acute poisonings	1 567	683	224	224	143	235	11	46		43.8		27	
Acute infections	3 100	1 180	870	350	417	233	27	22		44.0			
Other	477	203	86	59	82	35		8		37.7			
Drowning and asphyxiation	2 097	640	465	263	465	178	44	44	127	40.5	44.7	253	42.7
Asphyxiation	176	64	38	25	30	15			22	62.0		107	
Drowning and non-fatal submersions	13	4			4				5	31.0		8	
Other	138	37	32	18	38	9			11	47.3		19	
Effects of sound, vibration and pressure	2 615	797	966	354	256	181	17	44		48.3	24.0	4	30.8
Acute hearing losses	1 096	359	471	141	63	43		17		47.7			
Effects of pressure (barotrauma)	174	59	50	24	18	22				29.0			
Other	405	105	91	69	77	46		7		52.2			
Effects of temperature extremes, light and radiation	1 259	525	263	79	287	57	17	30		36.9	35.0	5	37.2
Heat and sunstroke <sup>(1)</sup>	71	23	19		23								
Effects of radiation (non-thermal)	744	392	121	25	176	15	5	10		45.0			
Effects of reduced temperature	86	34	16	5	16	6		5		55.8			
Other	129	55	19	8	35	7		4		25.5			
Shock	12 678	3 541	1 746	2 226	1 969	2 416	342	439	60	41.8	41.2	111	41.6
Shocks after aggression and threats	5 370	1 671	324	1 078	459	1 354	180	305	6	42.4		6	
Traumatic shocks	2 751	758	359	612	388	498	51	84	38	44.3		57	
Other	814	353	53	162	46	166	12	22		40.7		14	
Multiple injuries	68 369	9 282	15 595	9 221	9 339	15 205	5 445	4 281	835	42.3	42.4	1 278	42.7
Other specified injuries not included under other headings	80 816	16 241	20 307	10 171	16 147	12 348	3 089	2 512	603	41.0	44.8	761	44.6

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(<sup>1</sup>) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

(<sup>2</sup>) According to a too small number of records for some categories, averages are displayed only at 1-digit level for types of injury

(<sup>3</sup>) No record for fatal accidents; use of code '-' in the table for average ages

Source: Eurostat – ESAW





**Table A6.5**  
**Number of accidents at work by contact – mode of injury and number of days lost; average age of victims, EU\_V**

	Number of accidents at work per category of days lost in 2005								Number of fatal accidents over 2003-2005	Averaged age of victims for:	
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity <sup>(1)</sup>		Permanent incapacities in 2005 <sup>(1)</sup>	Fatal accidents over 2003-2005
<b>All modes of injury</b>	<b>3 063 650</b>	<b>495 976</b>	<b>769 124</b>	<b>420 101</b>	<b>499 174</b>	<b>689 942</b>	<b>97 830</b>	<b>91 502</b>	<b>8 548</b>	<b>43.0</b>	<b>42.5</b>
Contact with electrical voltage, temperature, hazardous substances	102 780	24 002	27 251	13 652	14 307	19 527	1 985	2 054	624	40.9	39.8
Indirect contact with a welding arc, spark, lightning (passive)	1 637	373	296	186	274	394	62	53	36	38.5	40.8
Direct contact with electricity, receipt of electrical charge in the body	5 510	934	1 110	675	823	1 428	210	330	267	39.5	37.4
Contact with naked flame or a hot or burning object or environment	40 280	6 599	10 144	6 350	5 705	10 123	723	637	151	41.8	40.4
Contact with a cold or frozen object or environment	2 634	405	631	339	462	581	132	84	.	39.8	51.0
Contact with hazardous substances - through nose, mouth via inhalation	4 472	1 432	1 157	542	605	538	83	115	75	42.3	41.8
Contact with hazardous substances - on/through skin or eyes	31 814	10 190	8 948	3 415	3 173	5 131	384	572	25	42.0	45.5
Contact with hazardous substances - through the digestive system by swallowing or eating (2)	319	55	64	46	37	112	4	.	9	-	51.8
Other	10 374	2 147	2 841	1 465	1 920	1 464	294	243	35	39.2	43.8
Drowned, buried, enveloped	3 451	878	873	366	546	529	145	114	374	42.6	41.4
Drowned in liquid	193	23	39	32	43	38	8	9	130	51.7	42.3
Buried under solid	644	61	126	65	99	166	82	45	157	40.8	39.8
Enveloped in, surrounded by gas or airborne particles	1 217	582	326	90	122	66	9	21	30	41.9	41.4
Other	1 070	182	279	134	210	203	38	24	12	39.7	49.9
Horizontal or vertical impact with or against a stationary object (the victim is in motion)	793 632	107 309	169 130	108 885	126 676	212 819	34 058	34 756	2 295	44.6	43.9
Vertical motion, crash on or against (resulting from a fall)	482 749	57 718	92 075	64 160	74 078	144 299	22 672	27 747	1 610	44.9	44.7
Horizontal motion, crash on or against	170 250	25 507	41 106	24 479	27 624	41 502	5 737	4 295	466	43.2	41.0
Other	64 756	9 495	12 328	10 074	11 740	16 180	3 817	1 121	61	42.7	43.7
Struck by object in motion, collision with	554 466	90 084	134 174	74 153	94 886	127 635	18 140	15 395	2 993	41.8	41.8
Struck - by flying object	69 495	15 154	17 275	7 808	8 520	17 380	1 598	1 760	129	42.1	40.9
Struck - by falling object	190 284	28 652	44 412	24 602	31 047	51 395	5 846	4 329	475	41.6	43.3
Struck - by swinging object	19 981	3 473	4 888	2 475	3 555	4 712	545	332	40	42.2	44.2
Struck - by rotating, moving, transported object, including vehicles	86 647	12 075	20 385	12 814	16 367	18 400	3 501	3 105	755	41.7	42.0
Collision with an object, including vehicles - collision with a person (the victim is moving)	66 020	9 592	14 501	9 633	10 388	16 130	2 728	3 048	1 128	41.7	41.3
Other	51 070	8 949	11 569	7 491	10 693	9 402	2 095	871	215	41.9	42.1
Contact with sharp, pointed, rough, coarse Material Agent	605 676	101 139	189 640	84 805	81 339	119 748	12 936	16 068	504	42.6	42.9
Contact with sharp Material Agent (knife, blade etc.)	244 865	34 038	76 694	34 298	29 647	61 403	4 252	4 533	95	40.9	39.3
Contact with pointed Material Agent (nail, sharp tool etc.)	60 636	12 668	19 166	8 084	7 570	11 043	989	1 115	44	41.0	40.1
Contact with hard or rough Material Agent	144 083	23 206	39 765	22 400	17 219	29 538	4 222	7 733	261	43.8	44.5
Other	35 355	7 694	9 503	4 809	6 178	5 582	1 188	401	16	40.0	45.3
Trapped, crushed, etc.	204 139	26 543	38 687	26 834	27 498	69 297	7 970	7 311	1 279	41.1	42.1
Trapped, crushed - in	39 925	5 603	7 216	5 694	5 565	12 410	1 814	1 623	139	41.1	43.0
Trapped, crushed - under	33 766	4 366	7 304	5 054	4 741	9 734	1 145	1 422	567	41.8	41.5
Trapped, crushed - between	93 806	10 880	15 647	11 174	11 958	38 521	3 042	2 584	346	40.2	41.4
Limb, hand or finger torn or cut off	5 840	237	630	458	761	2 343	776	635	17	40.6	43.6
Other	9 691	1 390	1 848	1 536	1 787	2 426	527	178	22	41.6	44.0
Physical or mental stress	634 545	119 635	171 751	89 305	120 429	105 346	16 150	11 929	186	42.8	46.0
Physical stress - on the musculoskeletal system	553 551	101 452	149 000	77 761	107 408	93 591	14 050	10 288	98	42.9	45.2
Physical stress - due to radiation, noise, light or pressure	2 420	587	641	297	382	350	99	65	7	41.4	41.3
Mental stress or shock	7 217	1 614	1 066	1 357	693	1 745	388	355	35	44.6	50.3
Other	32 184	6 452	5 992	5 363	5 705	6 865	1 172	637	35	39.8	45.8
Bite, kick, etc. (animal or human)	75 608	13 691	17 958	10 491	11 685	17 591	2 193	1 999	129	45.1	47.6
Bite	6 545	1 601	1 683	963	674	1 446	79	99	.	45.5	-
Sting from insect or fish	2 820	1 022	809	304	296	324	26	39	12	48.9	47.3
Blow, kick, head butt, strangulation	49 165	7 726	10 668	6 751	8 001	13 117	1 476	1 425	71	45.3	46.2
Other	6 749	1 033	1 521	915	1 169	1 591	297	224	25	42.9	41.0
Other Contacts - Modes of Injury not listed in this classification	89 353	12 696	19 661	11 611	21 808	17 450	4 252	1 875	164	42.0	45.1

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(<sup>1</sup>) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

Source: Eurostat – ESAW



**Table A6.6**  
 Number of accidents at work by specific physical activity and number of days lost; average age of victims, EU\_V

	Number of accidents at work per category of days lost in 2005								Number of fatal accidents over 2003-2005	Averaged age of victims for:	
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity <sup>(1)</sup>		Permanent incapacities in 2005 <sup>(1)</sup>	Fatal accidents over 2003-2005
<b>All specific physical activity</b>	<b>1 746 369</b>	<b>257 079</b>	<b>455 584</b>	<b>233 778</b>	<b>302 275</b>	<b>393 916</b>	<b>56 211</b>	<b>47 525</b>	<b>7 122</b>	<b>43.6</b>	<b>42.3</b>
Operating machine	118 738	15 188	28 972	15 137	21 158	30 681	4 647	2 955	515	40.7	41.7
Starting the machine, stopping the machine	9 530	1 172	2 372	1 406	1 555	2 197	491	336	46	41.1	40.4
Feeding the machine, unloading the machine	22 767	2 537	5 461	3 161	4 246	5 702	1 111	549	58	39.9	41.9
Monitoring the machine, operating or driving the machine, Other	27 774	3 243	6 210	3 432	4 426	8 652	990	821	176	41.0	42.4
Other	15 874	2 002	4 215	2 278	2 461	4 013	659	246	89	39.9	41.1
Working with hand-held tools	265 830	44 468	81 296	37 504	41 867	47 978	6 394	6 323	831	43.0	43.0
Working with hand-held tools - manual	139 108	21 997	43 123	20 321	20 616	26 782	3 093	3 177	456	43.4	42.7
Working with hand-held tools - motorised	56 791	9 140	16 688	8 475	8 192	11 284	1 443	1 568	145	41.9	39.9
Other	4 590	612	1 082	508	936	1 175	193	84	20	42.2	43.3
Driving/being on board a means of transport or handling equipment	127 923	15 868	29 106	18 664	22 318	30 364	5 661	5 943	2 799	42.2	40.6
Driving a means of transport or handling equipment - mobile and motorised	72 347	8 754	16 696	10 640	12 617	17 344	3 113	3 183	1 929	41.7	40.4
Driving a means of transport or handling equipment - mobile and non-motorised	12 166	1 553	2 908	1 853	1 879	2 993	482	498	133	42.3	42.3
Being a passenger on board a means of transport	7 477	784	1 530	1 066	1 282	2 029	449	336	321	42.4	40.1
Other	4 119	486	1 009	563	774	964	236	87	42	43.0	43.6
Handling of objects	472 542	72 564	125 787	58 461	81 283	113 383	11 180	9 884	895	43.3	43.1
Manually taking hold of, grasping, seizing, holding, placing - on a horizontal level	213 086	36 002	64 387	29 142	41 030	33 382	4 907	4 237	287	43.0	42.6
Tying, binding, tearing off, undoing, squeezing, unscrewing, screwing, turning	24 687	3 725	7 020	3 500	3 798	5 022	807	815	107	43.1	41.5
Fastening, hanging up, raising, putting up - on a vertical level	25 910	3 940	7 041	3 513	4 640	5 054	978	743	109	42.7	41.0
Throwing, flinging away	2 645	291	602	454	426	615	130	129	27	47.9	49.1
Opening, closing (box, package, parcel)	13 237	2 212	4 031	1 995	2 096	2 252	277	374	26	44.1	40.8
Pouring, pouring into, filling up, watering, spraying, emptying, baling out	9 032	1 646	2 504	1 233	1 674	1 543	222	210	36	45.6	42.7
Opening (a drawer), pushing (a warehouse/office /cupboard door)	9 189	1 308	2 328	1 337	1 506	2 244	237	230	15	44.4	44.7
Other	12 816	1 827	3 589	1 841	2 603	2 226	487	243	62	43.4	47.0
Carrying by hand	234 194	39 230	66 802	33 156	40 011	43 304	6 639	5 052	314	44.0	43.3
Carrying vertically - lifting, raising, lowering an object	97 426	15 802	27 927	13 892	17 333	17 611	2 518	2 342	121	43.9	43.5
Carrying horizontally - pulling, pushing, rolling an object	34 897	4 891	8 871	4 751	6 636	7 920	1 115	714	61	43.5	43.7
Transporting a load - carried by a person	62 055	9 914	18 392	9 145	9 725	11 870	1 914	1 094	98	44.3	42.2
Other	3 598	371	872	561	725	811	182	75	12	44.1	44.1
Movement	477 925	62 310	111 733	64 498	85 957	117 741	19 744	15 943	1 252	45.1	44.5
Walking, running, going up, going down, etc.	312 866	37 621	71 893	43 161	56 328	79 558	13 148	11 158	821	44.8	44.5
Getting in or out	20 938	1 744	3 748	2 617	3 356	7 871	1 070	532	57	44.9	40.1
Jumping, hopping, etc.	6 535	700	1 425	908	1 236	1 605	369	292	15	44.3	43.7
Crawling, climbing, etc.	4 398	240	528	308	401	2 624	127	170	40	45.7	46.1
Getting up, sitting down	11 999	2 115	3 505	1 562	2 391	1 879	325	224	19	45.1	40.5
Swimming, diving	203	32	61	28	46	28	6	.	9	-	43.1
Movements on the spot	29 553	4 676	8 239	3 865	6 430	4 961	862	519	71	44.7	44.5
Other	7 668	882	1 928	1 057	1 537	1 675	410	180	40	44.1	43.2
Presence	27 871	4 509	6 659	3 559	4 892	6 281	1 005	966	306	43.9	44.7
Other Specific Physical Activities not listed in this classification	21 346	2 943	5 232	2 798	4 789	4 186	940	458	210	43.0	42.5

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(<sup>1</sup>) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

Source: Eurostat – ESAW



**Table A6.7****Number of accidents at work by working process and number of days lost; average age of victims, EU\_V**

	Number of accidents at work per category of days lost in 2005								Averaged age of victims for:		
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity <sup>(1)</sup>	Number of fatal accidents over 2003-2005	Permanent incapacities in 2005 <sup>(1)</sup>	Fatal accidents over 2003-2005
<b>All working process</b>	<b>1 709 648</b>	<b>251 660</b>	<b>447 683</b>	<b>227 496</b>	<b>295 426</b>	<b>383 243</b>	<b>54 907</b>	<b>49 233</b>	<b>6 921</b>	<b>42.9</b>	<b>41.8</b>
Production, manufacturing, processing, storing - All types	636 188	98 386	172 156	80 623	107 385	147 669	16 389	13 580	962	41.2	41.5
Production, manufacturing, processing - all types	285 251	43 787	78 742	38 202	44 182	65 798	7 739	6 802	467	40.9	41.0
Storing - all types	129 145	23 097	38 425	18 088	22 635	19 808	3 556	3 535	247	41.9	41.6
Other	20 336	2 817	5 463	2 791	3 956	3 934	984	391	63	39.7	44.0
Excavation, Construction, Repair, Demolition	226 835	38 318	65 277	29 615	41 954	36 162	7 887	7 622	1 464	41.8	41.8
Excavation	9 678	1 303	2 172	1 159	1 699	2 443	652	249	131	41.6	41.4
New construction - building	123 693	21 763	36 262	16 023	23 305	18 486	3 698	4 155	651	41.7	42.4
New construction - civil engineering, infrastructures, roads, bridges, dams, ports	12 987	2 041	3 672	1 655	2 585	2 155	537	343	103	42.0	41.4
Remodelling, repairing, extending, building maintenance - all types of constructions	36 689	5 958	10 375	4 800	6 857	5 943	1 389	1 368	302	42.0	42.0
Demolition - all types of construction	2 786	451	738	400	394	513	159	131	49	42.2	41.3
Other	7 367	1 265	2 000	910	1 289	1 337	379	206	54	41.5	42.0
Agricultural type work, forestry, horticulture, fish farming, work with live animals	83 859	8 850	19 417	13 344	15 337	19 750	3 077	4 084	525	49.0	45.2
Agricultural type work - working the land	16 660	1 609	3 792	2 849	3 274	3 633	603	900	117	49.0	47.1
Agricultural type work - with vegetables, horticultural	18 735	2 152	4 546	3 151	3 166	4 016	569	1 135	71	49.7	50.1
Agricultural type work - with live animals	19 239	1 492	3 697	2 935	3 032	6 472	710	900	65	51.1	47.8
Forestry type work	11 573	1 548	3 067	1 749	2 087	2 127	484	512	167	45.8	41.4
Fish farming, fishing	2 594	207	539	370	617	619	160	82	46	43.6	42.0
Other	3 702	536	1 001	530	726	654	156	99	23	44.9	46.1
Service provided to enterprise and/or to the general public; intellectual activity	225 704	34 013	60 993	32 589	41 771	42 846	7 029	6 464	379	44.2	42.2
Service, care, assistance, to the general public	88 122	12 924	21 681	12 159	17 092	19 218	2 745	2 304	93	45.2	42.4
Intellectual work - teaching, training, data processing, office work, organising, managing	22 716	3 176	5 642	3 168	4 131	4 705	941	954	71	47.2	44.5
Commercial activity - buying, selling and associated services	63 248	10 192	19 318	9 787	10 672	9 933	1 701	1 645	124	41.7	41.3
Other	12 635	1 785	3 512	1 825	2 501	2 257	516	239	28	42.1	41.5
Other work related to tasks coded under 10, 20, 30 and 40	288 697	43 473	77 295	38 917	47 799	62 975	10 005	8 232	1 098	42.6	43.3
Setting up, preparation, installation, mounting, disassembling, dismantling	98 972	14 949	25 824	12 086	16 424	24 245	3 022	2 422	334	40.7	41.4
Maintenance, repair, tuning, adjustment	74 981	11 024	19 632	10 093	11 618	17 558	2 534	2 522	362	43.2	43.6
Cleaning working areas, machines - industrial or manual	59 598	9 179	17 143	8 987	10 274	10 145	2 208	1 662	121	44.3	42.5
Waste management, disposal, waste treatment of all kinds	14 454	2 379	4 173	2 195	2 342	2 509	458	398	64	43.3	43.3
Monitoring, inspection of manufacturing procedures, working areas, means of transport, equipment - with or without monitoring equipment	16 301	2 317	3 902	2 185	2 596	4 089	731	481	140	43.0	45.6
Other	13 086	1 764	3 264	1 883	2 260	2 761	719	435	62	42.2	47.0
Movement, sport, artistic activity	204 371	22 477	41 306	26 813	30 373	66 383	8 706	8 313	2 264	43.4	40.4
Movement, including aboard means of transport	180 964	19 965	36 231	23 478	25 821	60 868	7 252	7 349	2 189	43.4	40.4
Sport, artistic activity	11 746	1 105	2 321	1 676	2 030	3 134	845	635	32	43.9	40.8
Other	4 529	471	1 005	647	942	1 085	311	67	13	40.3	38.6
Other Working Processes not listed in the above classification	43 994	6 144	11 238	5 595	10 807	7 457	1 814	938	229	41.4	41.3

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(<sup>1</sup>) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

Source: Eurostat – ESAW





**Table A6.9a (continued over 4 pages)****Number of accidents at work by Material Agent associated with the deviation and number of days lost; average age of victims, EU\_V**

	Number of accidents at work per category of days lost in 2005								Number of fatal accidents over 2003-2005	Averaged age of victims for:	
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity (1)		Permanent incapacities in 2005 (1)	Fatal accidents over 2003-2005
<b>All Material Agent associated with the deviation</b>	<b>2 350 667</b>	<b>334 654</b>	<b>598 456</b>	<b>310 448</b>	<b>405 286</b>	<b>552 646</b>	<b>77 547</b>	<b>71 630</b>	<b>6 888</b>	<b>43.2</b>	<b>43.2</b>
Buildings, structures, surfaces - at ground level (indoor or outdoor, fixed or mobile, temporary or not)	436 508	54 989	101 755	59 728	74 838	112 080	16 419	16 699	523	44.9	43.7
Building components, structural components - doors, walls, partitions etc. and intentional obstacles (windows, etc.)	52 882	8 816	15 439	7 249	9 587	8 885	1 521	1 386	115	43.0	42.1
Surfaces at ground level - ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank with nails in)	345 893	39 787	76 579	47 484	57 903	96 966	13 259	13 916	364	45.0	44.4
Surfaces at ground level - floating	1 598	155	343	217	297	422	103	61	4	40.9	32.5
Other	3 612	392	777	440	710	948	263	82	4	41.8	39.3
Buildings, structures, surfaces - above ground level (indoor or outdoor)	217 533	24 856	47 206	28 776	38 774	55 505	10 670	11 747	928	43.5	44.0
Parts of building, above ground level - fixed (roofs, terraces, doors and windows, stairs, quays)	115 987	13 346	25 597	15 894	22 054	29 588	4 989	4 519	381	43.2	42.8
Structures, surfaces, above ground level - fixed (including gangways, fixed ladders, pylons)	13 946	1 601	3 331	2 010	2 353	3 161	761	730	123	42.8	44.6
Structures, surfaces, above ground level - mobile (including scaffolding, mobile ladders, cradles, elevating platforms)	59 121	5 811	11 489	7 217	8 369	18 093	3 125	5 017	200	44.2	47.4
Structures, surfaces, above ground level - temporary (including temporary scaffolding, harnesses, swings)	16 913	2 325	4 142	2 089	3 585	3 111	837	825	158	41.6	42.6
Structures, surfaces, above ground level - floating (including drilling platforms, scaffolding on barges)	457	74	94	54	98	91	28	18	6	40.2	41.7
Other	2 548	256	483	340	525	643	218	83	6	38.6	39.5
Buildings, structures, surfaces - below ground level (indoor or outdoor)	10 446	1 096	1 996	1 192	1 687	3 335	762	379	133	42.2	44.0
Excavations, trenches, wells, pits, escarpments, garage pits	6 775	725	1 297	811	1 050	2 221	425	246	93	41.3	42.5
Underground areas, tunnels	1 412	134	186	109	214	564	164	41	20	40.8	40.9
Underwater environments	123	19	42	19	26	10	:	:	:	-	-
Other	781	69	152	85	125	266	66	19	11	44.4	55.8
Systems for the supply and distribution of materials, pipe networks	20 494	3 349	5 975	2 942	3 521	3 497	669	541	55	43.1	42.1
Systems for the supply and distribution of materials, pipe networks - fixed - for gas, air, liquids, solids - including hoppers	11 945	1 913	3 573	1 803	1 923	2 010	349	374	34	43.6	42.1
Systems for the supply and distribution of materials, pipe networks - mobile	4 760	809	1 430	647	886	759	136	93	10	42.6	49.5
Sewers, drains	973	120	262	150	159	212	51	19	:	43.4	-
Other	945	145	249	126	183	186	43	14	5	40.3	25.6
Motors, systems for energy transmission and storage	19 014	2 907	5 053	2 661	3 413	3 647	680	652	165	41.8	39.9
Motors, power generators (thermal, electric, radiation)	6 315	997	1 777	848	1 161	1 156	196	181	34	42.2	43.2
Systems for energy transmission and storage (mechanical, pneumatic, hydraulic, electric, including batteries and accumulators)	10 051	1 510	2 627	1 436	1 736	1 985	370	387	121	41.5	38.8
Other	736	82	177	110	157	161	35	14	5	38.5	43.4
Hand tools, not powered	225 275	36 775	73 327	31 361	35 689	40 421	4 047	3 657	104	42.1	40.8
Hand tools, not powered - for sawing	5 602	608	1 694	933	872	1 068	144	282	5	43.0	40.0
Hand tools, not powered - for cutting, separating (including scissors, shears, secateurs)	94 149	14 092	35 698	13 624	12 076	16 339	1 036	1 284	24	42.1	38.5
Hand tools, not powered - for carving, slotting, chiselling, trimming, clipping, shearing	4 507	741	1 570	600	671	774	64	87	:	40.7	-
Hand tools, not powered - for scraping, polishing, buffing	3 573	625	1 195	413	528	693	68	52	:	42.7	-
Hand tools, not powered - for drilling, turning, screwing	26 582	4 281	7 477	3 404	3 666	6 742	524	489	15	41.7	33.1
Hand tools, not powered - for nailing, riveting stapling	27 887	4 905	7 828	3 856	5 006	5 437	412	442	13	40.8	42.5
Hand tools, not powered - for sewing, knitting	442	76	152	76	59	76	:	:	:	-	-
Hand tools, not powered - for welding, gluing	1 823	407	534	223	360	254	32	12	:	43.9	-
Hand tools, not powered - for extracting materials and working the ground (including farming tools)	4 815	800	1 423	665	875	884	106	62	8	42.5	45.4
Hand tools, not powered - for waxing, lubricating, washing, cleaning	3 864	599	1 146	598	779	583	103	55	:	44.4	-
Hand tools, not powered - for painting	1 119	211	367	143	222	124	35	17	:	43.8	-
Hand tools, not powered - for holding in place, grasping	8 667	1 430	2 573	1 179	1 445	1 676	215	149	10	40.3	41.1
Hand tools, not powered - for kitchen work (except knives)	5 071	958	1 779	833	801	533	98	68	4	40.6	50.5
Hand tools, not powered - for medical and surgical work - sharp, cutting	9 184	1 725	2 691	1 283	1 355	1 725	185	221	:	45.4	-
Hand tools, not powered - for medical and surgical work - non-cutting, others	655	105	172	105	126	105	26	15	:	43.1	-
Other	5 509	754	1 458	785	1 004	1 222	202	83	12	41.9	44.4

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(1) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

Source: Eurostat – ESAW



**Table A6.9b (continued)**
**Number of accidents at work by Material Agent associated with the deviation and number of days lost; average age of victims, EU\_V**

	Number of accidents at work per category of days lost in 2005								Number of fatal accidents over 2003-2005	Averaged age of victims for:	
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity (1)		Permanent incapacities in 2005 (1)	Fatal accidents over 2003-2005
<b>All Material Agent associated with the deviation</b>	<b>2 350 667</b>	<b>334 654</b>	<b>598 456</b>	<b>310 448</b>	<b>405 286</b>	<b>552 646</b>	<b>77 547</b>	<b>71 630</b>	<b>6 888</b>	<b>43.2</b>	<b>43.2</b>
Hand-held or hand-guided tools, mechanical	65 516	9 811	18 305	8 891	11 008	14 173	1 776	1 552	46	41.0	43.0
Mechanical hand tools - for sawing	7 368	616	1 804	1 081	1 372	1 797	324	375	4	40.6	39.0
Mechanical hand tools - for cutting, separating (including scissors, shears, secateurs)	8 677	928	2 399	1 074	1 240	2 759	180	96	7	37.9	63.6
Mechanical hand tools - for carving, slotting, chiselling, (hedge cutting see 09.02) trimming, clipping, shearing	930	142	308	141	129	162	22	26	:	36.8	-
Mechanical hand tools - for scraping, polishing, buffing (including disc cutters)	11 550	1 656	3 639	1 860	1 909	2 015	260	211	:	40.2	-
Mechanical hand tools - for drilling, turning, screwing	12 038	1 818	3 472	1 554	1 995	2 678	277	244	:	39.5	-
Mechanical hand tools - for nailing, riveting, stapling	4 289	654	1 116	575	652	1 123	95	75	:	43.1	-
Mechanical hand tools - for sewing, knitting	242	40	89	34	33	38	6	:	:	-	-
Mechanical hand tools - for welding, gluing	3 314	967	996	404	472	367	59	50	7	43.8	40.7
Mechanical hand tools - for extracting materials and working the ground (including farming tools, concrete breakers)	2 158	350	642	291	460	341	43	31	:	40.4	-
Mechanical hand tools - for waxing, lubricating, washing, cleaning (including high-pressure vacuum cleaner)	1 812	316	538	248	287	325	61	37	:	44.5	-
Mechanical hand tools - for painting	320	74	80	40	63	42	14	6	:	37.6	-
Mechanical hand tools - for holding in place, grasping	1 648	209	418	208	313	414	47	38	:	42.2	-
Mechanical hand tools - for kitchen work (except knives)	1 245	213	450	219	216	110	22	15	:	39.4	-
Mechanical hand tools - for heating (including driers, flame guns, irons)	725	111	204	123	174	97	9	7	:	45.7	-
Mechanical hand tools - for medical and surgical work - sharp, cutting	175	42	54	22	30	24	:	:	:	-	-
Mechanical hand tools - for medical and surgical work - non-cutting, others	83	10	11	9	24	25	:	:	:	-	-
Pneumatic guns (without specification of tool)	527	68	110	52	69	196	22	10	:	34.3	-
Other	1 657	233	430	224	332	341	62	35	4	40.3	40.0
Hand tools - without specification of power source	16 258	2 427	4 746	1 962	2 865	3 630	344	284	9	41.7	37.1
Hand tools, without specification of power source - for sawing	904	88	259	127	169	189	25	46	:	41.6	-
Hand tools, without specification of power source - for cutting, separating (including scissors, shears, secateurs)	3 269	425	1 016	355	536	819	70	49	:	43.7	-
Hand tools, without specification of power source - for carving, slotting, chiselling, trimming, clipping, shearing	408	60	136	56	57	81	10	8	:	41.9	-
Hand tools, without specification of power source - for scraping, polishing, buffing	900	107	183	82	96	408	18	5	:	35.5	-
Hand tools, without specification of power source - for drilling, turning, screwing	2 116	302	567	233	313	617	45	39	:	42.9	-
Hand tools, without specification of power source - for nailing, riveting, stapling	601	116	179	72	103	120	:	9	:	41.5	-
Hand tools, without specification of power source - for sewing, knitting	103	15	22	12	14	36	:	:	:	-	-
Hand tools, without specification of power source - for welding, gluing	924	157	176	60	130	387	8	6	:	40.6	-
Hand tools, without specification of power source - for extracting materials and working the ground (including farming tools)	306	45	85	45	66	54	5	6	:	46.6	-
Hand tools, without specification of power source - for waxing, lubricating, washing, cleaning	416	48	141	58	100	58	8	:	:	-	-
Hand tools, without specification of power source - for painting	124	25	30	17	26	21	5	:	:	-	-
Hand tools, without specification of power source - for holding in place, grasping	820	134	270	92	141	131	31	21	:	40.2	-
Hand tools, without specification of power source - for kitchen work (except knives)	556	78	189	103	115	64	:	4	:	37.8	-
Hand tools, without specification of power source - for medical and surgical work - sharp, cutting	90	16	27	18	18	7	:	:	:	-	-
Hand tools, without specification of power source - for medical and surgical work - non-cutting, others	122	19	29	21	37	11	:	:	:	-	-
Other	1 110	192	345	167	219	140	27	22	:	36.4	-
Machines and equipment - portable or mobile	36 910	4 755	9 070	5 440	7 152	7 445	1 535	1 513	307	45.8	45.9
Portable or mobile machines - for extracting materials or working the ground - mines, quarries and plant for building and civil engineering works	11 055	1 531	2 753	1 591	1 969	2 229	511	472	127	41.7	43.0
Portable or mobile machines - for working the ground, farming	9 996	735	2 046	1 768	1 849	2 481	460	657	139	50.1	48.5
Portable or mobile machines (not for working the ground) - for construction sites	1 896	268	522	263	371	327	93	51	7	39.5	43.7
Mobile floor cleaning machines	1 364	240	344	193	268	255	35	28	:	43.9	-
Other	3 060	488	824	391	613	537	134	72	5	40.9	44.8

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(1) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

Source: Eurostat – ESAW



**Table A6.9d (continued)**
**Number of accidents at work by Material Agent associated with the deviation and number of days lost; average age of victims, EU\_V**

	Number of accidents at work per category of days lost in 2005								Number of fatal accidents over 2003-2005	Averaged age of victims for:	
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity (¹)		Permanent incapacities in 2005 (¹)	Fatal accidents over 2003-2005
<b>All Material Agent associated with the deviation</b>	<b>2 350 667</b>	<b>334 654</b>	<b>598 456</b>	<b>310 448</b>	<b>405 286</b>	<b>552 646</b>	<b>77 547</b>	<b>71 630</b>	<b>6 888</b>	<b>43.2</b>	<b>43.2</b>
Chemical, explosive, radioactive, biological substances	33 078	5 860	7 423	3 825	4 666	10 017	671	616	148	40.8	42.0
Substances - caustic, corrosive (solid, liquid or gaseous)	9 888	2 174	2 466	1 092	1 084	2 722	170	179	6	41.5	42.5
Substances - harmful, toxic (solid, liquid or gaseous)	2 804	798	836	307	405	348	56	54	38	37.9	42.9
Substances - flammables (solid, liquid or gaseous)	3 788	250	412	295	462	2 236	64	69	26	36.6	39.8
Substances - explosive, reactive (solid, liquid or gaseous)	713	48	129	99	99	233	59	46	29	35.4	41.3
Gases, vapours with no specific effects (inert for life forms, suffocating)	2 037	416	586	322	301	322	41	51	25	41.1	41.0
Substances - radioactive	13	5	:	:	:	:	:	:	:	-	-
Substances - biological	3 333	567	986	476	646	521	68	68	:	53.8	-
Substances, materials - with no specific risk (water, inert materials...)	7 734	1 020	1 567	955	1 269	2 695	136	93	6	42.7	49.7
Other	720	149	210	110	123	89	27	11	10	42.6	45.6
Safety devices and equipment	4 831	678	1 154	644	764	1 175	286	129	18	41.7	40.3
Safety devices - on machines	1 164	125	243	158	175	359	72	30	:	43.9	-
Protective devices - individual	1 402	229	364	186	212	316	55	41	9	40.9	38.3
Emergency devices and equipment	512	90	130	76	78	78	47	12	:	42.2	-
Other	940	102	191	119	163	257	88	21	:	39.9	-
Office equipment, personal equipment, sports equipment, weapons, domestic appliances	66 581	10 642	18 174	9 653	12 239	11 993	1 994	1 887	39	44.4	43.9
Furniture	26 862	4 425	7 296	3 869	4 993	4 867	728	682	8	44.3	40.0
Equipment - computer, office automation, reprographic, communications	3 005	521	871	398	634	460	74	47	:	42.4	-
Equipment - for teaching, writing, drawing - including typewriters, stamping machines, enlargers, time-recorders	1 321	257	359	205	189	236	35	40	:	39.8	-
Items and equipment for sports and game	4 741	476	1 012	810	783	1 181	179	301	11	48.5	51.9
Weapons	740	72	177	59	121	190	68	53	13	34.5	41.0
Personal items, clothing	2 212	394	631	333	380	357	77	39	:	44.2	-
Musical instruments	242	24	46	33	68	63	:	5	:	43.0	-
Domestic-type equipment, tools, objects, linen (professional use)	19 665	3 252	6 303	2 845	3 700	2 774	429	361	4	40.8	39.3
Other	2 358	276	665	370	424	471	101	52	:	42.2	-
Living organisms and human-beings	105 055	14 682	24 201	14 564	18 691	25 194	3 888	3 835	265	45.2	45.2
Trees, plants, crops	13 445	2 192	3 491	2 061	2 094	2 558	363	685	93	48.2	44.1
Animals - domestic and for breeding	18 596	1 770	3 330	2 388	2 615	7 287	561	646	30	48.2	49.8
Animals - wild animals, insects, snakes	2 928	842	758	346	371	497	55	59	16	43.7	47.1
Micro-organisms	72	18	19	13	10	9	:	:	:	-	-
Infectious viral agents	294	63	71	41	45	58	13	4	:	49.7	-
Humans	53 120	7 077	13 124	7 408	10 579	11 566	2 048	1 318	96	42.7	43.1
Other	258	22	54	37	52	66	21	6	:	40.0	-
Bulk waste	7 938	1 177	2 067	1 247	1 298	1 646	305	197	16	42.4	40.7
Bulk waste - from raw materials, products, materials, objects	3 501	383	844	474	617	931	179	73	8	42.3	44.6
Bulk waste - from chemicals	242	42	64	44	28	53	8	:	:	-	-
Bulk waste - from biological substances, plants, animals	1 984	364	571	328	318	307	52	44	:	43.9	-
Other	494	38	118	78	99	113	40	8	:	38.4	-
Physical phenomena and natural elements	12 144	1 297	2 322	1 540	2 199	3 359	1 098	328	100	42.0	43.5
Physical phenomena - noise, natural radiation, light, light arcs, pressurisation, depressurisation, pressure	737	134	167	81	79	242	19	16	12	38.5	42.9
Natural and atmospheric elements (including stretches of water, mud, rain, hail, snow, ice, wind, etc.)	8 338	778	1 473	1 035	1 517	2 479	850	206	35	42.8	47.7
Natural disasters (including floods, volcanic eruptions, earthquakes, tidal waves, fire, conflagration)	1 073	125	259	157	204	204	79	45	33	43.4	39.8
Other	953	69	170	119	190	286	107	12	10	35.0	45.4
Other material agents not listed in this classification	38 573	5 952	10 640	5 265	7 527	6 770	1 528	891	57	41.3	44.1

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(¹) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

Source: Eurostat – ESAW

**Table A6.10a (continued over 4 pages)****Number of accidents at work by Material Agent associated with the contact – mode of injury and number of days lost; average age of victims, EU\_V**

	Number of accidents at work per category of days lost in 2005								Number of fatal accidents over 2003-2005	Averaged age of victims for:	
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity (1)		Permanent incapacities in 2005 (1)	Fatal accidents over 2003-2005
<b>All Material Agent associated with the contact - mode of injury</b>	<b>1 880 024</b>	<b>305 398</b>	<b>474 071</b>	<b>256 719</b>	<b>318 469</b>	<b>419 219</b>	<b>57 621</b>	<b>48 526</b>	<b>7 089</b>	<b>43.5</b>	<b>42.2</b>
Buildings, structures, surfaces - at ground level (indoor or outdoor, fixed or mobile, temporary or not)	377 118	50 235	85 304	52 303	61 560	96 622	14 661	16 432	1 184	45.2	44.0
Building components, structural components - doors, walls, partitions etc. and intentional obstacles (windows, etc.)	46 432	8 335	13 096	6 619	8 033	8 138	1 160	1 051	132	43.8	41.5
Surfaces at ground level - ground and floors (indoor or outdoor, farmland, sports fields, slippery floors, cluttered floors, plank with nails in)	288 726	34 233	60 683	39 907	46 530	81 300	11 799	14 273	975	45.3	44.3
Surfaces at ground level - floating	1 125	85	196	171	245	315	83	29	7	43.6	37.7
Other	2 921	348	597	393	571	754	211	47	6	39.6	40.5
Buildings, structures, surfaces - above ground level (indoor or outdoor)	139 542	20 150	32 083	19 965	25 933	30 137	6 345	4 930	590	43.6	43.0
Parts of building, above ground level - fixed (roofs, terraces, doors and windows, stairs, quays)	78 650	11 137	17 864	11 343	15 218	17 443	3 277	2 367	231	44.0	42.8
Structures, surfaces, above ground level - fixed (including gangways, fixed ladders, pylons)	15 160	2 041	3 674	2 219	2 607	3 299	774	546	109	42.5	43.0
Structures, surfaces, above ground level - mobile (including scaffolding, mobile ladders, cradles, elevating platforms)	28 634	4 428	6 199	4 271	4 274	6 490	1 462	1 510	125	44.3	45.2
Structures, surfaces, above ground level - temporary (including temporary scaffolding, harnesses, swings)	8 692	1 410	2 207	1 152	1 793	1 470	359	301	68	42.2	41.6
Structures, surfaces, above ground level - floating (including drilling platforms, scaffolding on barges)	409	74	97	40	76	82	25	14	:	39.2	-
Other	4 351	519	867	582	808	1 093	375	106	20	41.2	41.3
Buildings, structures, surfaces - below ground level (indoor or outdoor)	7 120	829	1 336	893	1 204	2 161	475	221	116	42.4	41.6
Excavations, trenches, wells, pits, escarpments, garage pits	4 464	536	859	569	689	1 409	248	153	97	42.3	41.2
Underground areas, tunnels	1 085	121	148	90	194	392	110	29	10	41.4	38.4
Underwater environments	39	6	9	8	9	5	:	:	:	-	-
Other	816	77	107	131	139	252	103	8	6	46.5	55.0
Systems for the supply and distribution of materials, pipe networks	19 110	3 376	5 749	2 771	3 248	3 014	526	426	44	43.5	40.7
Systems for the supply and distribution of materials, pipe networks - fixed - for gas, air, liquids, solids - including hoppers	10 970	1 853	3 312	1 675	1 786	1 750	286	308	29	43.7	41.4
Systems for the supply and distribution of materials, pipe networks - mobile	3 871	695	1 182	515	753	573	99	53	9	44.5	43.7
Sewers, drains	1 265	170	331	229	179	282	47	27	:	42.2	-
Other	1 060	226	221	161	205	202	28	16	:	39.8	-
Motors, systems for energy transmission and storage	16 821	2 645	4 488	2 335	3 033	3 233	564	523	194	42.0	38.8
Motors, power generators (thermal, electric, radiation)	5 307	872	1 481	729	1 004	937	152	132	29	43.2	41.9
Systems for energy transmission and storage (mechanical, pneumatic, hydraulic, electric, including batteries and accumulators)	9 100	1 401	2 336	1 264	1 551	1 876	321	350	144	41.9	37.7
Other	1 013	126	233	124	213	238	63	16	11	34.1	43.9
Hand tools, not powered	131 504	24 157	42 439	18 286	20 596	22 123	2 091	1 812	83	42.3	41.4
Hand tools, not powered - for sawing	3 814	426	1 098	644	615	766	85	179	5	43.7	48.6
Hand tools, not powered - for cutting, separating (including scissors, shears, secateurs)	48 501	9 095	17 258	7 022	6 008	8 025	501	591	25	41.9	40.4
Hand tools, not powered - for carving, slotting, chiselling, trimming, clipping, shearing	2 408	415	833	323	384	379	36	37	:	40.3	-
Hand tools, not powered - for scraping, polishing, buffing	2 066	356	686	255	330	374	34	30	:	41.3	-
Hand tools, not powered - for drilling, turning, screwing	11 316	1 995	3 143	1 441	1 608	2 756	199	175	9	42.6	39.0
Hand tools, not powered - for nailing, riveting stapling	15 624	2 793	4 246	2 211	2 929	2 999	245	201	10	41.4	36.3
Hand tools, not powered - for sewing, knitting	513	109	166	94	59	77	4	5	:	37.0	-
Hand tools, not powered - for welding, gluing	1 481	322	427	202	314	184	24	8	:	43.7	-
Hand tools, not powered - for extracting materials and working the ground (including farming tools)	4 107	723	1 194	597	730	745	80	38	7	40.8	46.3
Hand tools, not powered - for waxing, lubricating, washing, cleaning	3 020	475	927	462	628	433	58	36	:	46.0	-
Hand tools, not powered - for painting	808	150	268	100	161	96	19	14	:	44.5	-
Hand tools, not powered - for holding in place, grasping	5 443	977	1 604	756	932	977	119	78	8	42.0	44.8
Hand tools, not powered - for kitchen work (except knives)	3 622	694	1 285	581	559	403	63	36	:	40.2	-
Hand tools, not powered - for medical and surgical work - sharp, cutting	1 813	356	545	261	259	311	41	40	:	44.0	-
Hand tools, not powered - for medical and surgical work - non-cutting, others	419	62	100	65	90	72	20	8	:	44.6	-
Other	4 612	701	1 160	634	891	1 025	143	58	4	42.9	39.0

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(1) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

Source: Eurostat – ESAW



**Table A6.10b (continued)**
**Number of accidents at work by Material Agent associated with the contact – mode of injury and number of days lost; average age of victims, EU\_V**

	Number of accidents at work per category of days lost in 2005								Number of fatal accidents over 2003-2005	Averaged age of victims for:	
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity <sup>(1)</sup>		Permanent incapacities in 2005 <sup>(1)</sup>	Fatal accidents over 2003-2005
<b>All Material Agent associated with the contact - mode of injury</b>	<b>1 880 024</b>	<b>305 398</b>	<b>474 071</b>	<b>256 719</b>	<b>318 469</b>	<b>419 219</b>	<b>57 621</b>	<b>48 526</b>	<b>7 089</b>	<b>43.5</b>	<b>42.2</b>
Hand-held or hand-guided tools, mechanical	38 560	6 441	10 570	5 270	6 556	8 095	969	658	37	41.1	38.6
Mechanical hand tools - for sawing	3 250	321	762	507	611	793	135	120	4	40.3	40.8
Mechanical hand tools - for cutting, separating (including scissors, shears, secateurs)	6 805	873	1 787	797	1 020	2 121	151	57	:	39.9	-
Mechanical hand tools - for carving, slotting, chiselling, (hedge cutting see 09.02) trimming, clipping, shearing	505	77	139	61	100	101	15	12	:	43.1	-
Mechanical hand tools - for scraping, polishing, buffing (including disc cutters)	3 638	670	1 072	580	573	612	87	44	:	40.0	-
Mechanical hand tools - for drilling, turning, screwing	6 161	998	1 711	818	1 047	1 360	142	86	4	38.3	34.3
Mechanical hand tools - for nailing, riveting, stapling	2 130	379	486	279	340	567	47	31	:	43.3	-
Mechanical hand tools - for sewing, knitting	233	31	89	36	34	32	8	:	:	-	-
Mechanical hand tools - for welding, gluing	2 026	619	566	227	306	244	36	27	5	44.3	40.8
Mechanical hand tools - for extracting materials and working the ground (including farming tools, concrete breakers)	1 619	273	472	221	345	254	26	27	:	41.8	-
Mechanical hand tools - for waxing, lubricating, washing, cleaning (including high-pressure vacuum cleaner)	1 038	214	273	153	170	184	30	14	:	50.4	-
Mechanical hand tools - for painting	251	47	66	36	49	38	10	5	:	37.6	-
Mechanical hand tools - for holding in place, grasping	1 239	196	302	167	228	285	32	27	:	39.3	-
Mechanical hand tools - for kitchen work (except knives)	939	165	341	166	173	71	14	8	:	41.1	-
Mechanical hand tools - for heating (including driers, flame guns, irons)	719	153	196	115	159	82	8	7	:	37.3	-
Mechanical hand tools - for medical and surgical work - sharp, cutting	96	24	28	9	18	15	:	:	:	-	-
Mechanical hand tools - for medical and surgical work - non-cutting, others	70	6	10	7	27	18	:	:	:	-	-
Pneumatic guns (without specification of tool)	256	41	60	29	39	75	10	:	:	-	-
Other	1 338	221	303	207	259	277	52	18	:	43.8	-
Hand tools - without specification of power source	27 568	4 479	7 822	3 501	5 121	5 759	519	367	17	44.3	44.2
Hand tools, without specification of power source - for sawing	2 128	235	535	357	353	508	57	83	:	44.0	-
Hand tools, without specification of power source - for cutting, separating (including scissors, shears, secateurs)	8 096	1 054	2 359	923	1 411	2 059	162	128	:	46.3	-
Hand tools, without specification of power source - for carving, slotting, chiselling, trimming, clipping, shearing	475	83	131	59	88	92	14	7	:	35.0	-
Hand tools, without specification of power source - for scraping, polishing, buffing	1 597	179	319	174	219	660	35	10	:	35.5	-
Hand tools, without specification of power source - for drilling, turning, screwing	3 340	519	837	381	516	975	67	45	:	48.3	-
Hand tools, without specification of power source - for nailing, riveting stapling	2 388	502	695	358	475	317	7	34	:	48.8	-
Hand tools, without specification of power source - for sewing, knitting	79	11	18	7	11	31	:	:	:	-	-
Hand tools, without specification of power source - for welding, gluing	823	152	172	57	141	293	5	:	:	-	-
Hand tools, without specification of power source - for extracting materials and working the ground (including farming tools)	588	110	172	100	123	69	8	5	:	54.5	-
Hand tools, without specification of power source - for waxing, lubricating, washing, cleaning	891	117	301	131	217	103	19	:	:	-	-
Hand tools, without specification of power source - for painting	98	23	28	14	12	17	5	:	:	-	-
Hand tools, without specification of power source - for holding in place, grasping	768	140	248	89	146	117	20	9	:	41.6	-
Hand tools, without specification of power source - for kitchen work (except knives)	655	106	231	127	141	49	:	:	:	-	-
Hand tools, without specification of power source - for medical and surgical work - sharp, cutting	128	18	43	25	32	7	:	:	:	-	-
Hand tools, without specification of power source - for medical and surgical work - non-cutting, others	422	39	108	49	157	49	10	10	:	52.0	-
Other	2 150	466	531	367	435	293	37	20	:	36.3	-
Machines and equipment - portable or mobile	29 368	4 468	7 325	4 355	5 820	5 429	1 149	823	347	44.7	44.8
Portable or mobile machines - for extracting materials or working the ground - mines, quarries and plant for building and civil engineering works	6 531	1 007	1 611	942	1 164	1 278	301	228	148	40.9	41.3
Portable or mobile machines - for working the ground, farming	8 255	811	1 762	1 463	1 589	1 872	383	377	171	49.8	48.0
Portable or mobile machines (not for working the ground) - for construction sites	1 728	291	475	245	330	279	68	39	:	41.3	-
Mobile floor cleaning machines	1 060	225	259	158	184	191	28	15	:	43.2	-
Other	3 315	697	798	479	609	567	111	54	9	42.8	44.0

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(<sup>1</sup>) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

Source: Eurostat – ESAW





**Table A6.10d (continued)**  
**Number of accidents at work by Material Agent associated with the contact – mode of injury and number of days lost; average age of victims, EU\_V**

	Number of accidents at work per category of days lost in 2005								Number of fatal accidents over 2003-2005	Averaged age of victims for:	
	More than 3 days lost	4 - 6 days lost	7 - 13 days lost	14 - 20 days lost	21 days - 1 month lost	1 - 3 months lost	3 - 6 months lost	Permanent incapacity (1)		Permanent incapacities in 2005 (1)	Fatal accidents over 2003-2005
<b>All Material Agent associated with the contact - mode of injury</b>	<b>1 880 024</b>	<b>305 398</b>	<b>474 071</b>	<b>256 719</b>	<b>318 469</b>	<b>419 219</b>	<b>57 621</b>	<b>48 526</b>	<b>7 089</b>	<b>43.5</b>	<b>42.2</b>
Chemical, explosive, radioactive, biological substances	40 118	7 605	9 518	4 958	5 646	11 049	710	631	182	41.2	42.2
Substances - caustic, corrosive (solid, liquid or gaseous)	7 350	1 610	1 883	895	856	1 860	120	126	13	41.4	45.9
Substances - harmful, toxic (solid, liquid or gaseous)	2 470	695	737	283	375	288	49	44	40	37.9	44.5
Substances - flammables (solid, liquid or gaseous)	2 919	212	336	230	375	1 660	51	55	23	39.9	36.7
Substances - explosive, reactive (solid, liquid or gaseous)	482	38	81	71	75	154	33	29	28	35.7	39.3
Gases, vapours with no specific effects (inert for life forms, suffocating)	1 407	291	447	203	207	205	23	32	37	42.3	40.7
Substances - radioactive	17	9	.	.	.	.	.	.	.	-	-
Substances - biological	583	127	152	88	88	106	10	13	.	51.8	-
Substances, materials - with no specific risk (water, inert materials...)	20 521	2 976	4 333	2 870	3 288	6 552	296	207	27	43.7	47.4
Other	2 240	498	550	353	372	367	85	14	6	42.2	41.5
Safety devices and equipment	3 730	625	921	534	593	842	138	78	13	42.4	49.2
Safety devices - on machines	1 113	126	241	162	168	351	27	.	.	44.7	-
Protective devices - individual	884	178	253	114	137	163	25	14	4	40.2	51.3
Emergency devices and equipment	238	48	56	35	37	45	13	.	.	-	-
Other	852	144	194	123	134	190	51	16	.	42.2	-
Office equipment, personal equipment, sports equipment, weapons, domestic appliances	52 202	9 539	14 082	7 890	9 540	8 760	1 309	1 081	50	44.5	41.0
Furniture	30 246	5 659	8 054	4 606	5 458	5 179	713	577	.	44.2	-
Equipment - computer, office automation, reprographic, communications	2 829	530	776	410	605	418	64	26	.	39.1	-
Equipment - for teaching, writing, drawing - including typewriters, stamping machines, enlargers, time-recorders	727	162	174	119	107	128	17	21	11	41.3	48.5
Items and equipment for sports and game	2 938	346	583	520	473	718	112	186	19	48.6	38.9
Weapons	286	29	60	18	54	75	23	26	.	36.9	-
Personal items, clothing	2 178	420	606	341	398	314	61	37	.	43.1	-
Musical instruments	121	19	24	15	35	26	.	.	.	-	-
Domestic-type equipment, tools, objects, linen (professional use)	5 675	1 018	1 755	796	1 149	774	108	76	.	43.1	-
Other	4 676	738	1 116	823	806	954	184	55	6	40.6	40.7
Living organisms and human-beings	114 203	21 129	25 642	17 223	18 853	25 299	3 302	2 756	240	45.1	45.4
Trees, plants, crops	10 118	1 883	2 734	1 575	1 487	1 787	259	393	123	47.9	43.2
Animals - domestic and for breeding	14 925	1 683	2 760	2 030	2 048	5 588	403	412	34	48.8	56.2
Animals - wild animals, insects, snakes	1 644	474	444	210	213	253	24	27	14	46.7	45.0
Micro-organisms	100	32	17	22	17	7	.	.	.	-	-
Infectious viral agents	41 418	8 443	10 195	6 850	6 372	7 646	1 274	637	16	47.8	44.3
Humans	38 662	7 600	8 126	6 046	7 021	7 918	1 170	781	40	42.3	44.7
Other	358	48	76	59	64	84	23	5	.	36.7	-
Bulk waste	4 363	856	1 095	739	661	816	139	58	11	43.8	45.9
Bulk waste - from raw materials, products, materials, objects	1 766	258	387	288	317	425	76	14	.	43.4	-
Bulk waste - from chemicals	169	45	47	25	15	33	4	.	.	-	-
Bulk waste - from biological substances, plants, animals	899	189	251	160	145	117	24	12	4	44.1	47.8
Other	356	63	72	72	48	79	19	4	.	49.8	-
Physical phenomena and natural elements	12 405	1 767	2 628	1 646	2 099	3 012	992	261	164	42.6	41.9
Physical phenomena - noise, natural radiation, light, light arcs, pressurisation, depressurisation, pressure	572	154	157	54	79	90	24	13	13	42.1	42.1
Natural and atmospheric elements (including stretches of water, mud, rain, hail, snow, ice, wind, etc.)	7 965	867	1 268	1 034	1 430	2 387	841	138	78	42.4	40.5
Natural disasters (including floods, volcanic eruptions, earthquakes, tidal waves, fire, conflagration)	955	141	241	146	168	177	46	35	47	43.9	41.4
Other	855	81	147	110	164	253	84	15	15	34.5	44.4
Other material agents not listed in this classification	46 865	10 333	10 919	7 512	7 731	8 136	1 467	766	88	42.7	43.1

NB: Because of the rounding used in the computation of breakdowns and possible missing values the sum of categories may differ slightly.

Category 'Unknown' redistributed by class of days lost

(1) 'Permanent incapacity' means more than 6 months of absence or in permanent incapacity

Source: Eurostat – ESAW



## **Part II: Implications on preventive measures**





# Chapter 1 - Using ESAW data in the development of preventive measures





## 1.1 Introduction

It should be recalled that Council Directive 89/391/EEC of 12 June 1989 (Framework Directive) provides for the introduction of measures to encourage improvements in the safety and health of workers at work, and that within the context of his responsibilities, the employer must take the necessary measures to ensure the protection of safety and health of workers.

The employer shall be alert to the need to adjust these measures to take account of changing circumstances and aim to improve existing situations. In this respect, the employer shall implement the measures on the basis of the following general principles of prevention:

- avoiding risks;
- evaluating the risks which cannot be avoided;
- combating the risks at source;
- adapting the work to the individual, especially as regards the design of work places, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate and to reducing their effect on health;
- adapting to technical progress;
- replacing the dangerous by the non-dangerous or the less dangerous;
- developing a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors related to the working environment;
- giving collective protective measures priority over individual protective measures;
- giving appropriate instructions to the workers.

In order to develop an adequate prevention policy, the employer must carry out a number of analyses to assess risks to health and safety at work.

One method for identifying occupational risks is the assessment of accidents at work that could not be prevented. Obviously, the fact that certain accidents have never occurred within a given enterprise does preclude such accidents from happening in future. It is therefore essential for employers, who are responsible for the implementation of effective prevention strategies and safety procedures, to have access to other sources of information to complete their own experience of accidents at work. Moreover, the employer will also need to ensure that preventive measures implemented in the past were sufficient. However, should an accident at work nonetheless occur, the employer will analyse the reasons why the preventive measures in force in the enterprise were insufficient to prevent the accident.

The ESAW methodology has thus been developed with a strong emphasis on prevention, with Phase III comprising one of its main objectives, namely “gathering detailed information on the causes and circumstances of accidents at work”. Using harmonised data on accidents at work at Member State level makes it possible not only to analyse the evolution of certain types of accidents and to monitor trends, but also to implement preventive measures at EU level.

The availability of harmonised ESAW data makes it possible to monitor the evolution of accidents at work by sector, by age and sex of the victim, as well as by type of accident and cause and circumstances in which the accident occurred. The frequency of these data (annual) also makes it possible to monitor the evolution and trends related to accidents at work, thus enabling the competent authorities to promote, if required, targeted prevention actions.

In order to develop adequate prevention policies, it is necessary to understand the causes and circumstances under which accidents at work occur. To this effect, the reporting of accidents must comprise three basic elements of information:

- *Information to identify where the accident occurred, who was injured and when:*

This comprises the economic activity of the employer; the victim's occupation, occupational status, sex, age and nationality; the geographic location and size of the enterprise's local unit; the date and time; the working environment, the workstation and the working process.

- *Information to show how the accident occurred, in what circumstances and how the injuries came about:*

This comprises the event broken down into three sequences: the specific physical activity, the deviation, and the contact – mode of injury, and their respective associated material agents.

- *Information on the nature and seriousness of the injuries and the consequences of the accident:*

This comprises the body part injured, the type of injury and the number of days lost.

The first part of this publication has provided one possible analysis of the statistical data available in the ESAW database. The following chapters will rely on the results of the analysis in order to define prevention policies and measures. In this context, two sections relating to preventive measures will be presented: one relating to prevention actions in general, the other relating to more specific aspects of accident prevention.



## 1.2 General priorities

This section will focus on data relating to the age of the victim, the size of the enterprise, the type of injury and part of body injured.

### Age of the victim

The analysis of data relating to the age of the victim has highlighted which age groups are most likely to fall victim to accidents at work.

The analysis of the age groups of victims of accidents at work involving more than three days of absence shows that the average incidence rate (number of accidents per 100 000 workers) for the nine main branches of economic activity was 3 098 in 2005. In contrast, the incidence rate of non-fatal accidents for workers aged between 18 and 24 was 4 239 (see Part I – Table A1.3 in the Annex).

For fatal accidents at work, the average incidence rate stood at 3.4 in 2005. A higher share of workers aged 55-64 died as a result of an accident at work, with an incidence rate of 5.6 per 100 000 workers. (see Part I – Table A1.4 in the Annex).

In light of these results, it is essential to focus on the age groups highlighted above (18-24 and 55-64), as incidence rates in terms of fatal and non-fatal accidents were significantly higher than the average.

The analysis has highlighted that non-fatal accidents at work were far more prevalent among young people. When starting in a new company, in addition to their initial education and training, these young workers should accordingly be trained on specific work methods. The creation of dedicated training structures for young workers should therefore be encouraged, not only upon joining the company, but also when changing activity within the enterprise.

Experienced workers aged between 55 and 64 should periodically be reminded of the health and safety regulations applicable in the enterprise. Dedicated training and refresher courses on health and safety should therefore be provided for workers in this age group.

### Size of the enterprise

The analysis of data relating to the size of enterprises has enabled to identify those in which accidents at work are most likely to occur.

Considering the size of enterprises employing workers who have fallen victim to an accident at work resulting in more than three days of absence, the average incidence rate for the nine main branches of economic activity was 3 096 in 2005, while this figure stood at 3 781 for enterprises<sup>1</sup> employing 10 to 49 workers, and 4 096 for those employing 50 to 249 workers (see Part I – Table A1.5 in the Annex).

<sup>1</sup> The size of the enterprise is defined here as the number of employees working at the local unit of the enterprise of the victim, or the geographically identified location where the job is mainly carried out or where the work is organised (ESAW methodology – 2001 edition)

In terms of fatal accidents at work, the average incidence rate stood at 3.4 per 100 000 workers. Enterprises with 1 to 9 workers and 10 to 49 workers registered incidence rates of 4.5 and 4.0 per 100 000 workers respectively (see Part I – Table A1.5 in the Annex).

### Type of injury and part of body injured

The analysis of 2005 data related to the type of injuries and part of body injured has shed some light on a number of aspects.

Among all non-fatal accidents recorded in 2005, injuries were sustained to the head in 293 526 cases, 94 102 of which affected more specifically the eyes, among which 70 000 accidents resulted from the projection of particles and other debris. (see Part I – Table A1.13 in the Annex). In this context, collective preventive measures should be implemented to reduce risks linked to the projection of particles and other debris.



For certain activities, such as sharpening tools, cutting wood, polishing metals or using other mechanical hand tools, enterprises must provide individual protection equipment, such as safety goggles, gloves, etc., and must ensure that workers use them appropriately.



In 2005, 432 480 non-fatal accidents resulted in injuries to the back, 265 149 of which were due to dislocations, sprains and strains (see Part I – Table A1.13 in the Annex). In the context of this type of injury, particular attention should be paid to loads handled by hand. Mechanical handling should be used wherever possible and tasks should be organised in such a way as to avoid repetitive work, stressful postures and movements or other situations which could result in such injuries.



## 1.3 Specific priorities

This section will focus on data relating to the sector of economic activity of enterprises and certain types of accidents.

### Economic activity of the employer

Local units of enterprises are categorised according to the NACE Rev1 classification. For instance, a cider factory will be categorised as follows:

- i Section D "Manufacturing"
- ii Subsection D 15 "Manufacture of food products, beverages and tobacco"
- iii Subsection D 15.9 "Manufacture of beverages"
- iv Subsection D 15.94 "Manufacture of cider and other fruit wines".

This classification makes it possible to identify the sectors which present the highest risks, and thus to establish priorities in terms of preventive actions.

In 2005, the incidence rate for non-fatal accidents (resulting in more than three days of absence) across all sectors of activity was on average 2 649 per 100 000 workers; for fatal accidents at work this figure stood at 2.7 per 100 000 workers (see Part I – Table A1.9 in the Annexe).

The sectors of economic activity (NACE 1 digit) most exposed to risk include:

- Fishing (NACE B), with an incidence rate of 7 199 for non-fatal accidents and 28.9 per 100 000 workers for fatal accidents at work.
- Construction (NACE F), with an incidence rate of 6 067 for non-fatal accidents and 8.8 per 100 000 workers for fatal accidents at work.
- Mining and quarrying (mines, quarries, extraction of natural gas and oil) (NACE C), with an incidence rate of 5 656 for non-fatal accidents and 15.5 per 100 000 workers for fatal accidents at work.
- Agriculture, hunting and forestry (NACE A), with an incidence rate of 4 559 for non-fatal accidents and 10.1 per 100 000 workers for fatal accidents at work.
- Transport, storage and communication (NACE I), with an incidence rate of 3 695 for non-fatal accidents and 7.6 per 100 000 workers for fatal accidents at work.
- Manufacturing (NACE D), with an incidence rate of 3 504 for non-fatal accidents and 2.6 per 100 000 workers for fatal accidents at work.

Within each branch of economic activity, particular attention should be placed on subsections (NACE at 2 digits) presenting averages higher than the general average and the sector average. In the same line of

thinking, similar comparisons can be carried out for NACE at 3 and 4 digits.

For example, in 2005 incidence rates in manufacturing stood at 3 504 for non-fatal accidents and 2.6 for fatal accidents; more detailed incidence rates at NACE 2-digit level are provided below:

- Manufacture of wood and wood products (NACE D 20), with an incidence rate of 6 864 for non-fatal accidents and 7.1 per 100 000 workers for fatal accidents at work.
- Manufacture of basic metals (NACE D 27) and fabricated metal products (NACE D 28), with an incidence rate of 5 760 for non-fatal accidents and 4.3 per 100 000 workers for fatal accidents at work.
- Manufacture of other non-metallic mineral products (NACE D 26), with an incidence rate of 5 702 for non-fatal accidents and 8.4 per 100 000 workers for fatal accidents at work.
- Manufacture of food products, beverages and tobacco (NACE D 15 and D16), with an incidence rate of 4 789 for non-fatal accidents and 3.0 per 100 000 workers for fatal accidents at work.
- Manufacture of rubber and plastic products (NACE D 25), with an incidence rate of 3 910 for non-fatal accidents and 1.2 per 100 000 workers for fatal accidents at work.

The analysis of data by branch of economic activity and by occupation will highlight main risks associated to these sectors and occupations, and will accordingly enable the development of sectoral prevention policies. Employers can use this type of analysis based on observed accidents (first-hand experience) as a basis on which to carry out "risk assessments" so as to implement appropriate preventive actions.

### Types of accidents

The ESAW data will make it possible to identify a number of representative categories of accidents.

Focus will be placed on the most recurrent deviations, which are defined as the last event deviating from normality and leading to the accident; the Material Agent associated to the deviation will also be analysed in this context.

The same analysis will be carried out for contacts, which describe how the victim was hurt (physical or mental trauma) by the Material Agent that caused the injury.

### Deviations and related Material Agents

The analysis of the ESAW data has shown that the following deviations were most involved in accidents at work (see Part I – Table A5.1a-d in the Annex):



### Loss of control (total or partial) of machine, means of transport or handling equipment, handheld tool, object, animal

In 2005, the deviation “loss of control of machine, means of transport or handling equipment” was involved in 671 878 cases of non-fatal accidents; the most recurrent Material Agents associated to this type of deviation included:

- Non-powered hand tools; mechanical hand tools; hand tools without specification of power source (199 934 cases);
- Materials, objects, products, machine or vehicle components, debris, dust (158 894 cases);
- Land vehicles (94 101 cases);
- Machines and equipment – fixed (69 555 cases);
- Conveying, transport and storage systems (61 489 cases).

The number of accidents at work triggered by loss of control could significantly be reduced by selecting and using machinery, transport means, handling equipment or hand tools that are suited to the task at hand, coupled with adequate training of workers.

### Slipping – Stumbling and falling – Fall of persons

In 2005, the deviation “Slipping – Stumbling and falling – Fall of persons” was involved in 490 307 cases of non-fatal accidents; the most recurrent Material Agents associated to this type of deviation included:

- buildings, structures, surfaces at ground level, above ground level and below ground level (364 568 cases);
- land vehicles (27 740 cases);
- materials, objects, products, machine or vehicle components, debris, dust (24 884 cases);
- conveying, transport and storage systems (19 235 cases).

Upgrading surfaces as well as careful storage of tools and materials and safe use of transport and storage systems could significantly reduce the number of accidents related to slipping and falling.

### Body movement without any physical stress (generally leading to an external injury)

In 2005, “Body movement without any physical stress” was involved in 325 275 cases of non-fatal accidents; the most recurrent Material Agents associated to this type of deviation included:

- buildings, structures, surfaces at ground level, above and below ground level (84 739 cases);
- materials, objects, products, machine or vehicle components, debris, dust (75 059 cases);
- conveying, transport and storage systems (38 037 cases);

- non-powered hand tools; mechanical hand tools; hand tools without specification of power source (36 345 cases);
- machines and equipment – fixed (22 366 cases).

The appropriate use of handling equipment and efficient organisation of tasks to be carried out would enable a considerable decrease in the number of work-related musculoskeletal disorders due to physical stress or body movement.



### Contacts and related Material Agents

The analysis of the ESAW data has revealed that the following contacts were most frequently involved in accidents at work (see Part I – Table A5.3a-d in the Annex):

#### Horizontal/vertical impact with/against stationary object (victim in motion)

In 2005, horizontal or vertical impacts against stationary objects were involved in 501 600 cases of non-fatal accidents; the most recurrent Material Agents associated to this type of contact included:

- buildings, structures, surfaces at ground level, above and below ground level (315 015 cases);
- materials, objects, products, machine or vehicle components, debris, dust (48 315 cases);
- conveying, transport and storage systems (28 171 cases);
- land vehicles (23 369 cases);
- non-powered hand tools; mechanical hand tools; hand tools without specification of power source (11 969 cases);
- machines and equipment – fixed (9 080 cases).

The number of such accidents could be substantially reduced through the efficient management of the working area, proper use of equipment and the provision of specific training for workers.



### Physical or mental stress

In 2005, physical or mental stress was involved in 430 977 cases of non-fatal accidents; the most recurrent Material Agents associated to this type of contact included:

- materials, objects, products, machine or vehicle components, debris, dust (136 993 cases);
- buildings, structures, surfaces at ground level, above and below ground level (72 212 cases);
- conveying, transport and storage systems (62 637 cases);
- non-powered hand tools; mechanical hand tools; hand tools without specification of power source (31 429 cases).

In order to avoid such accidents related to physical stress, appropriate tools should be provided and used according to safety recommendations; this should be complemented by training on the use of appropriate personal protective equipment (PPE). The organisation of work should also be adapted to prevent risks related to mental stress that can result in more than three consecutive days of absence.

### Struck by object in motion, collision with

In 2005, contacts involving being struck by or a collision with an object in motion accounted for 353 369 cases of non-fatal accidents; the most recurrent Material Agents associated to this type of contact included:

- materials, objects, products, machine or vehicle components, debris, dust (108 145 cases);
- land vehicles (64 949 cases);
- buildings, structures, surfaces at ground level, above and below ground level (42 999 cases);
- conveying, transport and storage systems (42 000 cases);
- non-powered hand tools; mechanical hand tools; hand tools without specification of power source (39 443 cases).

The number of accidents involving being struck by an object in motion could be drastically reduced via the use of appropriate signalling, better organisation of work and the training of workers in the operation of new machinery.

### Contact with sharp, pointed, rough, coarse Material



### Agent

In 2005, contacts with sharp Material Agents accounted for 327 105 cases of non-fatal accidents; the most recurrent Material Agents associated to this type of contact included

- Non-powered hand tools; mechanical hand tools; hand tools without specification of power source (98 267 cases);
- Materials, objects, products, machine or vehicle components, debris, dust (93 721 cases);
- Buildings, structures, surfaces at ground level, above ground level and below ground level (54 428 cases);
- Machines and equipment – fixed (30 835 cases).

The number of accidents due to contacts with sharp Material Agents could be significantly reduced through the provision of appropriate tools and relevant training in how to use them safely. The working area should also be cleared of any objects that could cause accidents due to such contacts with sharp objects (e.g. sharp object lying on the ground, plank with protruding nails, etc.).



In conclusion, the analysis of accidents and more specifically deviations, contacts and their related Material Agents can provide general guidelines in developing and setting priorities for prevention policies. In light of the analysis, the following areas should be given particular consideration:

- falls on the same level;
- falls from height;
- machinery;
- hand tools;
- manual or mechanical handling;
- occupational road risks;
- psychosocial risk factors.

These areas will be examined in more detail in the following chapters so as to define specific prevention actions in accordance with the various types of accidents and sectors of economic activity.





## Chapter 2 - Observations on the development and implementation of a prevention policy





## 2.1 The need for preventive measures

Preventive measures against occupational risks need to be implemented in order to improve health and safety at the workplace. Occupational risk assessments should be carried out in order to determine which actions are best suited to tackle these risks. This involves identifying risks existing in the enterprise and prioritising them in order of importance.

The need to carry out risk assessment does not depend on the prior occurrence of an accident at the workplace. Indeed, the fact that no accidents have ever occurred in an enterprise does not rule out the existence of risks. **Zero accidents does not equate to zero risks.** However the ultimate objective is to reach **zero accidents**.

Risk assessment must be carried out in all types of enterprises – large, medium, small and micro – and all sectors of activity. Risk assessment involves the identification of all hazards likely to pose a risk to the health and safety of workers and to cause an accident.

The prevention and assessment of occupational risks are the employer's responsibility. In order to achieve this, the employer must identify workplace hazards and take measures to eliminate or reduce risks arising from these hazards by fighting them at the source and by taking account of evolutions in techniques and technology. Risk prevention must also be founded on a sustained dialogue with workers and/or staff representatives so that their input and ideas relating to health and safety at work may be heard. All this will contribute towards ensuring good working conditions at the workplace and will enhance the image of the enterprise.

The assessment of occupational risks can also have a positive financial impact on the enterprise, as accidents at work entail high human and economic costs, including:

- loss of time and productivity;
- material damage to production equipment;
- difficulty in replacing workers;
- low motivation of workers;
- possible increase in insurance premiums;
- etc.

The inclusion of an occupational risk assessment in the management plan will contribute to reducing these costs through the identification of hazards that can be potentially harmful to the health and safety of workers and detrimental to the competitiveness of the enterprise.

## 2.2 Development and implementation of preventive measures

As employers are responsible for health and security at the workplace, they must facilitate communication between all persons involved in the creation of sustainable procedures to assess occupational risks and in the development of appropriate accident prevention measures. Employers must also ensure the implementation of such procedures and their subsequent monitoring.

All elements involved in the work process must be taken into account in the analysis of identified risks, and measures must be taken to eliminate or reduce them, including:

- work equipment and materials;
- products and substances;
- industrial processes and technologies;
- organisation of work and working methods;
- workers;
- work environment.

Technical, organisational and medical expertise will be required in order to take all these aspects into account and will enable the enterprise to ensure appropriate risk management.

Enterprises are in constant evolution, with new manufacturing processes and methods, better tools, changing working environments, etc., not forgetting workers themselves. It is therefore essential that **occupational risk assessments are carried out regularly**.

This will contribute to improving the quality of occupational risk assessments in relation to existing risks at the workplace. Indeed, there are often significant discrepancies between the recommended working procedures and the way work is actually carried out. This is why workers and/or staff representatives must be consulted in the assessments of risks and in the development of appropriate preventive measures. Although workers are those primarily affected by accidents at work, the analysis of the discrepancies between expected results and preventive measures in force should be as inclusive as possible. This method will make it possible to develop and implement optimal prevention policies.



## 2.3 Development and implementation phases

The implementation of preventive measures is carried out in several stages (see figure below).

The **preparation** phase is essential, as it will be instrumental in the success of the operation. This involves:

- setting objectives and defining the team responsible for risk assessment;
- identifying existing risks in the enterprise (local unit or enterprise) and taking account of existing preventive measures and their efficiency;
- ensuring that the various stakeholders are consulted;
- planning the risk assessment process;
- ensuring adequate information and training of workers and/or staff representatives.

Following the preparation stage, the **risk assessment** phase may be divided into the following phases:

- Defining the workspace: this division of the workspace will enable to identify the various groups of workers according to the organisation of work, the activity carried out and methods and techniques employed in the work process;
- Creation of risk inventories: this will enable the identification of potential hazards to workers according to the activity carried out in each workspace. Hazards related to the workplace, equipments, substances, work methods and the organisation of work, etc. must first be identified. Actual exposure to risks must then be analysed for each worker in order to determine if this can be effectively eliminated or reduced;

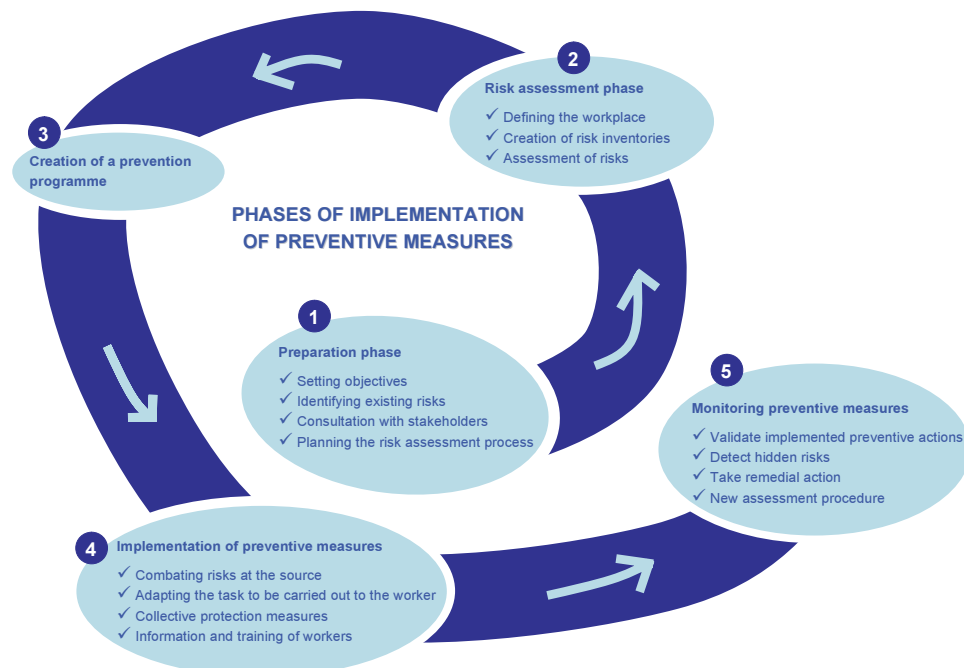
- Assessment of risks: the identification of risks alone is not enough to define comprehensive preventive measures. A number of additional elements must also be considered, such as:

- The severity of the potential harm or damage, taking account of the nature of what is to be protected, the workers, the severity of the injury, capital equipment, etc.
- The probability of harm occurring, calculated using the frequency and amount of exposure to hazards, the possibility of avoiding such risks and exposure of workers to such hazards.
- The number of workers exposed to hazards and their perception of the level of risk.

This phase is highly important as it must take account of knowledge, exposures times, consequences of the accident, etc. The risk posed by fatal accidents at work must be given the utmost attention, and must not be considered merely using the probability of occurrence.

**These phases will enable the creation of a prevention programme.** In this respect, priorities will have to be defined using the results of the risk assessment. The employer shall seek solutions to avoid risks and his decisions will be taken in accordance with the following principles:

- comply with the general principles of accident prevention;
- take account of technical, human and organisational considerations;
- define the technical, financial and human requirements to be implemented;
- establish a timetable of implementation.





**The implementation** of preventive measures will then be carried out in accordance with the following order of priority:

- combating risks at the source;
- adapting the task to be carried out to the worker, in particular concerning the design of the workplace and workstations, and in the choice of work equipment;
- favouring collective protection measures over individual prevention measures;
- provide information and training to workers through appropriate instructions.

The implementation of such measures must also be monitored so as to assess their effectiveness.

Lastly, **a monitoring of preventive measures** will need to be carried out so as to:

- validate implemented preventive actions and methods;
- uncover possible risks which had not until then been identified and detect preventive measures which are inadequate or insufficient;
- if required, take corrective action to modify and fine-tune preventive measures which have been implemented;
- if required, carry out a new assessment procedure in accordance with monitoring results.

Accident prevention must imperatively be taken into account in the design of the workplace. The construction project must be designed around the purpose of the workplace, the types of installation and equipments present on the premises and the maintenance these will require.



The conditions under which the workplace, installations and machines will be used must be well thought out from the outset and integrated in the initial design of the workplace. This includes the movement of persons and machines in and around the workplace, appropriate lighting, sound-proofing and ventilation. Access to staff rooms and sanitary appliances must also be provided. Maintenance of equipment and cleaning of the premises must not be forgotten in the design of the workplace, along with the layout of workstations. Workers also need to be trained so as to ensure that preventive measures are indeed effective.

**These preliminary considerations will help in identifying and preventing occupational risks.**





## Chapter 3 - Examples of preventive measures





## Overview

This chapter will present a number of measures that could be implemented in the field of accident prevention. This will involve an analysis of the **main causes and circumstances leading to accidents at work** and, according to these variables, putting forward a number of general preventive measures relating to all sectors of activity in order to help employers define the measures to be implemented in their field of activity, and more specifically within their enterprise.

The choice of these measures will be made on the basis of available information and according to the **general principles of prevention** stated in Framework Directive 89/391/EEC. **Each enterprise** must then consider its situation in order to **define the most appropriate preventive measures to be implemented**.

In order to assess risks at the workplace, the employer will need to carry out a detailed analysis of risks that may lead to accidents at work so as to define appropriate preventive measures. In certain cases, the employer will need to prioritise these measures according to the type of activity and risk.

The statistical analysis provided in Part I of this publication has highlighted the following risks:

- falls on the same level;
- falls from height;
- machinery;
- hand tools;
- manual or mechanical handling;
- occupational road traffic risks;
- psychosocial risk factors.

**General preventive measures** are provided for each of these risks, thus enabling employers to carry out a risk assessment in their enterprise. Several **case studies** will also be examined in order to present the various levels at which preventive action can be taken.

These general preventive measures have been drawn up using, in particular, INRS data and publications: [www.inrs.fr](http://www.inrs.fr).

## 3.1 Falls on the same level

Falls on the same level include slipping, tripping, stumbling, and falling on a level surface, even if the victim managed to recover his or her balance and there was no actual fall.

Falls on the same level only refer to level surfaces with no or little change of incline, such as pavements, low steps, inclined planes, etc.

In 2005, around 14% of the 2 900 000 accidents leading to more than three days of absence recorded in the ESAW database were due to falls on the same level. Aside from the sizeable economic losses incurred as a result of such accidents, these can bring about much pain, suffering and, all too often, death. Accidents due to falls on the same level can in most cases be prevented by:

- **understanding** why and how such falls occur;
- **identifying** the areas where such accidents are likely to happen;
- **analysing** risks and situations which could materialise and cause such accidents;
- **taking appropriate preventive measures**.

All workers may be exposed to falls on the same level since such accidents can occur in any place and at any time. Generally speaking, falls are triggered by a loss of balance; more specifically, slipping is due to a loss of balance caused by the feet losing grip with the ground.

### Falls on the same level can be triggered by

- **Poor or inadequate design** of the workplace in relation to the work carried out.
- **Technical failures**, slippery floors, inadequate or absent lighting.
- **Obstacles** left in the way due to poor organisation and/or design, and inappropriate behaviour (untidiness).
- **Lack of organisation:**
  - Absence of marking on passageways; clear marking is one way of preventing risks when these cannot be eliminated;
  - Common passageways for both persons and vehicles;
  - Cleaning carried out during working hours. In certain fields of activity, cleaning is in itself a preventive measure, as it reduces risks, but it can also generate risks which need to be analysed and prevented.



- **Inappropriate behaviour**, such as disregarding safety regulations, untidiness, cluttering of surfaces, wearing unsuitable shoes. As employers are responsible for providing adequate information and training, they must also ensure that workers abide by safety regulations and that preventive measures are followed, including the wearing of personal protective equipment (PPE). Reluctance to implement appropriate preventive measures can often be the result of insufficient awareness of risks on the part of the employer, but this can also be the result of a lack of training and awareness of risks on the part of workers.
- Insufficient or lack of **information and training** provided to workers.
- **The risk of falling is increased** when carrying heavy or unwieldy loads, if the transport is made without preparation and if the pace of work is too fast (causing stress). Being unprepared and improvisation are always a source of accidents.

Floors must be regularly and thoroughly cleaned; failure to do this appropriately will increase the risk of slipping.

### General measures to prevent falls on the same level

**Analysing the work to be carried out and clearly defining the purpose of passageways.**

#### Design of passageways

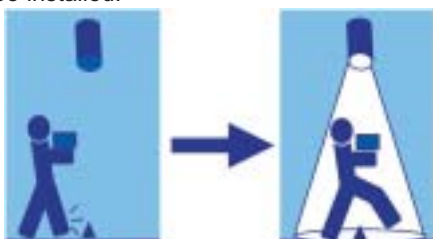
- Passageways must be designed and created in such a way as to enable easy access to persons or vehicles, which means they must be free of clutter and large obstacles; should the need arise, such hazards should be clearly identified by warning signs.

#### Organising the flow of traffic

- Plan for separate passageways for persons and vehicles.
- Clearly mark out passages and crossings.
- Walkways should be wide enough to enable two-way traffic and be kept clear of obstacles.

#### Improving lighting

- All passageways should be appropriately lit.
- Lights on passageways should be positioned so as to present no risk to workers.
- Easily accessible illuminated light switches should be installed.



#### Ensuring appropriate work organisation

- Time constraints can lead to unsafe behaviour to save time.
- Inappropriate time management: doing too many things at once can increase the risk of slipping and falling.
- Carrying out too many tasks simultaneously can also have consequences on the ability to keep one's balance.

#### Choosing the right floor surfaces

- Install non-slip flooring and surfaces.
- Ensure that passageways are fitted with surfaces having similar friction coefficients, so as to avoid unexpected changes in footing leading to slips and falls.

#### Keeping floors clean

- Floors should not be cleaned while work is being carried out in the company. If the need arises, the employer will provide appropriate personal protective equipment (PPE) in the form of non-slip safety shoes or boots.



- Do not use cleaning products or techniques that could wear out or damage slip-resistant floor surfaces.
- It should be noted that the physical properties of slip-resistant surfaces change with time due to abrasion linked to traffic, cleaning and ageing. Non-slip floors and surfaces should therefore be checked regularly. In case of substantial damage or wear and tear, slip-resistant surfaces should accordingly be replaced or renovated.

#### In everyday use

- Clearly mark out damaged or soiled areas; report damaged areas and ensure these are repaired or renovated in a timely manner.
- Avoid cluttering and obstacles.



### Working in areas with several levels of height

- Holes in floors should be either closed off, covered or made safe with guard rails.
- Non-slip strips should be affixed to the nosing of stairs.
- Clear markings or signs should be provided to give advance warning of steps and stairs.
- Hand rails should be provided where required.

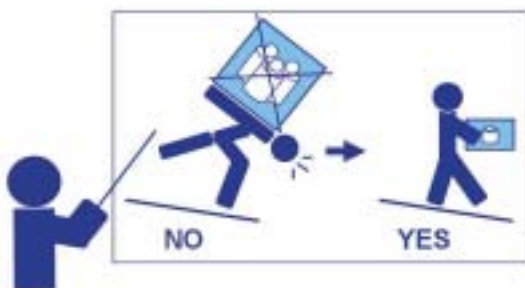


### Provide workers with personal protective equipment suited to traffic conditions in the enterprise

- Shoe soles and floor surfaces should be checked regularly and kept in good condition, as these wear out with time.
- As non-slip shoes and surfaces do not wear out at the same rate, workers must be frequently consulted if they feel their shoe soles are losing grip, in which case these should be replaced.

### Keep the workplace well organised and tidy

- Avoid rushing when moving from one place to another.
- Provide training and information to workers, especially newly recruited workers, when changing the organisation system in the company, the traffic system (movement of persons and vehicles) and shift hours.



These **general rules** can usefully be **complemented** with an analysis of working conditions in the **food-processing industry** and in **outdoor occupations**, such as agriculture, the extractive industries and construction.

### Food-processing, abattoirs, production and packaging of food products and beverages, etc.

- The choice of floor surfaces is very important in the food-processing industry, as floors can host a multitude of micro-organisms and waste products which can potentially contaminate foodstuffs. Cleaning floor surfaces may also generate additional risks and cause slips and falls.

- Floors must be cleaned and disinfected regularly in order to comply with sanitary regulations; these operations can be carried out simultaneously or separately.
- Considering these safety and sanitary constraints, an acceptable compromise should be found between floor surfaces that are both easily washable and that present an adequate friction coefficient.

### Outdoor work

- Many of the above-mentioned recommendations cannot be implemented in industries where work is mainly carried out outdoors, for instance in marking out passageways, setting up appropriate lighting, etc.
- In order to improve the safety of persons working in the vicinity of heavy machinery, they should be provided with bright and reflective clothing so as to be easily seen. Heavy machinery and mobile equipment must also be equipped with appropriate acoustic and light signals so as to give sufficient advance warning of their presence.



- Adverse weather conditions (cold, snow, rain and fog) increase risks on the workplace. If possible, work should be interrupted if weather conditions become too hazardous.

### Conclusion

There are many recommendations to prevent falls on the same level, e.g. the floors must be even, have an appropriate friction coefficient, passageways must be clearly marked out and be kept free of obstacles, etc. It should also be recalled that these technical recommendations alone are not enough to ensure adequate risk prevention; indeed, the manner in which tasks are carried out in the enterprise must also be examined in order to guarantee maximum risk prevention in accidents involving falls on the same level.

## 3.2 Falls from height

Falls from height comprise accidents resulting from a violent contact between a person and the ground, object, machine, furniture, etc. incurred during a fall from a height.

For example, falls from height can occur:

- in workspaces with areas at different levels: stairs, footbridges, platforms, pits, etc.;
- while working at height: on roofs, high furniture, high parts of machines, manually opening a tank truck hatch, etc.;
- while using ladders, step ladders, scaffolding, etc.;
- while using makeshift means of elevation: chairs, stacking various objects, storage racks, etc.

According to the ESAW database, around 5% of the 2 900 000 accidents leading to more than three days of absence recorded in 2005 were due to falls from height. Such accidents were also the second most common cause of death among workers in the EU.

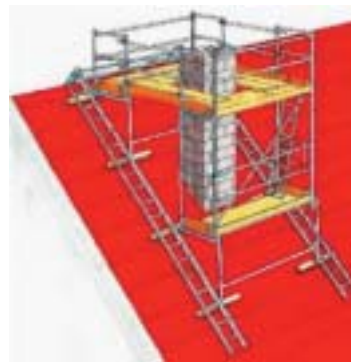
All workers, regardless of their sector of activity, can be exposed to this type of accident, which can have very severe consequences.

Falls from height can lead to **permanent incapacity, disability or death**. Accident prevention in this field must therefore be treated as a priority.

### Integration of the risk of falls from height into the design of the workspace

In order to prevent risks of falls from height, these must be **integrated in the design of the workspace or of construction sites (buildings)**. The implementation of general preventive measures will be made from the top down with emphasis on collective protective measures:

- Buildings and equipment should by design enable safe access to windows and skylights for cleaning, using collective protective measures wherever possible. Access to roofs and terraces must be provided.
- By design, footbridges, overhangs, elevated platforms and accesses should be made safe against the risk of falling. These protective installations should also be designed to enable safe maintenance and cleaning.
- Elevated workstations should be designed and fitted so as to prevent risks of falling.
- Specific precautions need to be taken when carrying out work on roofs made of fragile materials.
- Hazardous passageways where the risk of falling cannot be reduced must be clearly marked out with warning signs and non-authorized persons should be prevented access.



### General measures to prevent falls from height

#### Using a well-designed working area

- Work at height should be carried out in a working area designed, built and equipped to safeguard the health and safety of workers and to ensure ergonomic working conditions.



#### Collective protection systems

- The prevention of falls from height should first and foremost be ensured through the implementation of collective protection systems, i.e. integrated or firmly-fixed railings that are both rigid and durable.
- If work at height cannot be carried out in a dedicated working area as defined above, collective protection systems must be used wherever possible and appropriate work equipment must be provided, taking account of the nature of the task to be carried out and the safe movement of workers.





- Breaks in collective protection systems should be avoided. Similarly, such safety systems should not be removed when carrying out specific tasks. If these must be removed, appropriate measures must be taken to ensure the safety of workers.

#### Individual protection measures

- If collective protection systems cannot be installed, the safety of workers should be ensured through individual protection measures: safety harnesses preventing free-falls of more than one metre or reducing the effects of a free-fall from a higher position, with relevant explanations and safety recommendations on anchoring points and anchoring systems provided in the instructions. If individual protection measures are used, workers should never be left alone so that they may be promptly rescued if the need arises.



#### Access equipment to working areas and movement of persons at height

- Access equipment to working areas must be chosen according to the supported traffic, the height of the area to be accessed, the time for which they will be in use and their ergonomics.
- Access equipment must be designed to enable prompt intervention by rescue teams as well as rapid evacuation in case of imminent danger.
- Movements of persons at height must be done safely with no risk of falling when moving from access equipment to platforms, overhangs and footbridges.



#### Using ladders, step ladders and step stools

- Ladders, step ladders and step stools should not be used as a place of work unless it is technically impossible to use collective protection systems, if the risk involved is low or if the work to be carried out is short-term and non-repetitive.
- Ladders, step ladders and step stools should be made of materials that are solid, resistant and ergonomically adapted. Workers must ensure the equipment is secured before use; rungs or steps should be kept in a horizontal position during use.



- The use of fixed ladders, mobile ladders, suspended ladders, extension ladders and access ladders is subject to certain regulations. All must provide firm grip and secure footing. Carrying even light and manageable loads up or down ladders should be avoided wherever possible.

#### Using scaffolding

- Assembly, dismantling and altering of a scaffold should be carried out under the supervision of a competent person and by specifically and adequately trained workers.
- The installation of scaffolding must comply with certain regulations pertaining to stability, visibility of the design load, guard rails, working platforms, access equipment and restricted access areas.



#### Many tasks required work to be carried out at “low” height; using appropriate equipment:

- Light-weight rolling work platforms designed for interior work at low level.

- Rolling scaffolding is used to reach higher levels. There are specific standards and regulations concerning their assembly and use, and they should never be moved while workers are on the scaffolding.
- Assembly, verification and dismantling of fixed scaffolding, as well as calculations relating to maximum loads, must be carried out by specialised enterprises.

### Specific measures relating to the construction sector

- The construction sector is particularly affected by accident risks relating to falls from height. General preventive measures are applicable, but particular attention must be paid to temporary work and the use of provisional installations, which must comply with basic principles of accident prevention.
- Construction elements such as stairs, hand rails, guard rails, breast walls, balconies, parapets, etc. must be installed as the construction project advances.
- Resistant and stable construction elements should be used, e.g. roof parts, pre-slabs, etc.
- Install temporary floors at each level to cover shafts, ensuring access around slabs, the building or masonry work is safe.

### Mobile elevating work platforms (MEWPs)

Mobile elevating work platforms are increasingly being used on construction sites and for work at height. They include structures with one or several articulated or telescopic booms, scissor structures or vertical telescopic booms, mounted on a chassis which can be self-propelled or not. They are used to raise a work platform or cradle which is used as a workstation for one or several workers. MEWPs include:

- vertical elevating platforms, self-propelled or not;
- multidirectional elevating platforms, self-propelled or not, operated from the ground or from the platform.



Elevating platforms should be chosen according to the type of work to be carried out and after a detailed analysis of surrounding environment.

The following safety regulations should be strictly observed:

- ensure that ground conditions are stable enough to support the MEWP;
- ensure that the MEWP is constantly in a stable position;
- clearly mark out the work area;
- do not exceed safe working loads;
- do not use in strong winds;
- do not use close to overhead power lines;
- only duly trained and licensed workers should operate the MEWP.

### Conclusion

The consequences of a fall from height can be often very serious – and often fatal – to workers; preventive measures against falls from height should therefore be permanently ensured, planned from the outset and integrated at the design stage. Short-term work requiring tasks to be carried out at height should always be adequately prepared in order to ensure the safety of the worker.

### 3.3 Machinery

According to the ESAW database, no less than 7% of non-fatal accidents registered in 2005 involved machinery; machine parts or fragments were involved in 4% of accidents. According to the statistical analysis presented in Part I, accidents involving machines were most common in **manufacturing**, more precisely in the textile and clothing industry and in the manufacture of paper and paper products. Moreover, **young workers** were overrepresented in accidents linked to the use of machine tools for planing, milling, surface treatment, grinding, polishing, turning and drilling.

**Designers** and **users** have a crucial role to play in the prevention of risks involving the use of machinery, especially at the design stage.

Machinery is defined as “an assembly, fitted with or intended to be fitted with a drive system other than directly applied human or animal effort, consisting of linked parts or components, at least one of which moves, and which are joined together for a specific application”<sup>1</sup>.

<sup>1</sup> See Article 2 “Definition” of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006, OJ L 157 of 9.6.2006.

This provides an idea of the **range of risks** that can affect workers when operating machinery. Some of these risks are of mechanical origin, while others are related to the energy powering the machinery and its transformation, such as **electrical risks**. But risks can also arise from **noise**, **heat**, **vibrations**, **eletronnagnetic fields (EMF)** or **harmful substances**. Risks can be related to the materials worked on, inappropriate working postures or lack of visibility (insufficient lighting).

Machinery can present risks during normal operation if it has been poorly designed or is not appropriately secured. It goes without saying that using machinery for another purpose than that specified in the manufacturer’s instructions **increases risks**. Machinery is usually used as part of the production process. Certain accidents occur at the interface between machinery, the power supply, the feeding system, the transport and evacuation of products, etc.

Moreover, accidents increasingly tend to happen not during normal operation, but rather during repair, maintenance, cleaning, adjusting, etc. Similarly, transport, installation and dismantling are also critical phases as they also generate additional risks.

#### General measures to prevent accidents involving machinery

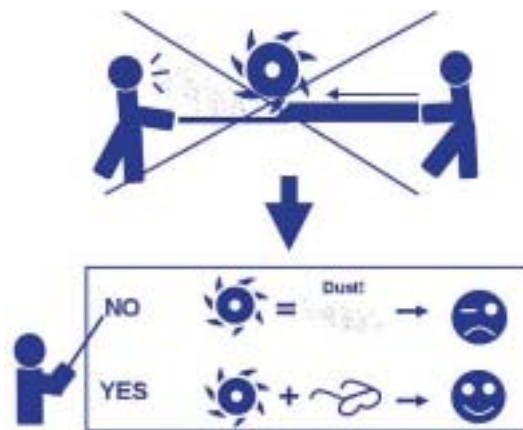
##### General principles of prevention

- The prevention of risks involving machinery must take account of the general principles of prevention set out in Chapter 1 of Part II: “Using ESAW data in the development of preventive

measures”. In this framework, preventive measures should first and foremost aim to eliminate or reduce risks at the source, during the design phase. This can be achieved through a careful selection of innocuous or less hazardous products and technologies (essential health and safety requirements should be met in order to ensure that machinery is safe, as set out in the European Parliament and Council Directive on Machinery<sup>2</sup>);

<sup>2</sup> Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC, OJ L 157 of 9.6.2006 repealing Directive 98/37/EC of the European Parliament and of the Council.

- When risks cannot be eliminated, collective protective measures should be implemented.
- If risks remain in spite of collective protective measures, personal protective equipment (PPE) should be provided.



##### Further preventive measures include:

- following instructions and recommendations provided by the manufacturer;
- ensuring appropriate working procedures;
- drafting operating recommendations;
- developing procedures to ensure safety during adjustment and maintenance operations;
- providing information and training to workers regarding appropriate use of machinery in accordance with built-in safety measures, operating instructions and any other instructions and working procedures;
- etc.

##### Iterative process for reducing risks

- Define the limits of use of machinery, including the duration and frequency of use, the maximum speed of movement, the surface and/or volume of movement, adjustment and maintenance operations, etc.
- Identify the risks posed by machinery in all its modes of use.
- Identify safety objectives.

- Define recommendations and/or necessary safety measures in order to eliminate or reduce risks.
- Validate and if necessary carry out a new risk assessment process.

### Risk reduction by design

Risk reduction by design is a priority among the available solutions that can be implemented. It aims to reduce or prevent risks linked to hazards at the source by **modifying the design and operating characteristics of the machinery (essential health and safety requirements)**, without resorting to external preventive measures:

- As far as possible, hazards must be dealt with at the design stage of the machine.
- Replacement machinery should be used if a risk is identified, (for instance of mechanical origin, such as crushing, cutting, impact, etc.); if required, a safer working process should be implemented in order to prevent risks. Installing external protection devices should only be carried out after the above options have been considered (as this will alter the initial design of the machine).
- In some cases, changing the form and relative disposition of moving parts, reducing the loads and forces applied, slowing down work rates and calculating the exact size of moving parts can reduce or prevent risks.
- Machines often operate at a higher speed or with a higher force than is strictly required for the task at hand. By reducing the speed or force of operation, manufacturer can help the employer save energy as well as reduce noise, vibrations and risks.

### Choosing appropriate machinery

In order to choose **efficient and safe** machinery, the employer needs to define the purpose and requirements of the machinery and workload the machine will be subjected to:

- For mass-produced machinery, the definition of requirements will enable the employer to choose the most appropriate equipment among products available on the market.
- For specific or custom-made equipment (adaptable standard machinery, specially designed machinery, production lines, etc.) the definition of requirements makes it possible to create specifications for the manufacturer, which can be used as a basis for a specific risk assessment in the creation of specially designed equipment.

In order to facilitate the choice of appropriate machinery, safety components and accessories are subjected to a series of controls prior to commercialisation in order to check that the machinery has been produced in accordance with the essential health and safety

requirements stated in Directive 2006/42/EC and EN standards. The “CE” mark certifies that the machine complies with Directive 2006/42/EC and EN standards, and therefore conforms with **essential health and safety requirements**. It is then the user’s responsibility to follow these requirements according to the operating manual and maintenance instructions provided by the manufacturer.



### Definition of requirements

The first step is to **clearly define** the purpose(s) of the machinery and the production requirements in terms of performance (quantity, quality, reliability, cost and safety). Technological innovation and foreseeable evolutions in production should also be taken into account when purchasing new machinery. However these are not the only criteria to be considered:

- Requirements must also be specified in terms of **maintenance**, so as to facilitate and maximise safety during cleaning, adjustment, repair, assembly and dismantling of tools or machine parts.
- Requirements can also be expressed in terms of **maximum time of operation** and “comfort” (accessibility, sufficient space and lighting, etc.). In order to reduce the burden on workers, criteria linked to the various workstations and their access should be defined so as to include ergonomic principles at the design stage.
- Detailed specifications should be drawn up accordingly.

### Receipt of machinery

Before putting the machinery in service, the employer (user) must first acknowledge receipt of the machinery, so as to:

- verify that all requirements stated in the specifications are met;
- verify that the machinery conforms with applicable regulations and standards.

### Training

Users (workers) must be informed of the risks incurred and reduced efficiency of protective measures if machinery is used inappropriately. This information will enable users to:

- be familiar with the in-built preventive systems of the machinery, and be aware of the consequence on health and safety should these be disregarded;
- train users (workers) on the correct operation of the machinery, including maintenance and repair procedures;
- organise the work process;
- choose appropriate personal protective equipment should risks remain.

## Mechanical risks

The main risks posed by machinery are of mechanical origin, which comprise all physical factors which can cause an injury through the action of mechanical elements of machinery such as tools, parts, projected solid materials or fluids. Mechanical risks include crushing, shearing, cutting, falling, being caught, dragged, trapped, hit, etc.



Mechanical risks arise from **mobile machinery parts**. These can include transmission equipment (chains, belts, gearing, etc.), mobile tools (a mandrel and tool), heavy mobile equipment (excavating machines), lifting equipment (cranes), etc.

The **consequences** of such accidents are often **severe**, such as crushed fingers or limbs, amputation, and death.

## General measures to prevent mechanical risks

### Keeping safe distances

- Most mechanical risks can be prevented by keeping at a safe distance, which keeps the body away from the hazardous area. This is the principle of protection through safe distance. The employer should clearly mark out hazardous zones<sup>3</sup> and, if required, restrict access to unauthorised persons.

<sup>3</sup> In accordance with Council Directive 92/58/EEC of 24 June 1992 on the minimum requirements for the provision of safety and/or health signs at work, OJ L 245 of 26.8.1992.

### Reducing energy spending and efforts

This principle is an integral part of risk reduction by design and aims to limit energy expenditure and effort so as to reduce related risks; this includes:

- accessibility of hazardous areas;
- anthropometric requirements;
- kinetic energy;
- pressure on various body parts;
- the shape and size of contact surfaces;
- response time of machinery;
- etc.

## Guards and safety components<sup>4</sup>

“Guard” means a part of the machinery used specifically to provide protection by means of a **physical barrier** (casing, cover, screen, door, enclosure):

According to their design and function, guards may be categorised as follows:

- guards for removable mechanical transmission devices;
- protective devices designed to detect the presence of persons;
- power-operated interlocking movable guards;
- logic units to ensure safety functions;
- valves and additional failure detection devices;
- extraction systems for machinery emissions;
- guards and protective devices designed to protect persons against moving parts of the machinery;
- etc.

The type of guard should be chosen according to the **type of risk** related to moving parts and the need to access hazardous areas.

<sup>4</sup> See Annex V of Directive 2006/42/EC “indicative list of safety components”.

### Protective devices designed to detect the presence of persons

These include three types of devices:

- opto-electronic protective devices** using single-beam light barriers or light curtains;
- pressure-sensitive devices**, such as pressure-sensitive safety mats, safety edges and flooring;
- other devices** such as infrared, ultrasound, and rotary scanning sensors.

### Enabling device

- Two-hand control systems are devices requiring the use of **both hands at once** to start and operate machinery, as long as a hazardous situation exists, thus providing protection for only the machine operator.

### Emergency stop devices

- Emergency stop devices automatically stop a process following a sudden or untimely movement.



### Other non-mechanical risks

Many other non-mechanical risks arise from manufacturing processes, products, materials, energy sources powering machinery and emissions linked to their operation.

The main non-mechanical risks linked to machinery include:

- risks due to the energy supply: electric, hydraulic, pneumatic;
- risks due to static electricity;
- risks due to assembly errors;
- risks due to extreme temperatures;
- risks due to fire and explosion;
- risks due to noise;
- risks due to vibrations;
- risks due to radiation (ionising and non-ionising radiation, laser radiation, etc.);
- risks due to the emission of hazardous materials and substances, such as gases, liquids, dust, steam and other waste produced by machinery;
- risks due to the design of drive systems.

Lastly, risks can also be due to failure to comply with ergonomic principles:

- for instance, poorly-designed lighting will cause visual fatigue, which can lead to accidents;
- poor design in the control panel can lead to confusion and hazardous mistakes;
- inappropriate posture at the workstation leads to muscle fatigue, articular diseases and accidents.

Hazards related to machinery exist during normal operation, but also in specific situations, such as:

- maintenance, adjustment and cleaning;
- inappropriate or dangerous operating methods;
- inappropriate choice of machinery;
- insufficient provision of training and information to workers;
- lack of awareness in terms of health and safety issues in safety procedures.

All workers in an enterprise must be **informed** of the risks to which they may be exposed, including risks posed by “work equipment located in their immediate environment, even if they do not use it personally” and risks posed by “alterations to such equipment”.

Information provided to workers responsible for the operation and maintenance of work equipment must contain a description of:

- the essential health and safety requirements related to the machinery;
- working and maintenance conditions;
- instructions or guidelines;
- appropriate behaviour in the event of foreseeable abnormal situations;
- conclusions drawn from past experience that could lead to better prevention of certain risks.

### Conclusion

Today, machinery available on the EU market offers a high level of safety. European standards (EN) are available to designers and manufacturers and specify the essential health and safety requirements to be implemented in order to ensure safety during the operation of machinery. The user (worker) must strictly abide by the conditions of use of the machine. Indeed, the environment in which a machine is located can substantially alter conditions of use compared to the original design, and thus bring about unforeseen risks. The risk assessment carried out by the enterprise will highlight the appropriate preventive measures to be implemented.

## 3.4 Using hand tools

In 2005, loss of control of hand tools and objects being worked on was the third most recurrent direct cause of accidents at work, accounting for around 8% of the 2 900 000 non-fatal accidents recorded in the ESAW database. Non-powered hand tools were also directly or indirectly involved in no less than 10% of recorded accidents.

A few general preventive measures should be recalled before proposing preventive measures for specific tools.

### General preventive measures when using hand tools

- Choose the appropriate tool for the job. Using the wrong tool increases the risk of accident.
- Use tools designed to keep the wrist in a straight position. Avoid bending the wrist when using hand tools.
- Use high-quality tools.
- Keep tools in good working condition.
- Check tools for defects before use. Replace or repair defective tools.
- Replace cracked, splintered or broken handles on files, hammers, screwdrivers, sledge hammers, etc.
- With tools such as hammers, check that the head is firmly attached to the handle.



- Keep cutting tools sharp and use an appropriate guard to cover the cutting edge so as to prevent injury in case of accidental contact.
- Replace worn jaws on spanners, pipe wrenches and pliers.
- Repair or replace anti-slip striking surfaces on hammers and other striking tools.
- Always pull on a spanner or pliers; avoid pushing, unless you keep you palm flat on the tool while doing so.
- Pointed tools (hand saws, scissors, knives, etc.) should be placed on workbenches with the sharp end pointing away from passageways, and the handle should not project from the top surface of the workbench.
- Ensure tools are in good condition by keeping them clean and dry; store them appropriately after use.

- Use a sturdy tool box to transport tools.
- Wear properly fitting safety goggles or cup-type goggles and gloves (PPE), in accordance with the risks posed by the tasks to be carried out.
- Keep the workplace clean and tidy in order to avoid clutter which could lead to accidents.
- Use a sturdy tool belt or apron and place tools on the side of the waist, not behind the back.
- Inform and train workers on the appropriate use of hand tools.

### How can optimising the workspace layout help prevent musculoskeletal disorders (MSDs) resulting from inappropriate use of hand tools?

Among all accidents registered in the ESAW database, no less than 18% were directly related to physical stress on the musculoskeletal system, of which 7% directly involved the use of hand tools.

One fundamental preventive principle is to fit the task to the worker, in particular concerning the **design of workstations** and the choice of work equipment. The choice of tools is also crucial to ensure the health, safety and comfort of workers. However it should be noted that even the best tools available on the market will not make a poorly-designed **workstation** any more comfortable or any safer.

Many components of the workspace, such as work benches, seats, floor surfaces, tools, equipment and environmental conditions must be taken into consideration to determine if essential health and safety criteria are met. If the layout of the workspace is not adapted to the needs of workers, this can cause discomfort, pain, fatigue and, possibly, MSDs. Moreover, a well-designed workspace where workers can frequently change between several appropriate work postures ensures that work is carried out safely and ergonomically.

#### Layout of the workstation

The workstation must be designed in such a way that the task to be carried out does not require the worker to bend down. Workers must be able to keep their back straight, and the height of the work bench must comply with ergonomic principles:

- Workers must be able to keep their elbows close to the body and reaching arms out over the head must be avoided.
- Workers must be allowed to take breaks in order to relax muscle tension.
- Chairs or stools enabling workers to carry out tasks while standing or sitting provide adequate support for a variety of tasks carried out with hand tools.

### Mechanised tools

As hand tools usually require repetitive use of physical force to carry out the task at hand, these must, as much as possible, be replaced with electric, pneumatic or hydraulic mechanised tools.

It should be noted that the greater the force required to use the hand tool and the more the hand must twist to exert the force, the more workers will be exposed to the risk of MSDs.

### Handles

With the exception of precision tools such as those used in sculpture, surgery and watchmaking, for instance, tool handles and grip surfaces should be designed to offer a firm hold. The widespread belief that small tools should be fitted with small handles, and conversely that larger tools should come with larger handles, is questionable.

### Handle shape

- Tools with **curved** handles, with a **pistol grip** or with handles forming an angle, can be used safely if the required force is applied directly in line with the extended wrist and forearm, especially when this force must be applied horizontally.
- Hand tools with **straight handles** are used for tasks requiring force to be applied at right angles in relation to the extended wrist and forearm, when force must be applied vertically, for instance.
- Tools with a **specific shape**, such as bent tools, are very useful if much of the work is carried out on the same level and at the same height as the hand and arm, and also when the task does not require the use of more than one or two other tools.
- A good understanding of the task to be carried out and of the layout of the area where the tools will be used is essential in choosing the appropriate tools. Workers should always select tools which allow the wrist to be kept in a **straight** or **relaxed position**.

### Handle diameter

- Tool handles should be either **oval** or **cylindrical** in shape and their diameter should be designed so as to present no risks during use.
- Should precision work be required, the diameter of tool handles should be designed around the worker and according to the type of work carried out.

### Handle length

- A tool with a handle that is too short can cause excessive compression in the palm of the hand. The tool handle should be long enough to extend across the entire length of the palm.

- Tool handles of appropriate length can reduce the adverse effects of compression, while rounded handles will also further reduce compression of the palm.

### Distance between tool handles

- It is recommended that tools comprising two handles should be chosen according to the sex of the worker using them.
- Tools with handles that are too close to one another or too far apart limit the force that can be exerted on the grip surface, and can therefore contribute to the development of carpal tunnel syndrome.

### Material and texture of handle

- In order to guarantee a firm grip, it is important to maintain sufficient friction between the hand and the tool handle, especially with sweaty hands, which require additional force to manipulate the tool safely.
- Tool handles should be made of non-slip, insulating and compressible materials. For instance, textured rubber handles offer a firm grip, reduce the effort required to carry out the task and prevent the tool from slipping. Tool handles with a smooth or precision-polished surface are inappropriate.
- Thermal and electrical insulation of handles are important characteristics in the case of electric hand tools.
- Plastic or composite rubber handles are therefore recommended, and edges or cutting edges should be covered with guard strips to prevent the risk of laceration.

### Vibrations

- The only way to effectively reduce vibrations transmitted by a tool is through careful design. This is why tools must be chosen with great care.
- Covering the handle of vibrating tools with viscoelastic material or wearing anti-vibration gloves are not appropriate solutions. Such anti-vibration materials only absorb vibrations above a given frequency, but most vibrations transmitted by a tool handle are below this frequency.





### Conclusion

Hand tools are often essential to workers. Experience will help the worker choose the appropriate tool in accordance with the task to be carried out and the worker's size and build. Particular emphasis should be placed on risks related to the use of hand tools which can cause MSDs.

## 3.5 Handling of loads

In spite of the increasing automation and mechanisation of working processes, manual handling remains a routine activity for many workers in all sectors of activity.

Of the 1 700 000 accidents recorded in the ESAW database for which data relating to occupation is available, 17% of victims were working in production, manufacturing and processing, of which 8% were involved in storage work. Moreover, the analysis of the specific physical activity of the worker just before the accident (see Part I, Chapter 3) reveals that 27% of victims were handling objects and 13% were carrying an object by hand.

There are **many** risks related to the handling of loads and they can have **severe consequences**, including bruises, wounds, fractures, back pain, torn muscles, and occupational diseases.

The **prevention of risks** due to the manual handling of loads is essentially carried out through appropriate **organisation of work**, as well as proper **training and information** of workers.

### General measures to prevent accidents related to the manual handling of loads

#### Organisation of work

- **Keeping manual handling of loads to a minimum**, with priority given to mechanical handling. The employer should provide mechanical equipment for lifting loads, such as forklift trucks, overhead travelling cranes and jib cranes.



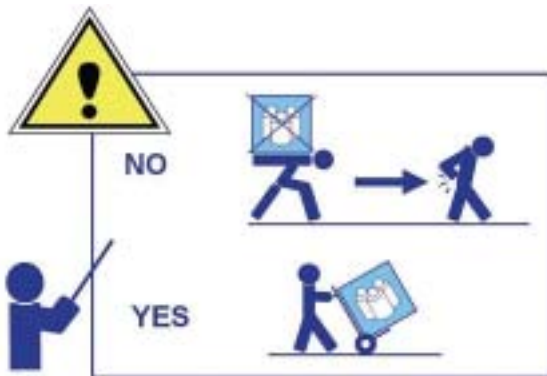
- If manual handling cannot be avoided, systems should be implemented to **reduce the physical strain** and risks, especially on the back and lower back. Mechanical handling aids (spreaders, winches, etc.) or devices such as jacks, lift cylinders and lift tables should be used to increase safety and reduce the burden on workers.



- If the manual handling of loads cannot be avoided, a risk assessment should be carried out in order to **analyse the characteristics** of the load, the required physical effort, the layout of the work area and the minimum requirements to carry out the task.
- Limit the maximum weight that may be manually handled by workers.

#### Training and information of workers

- Workers must be informed of the risks related to manually handling loads; they should also be told the weight of loads to be transported.
- Health and safety training on the handling of loads should be provided to workers, especially if they are newly recruited or recently changed post within the company. This training should focus on the safest behaviour and postures when manually handling loads, and if possible should also include practical demonstrations. The training should also focus on chosen operating methods and on protective devices and equipment.



#### Work method for the assessment of risks in the health care sector

The **health care sector**, nursing staff in particular, is highly exposed to risks related to manual handling of patients. Indeed, 10% of victims of non-fatal accidents due to physical stress on the musculoskeletal system comprised personal and protective services workers, among which 6% of accidents occurred in health establishments.



A **method** for the assessments of risks is presented below.

#### Phase 1: identifying tasks requiring manual handling

This may be done in three different but complementary ways.

**Analyse the flow of patients and medical equipment** in order to identify critical phases. This approach involves successively:

- gathering and classifying information on the autonomy of patients;
- making an inventory of available patient handling equipment;
- making flowcharts of the patient and medical equipment transfer processes;
- highlighting critical phases in each step of the process.

**Approach based on nursing staff.** Nursing staff themselves are in the best position to point out the most difficult or tiring tasks or movements they have to perform:

- This involves paying attention to what nursing staff have to say and careful observation.
- An analysis of recorded accidents will usefully complement the information gathered from nursing staff.

**Breakdown of tasks.** A breakdown of tasks must be carried out in order to assess the burden on nursing staff:

- Assessing the burden on nursing staff can involve, for instance, identifying the frequency at which a task must be carried out, the conditions under which it is carried out (alone or not), time pressure and the availability of appropriate patient handling equipment. The same assessment is also carried out for products used.
- Interpreting these results will highlight the most difficult or tiring tasks, which will be analysed in detail in the second phase.

### Phase 2: analysis of the most difficult or tiring tasks identified in phase 1

- **Task monitoring:** a survey using specific indicators is created for each task carried out by nursing staff. The collection of information can be carried out in three ways, including the observation of tasks performed, gathering information from nursing staff and carrying out measurements for certain criteria.
- **Interpretation** of task survey results.

### Phase 3: finding solutions

Action may be taken at several levels in order to reduce risks related to manual handling:

- **Accident prevention by design:** this mainly includes the layout of the work premises; planning for patient handling equipment at the design stage; choosing appropriate equipment and taking account of safety aspects such as adequate lighting, soundproofing, ventilation and a sterile working environment.
- **Remedial prevention:** results from the assessment of existing risks may require redesigning the work area or workstations, renovating or replacing patient handling equipment, etc.
- Prevention through the **provision of training and information to workers.**

### Phase 4: assessment of preventive measures

This phase makes it possible to:

- **assess** the quality and effectiveness of preventive measures;
- **maintain and strengthen** accident prevention procedures;
- decide if implemented measures should be **pursued** or if **remedial action** should be taken.



## Using appropriate handling equipment

The prevention of risks related to manual handling is essentially carried out through the appropriate organisation of work and the provision of adequate training and information to workers, with priority given to the implementation of mechanical handling equipment, especially **handling trucks** and **continuous handling equipment** such as conveyor belts.

According to the ESAW database, around 9% of all accidents recorded in 2005 can be ascribed to conveying, transport and storage systems. More specifically, 3% of accidents involved mobile handling devices, handling trucks – powered or not – (barrows, pallet trucks, etc.). Young workers are also more affected by such fatal accidents, as 14% of workers who died as a result of a contact with mobile handling devices were less than 25 years old (for comparison, in 2005 workers aged 18-24 accounted for only 8% of all fatal accidents at work).

Therefore, a few principles should be recalled on the appropriate use of such equipment.

### Preventive measures when using self-propelled rider-controlled industrial trucks

- The **choice of industrial truck** must be made according to the task to be carried out and the layout of the working environment.
- **Ensure the layout of the work area is appropriate**, with separate passageways for industrial trucks and for persons.
- **Provide information and training** to workers responsible for driving industrial trucks and accordingly deliver operator licences.

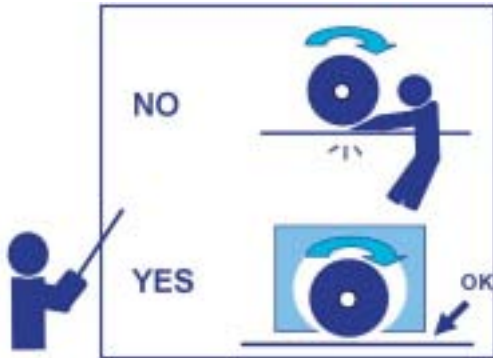


- Particular attention should be given to the risk of **lateral overturning**. Employers should accordingly define which manoeuvres are safe, apply speed restrictions, ensure the appropriate layout of the work area and define detailed traffic flow plans.
- **Other risks** should also be taken into account, such as: falls from height of operators standing on the raised fork, crushing, part of body caught in the raising mechanism, forward tipping, collision with a high obstacle, loads falling off shelving, falls off a platform or a ramp and fire or explosion risks.

### Preventive measures when using conveying systems

Conveying systems are commonly used in the supply or evacuation of products, in particular roller conveyors. In this respect, a certain number of safety regulations must be observed:

- **Guard** pinch points on rollers and wheels and between the conveyor and supplying or receiving table.



- Provide **adequate guardrails** along sides to prevent objects to be handled from falling off.
- Provide **emergency cut-off switches**.
- Provide **footbridges** to cross over the conveyor.

### Conclusion

The safe handling of loads is an often neglected aspect of the workplace: even if it is a necessary part of the production process, it does not appear to be a priority. A detailed analysis will make it possible to identify each stage of the handling process, to calculate the weight of handled loads and to define preventive measures accordingly.

## 3.6 Occupational road traffic risks

Driving is considered to be a part of work, especially travelling on mission in the context of work. But driving is not without risks, and employers should treat occupational road traffic risks accordingly.

The analysis of ESAW data reveals that 29% of fatal accidents at work are due to loss of control of means of transport or handling equipment (against 4% for non-fatal accidents). This type of deviation is therefore the first cause of fatal accidents at work. The main types of vehicles involved include light vehicles in 42% of cases, heavy goods vehicles (lorries, buses, coaches) in 28% of cases and two or three-wheeled vehicles in 6% of cases. Moreover, young workers are particularly affected by fatal accidents involving loss of control of two or three-wheeled vehicles, as 13% of workers who died as a result of this type of accident were under 25 years old (for comparison, in 2005 workers aged 18-24 accounted for only 8% of all fatal accidents at work).

However, road accidents can be prevented if **appropriate preventive measures** are implemented.

Driving, be it regular or occasional, is part of the daily lives of many workers (such as sales representatives, craftsmen, freight drivers, maintenance technicians, couriers, building workers, etc.), hence the expression "occupational road traffic risk".

The world of work has changed considerably in the course of the past years and workers often have to drive great distances on a daily basis, with the **increasing distance** between the enterprise and clients, the need to deliver goods in **ever-shorter deadlines**, **more demanding clients**, etc.

### Road traffic risk prevention

In many enterprises, certain workers are frequently required to travel by road, although driving is not their core activity. Many professions, such as sales representatives, managers, maintenance technicians, medical representatives, ambulance drivers, works foremen, etc. spend much of their work day behind the wheel, and are therefore exposed to **road traffic risks**.



As these workers are bound to their employer through an employment contract, such road risks must be considered as **occupational risks**, and must accordingly be taken into account and integrated in prevention policies implemented at enterprise level.

The prevention of road risks should be carried out as follows.

#### Assessment of road traffic risks while on mission

- **Make an inventory** of all road journeys, taking account of real driving conditions (time of travel, working hours, type and characteristics of the vehicle, traffic and weather conditions, etc.).
- **Analyse road journeys** (planning, organisation, etc.).
- Identify workers **exposed** to road traffic risks.
- Analyse the **purpose and characteristics** of missions.
- Analyse accidents which occurred while on mission **in the course of past years** (material damage and physical injuries; preventive measures implemented, if any; direct and indirect costs; etc.).
- Define an appropriate **preventive strategy** which can be implemented in the long term so as to bring about a real change in the company's working conditions and corporate culture.

#### Raise awareness among workers

- In order to make a detailed analysis of occupational road risks, exposed workers must be informed of and involved in preventive strategies, especially in the initial stages of implementation, the inventory of journeys and analysis of travel (planning and organisation).

Preventive strategies for occupational road traffic risks are based on known risks. A number of actions to be implemented concern the management and organisation of human and material resources.

Occupational road traffic risks can be divided into four main themes.

## Road journeys

#### Road travel management and planning

The **management and planning of journeys** (time of departure, time of travel, etc.) is a **key element** in the reduction of occupational road traffic risks.

Trips should be prepared in advance **on the premises of the enterprise**, not at the last moment or while on the road. Before departure, employers should accordingly ensure the appropriate scheduling of appointments, planning of rounds, choice of itineraries, estimation of distance covered, observation of break times, management of emergencies and delays, etc.

In the routine management, the following questions should be addressed **before each departure**:

- Is the trip necessary?
- Is it possible to use other means of transport (according to distance and time of travel)?

- Can this journey be usefully combined with other road trips?

Two essential principles should be followed in the design and implementation of a preventive strategy:

- Avoid travelling when this is possible.
- Reduce the exposure of workers to occupational road traffic risks.

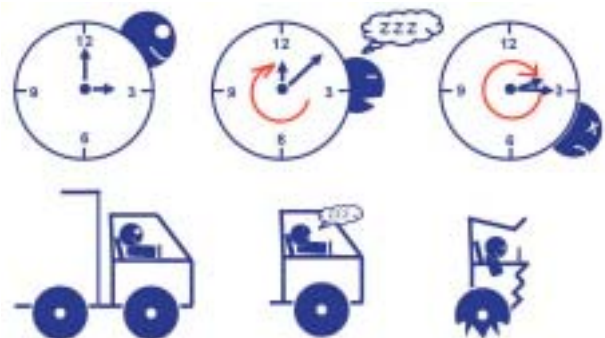
#### Possible preventive measures

- Avoid road journeys when this is possible.
- Use remote communications (video-conferencing, conference calls, the Internet or email) to avoid road journeys and the associated costs (time spent travelling, travel expenses, etc.).
- Reduce the number of appointments and meetings scheduled outside the company through careful planning and consolidation.
- Eliminate unnecessary journeys through better preparation of work sites.

#### Reducing exposure to risks while driving

The safest mode of transport should be used if travelling cannot be avoided:

- Use public transport such as rail or air travel.
- Combine air or rail transport with road transport (such as hiring a vehicle on arrival), thereby reducing driving distances as well as stress and fatigue.
- Abide by the highway code.
- Plan and rationalise long-haul trips.
- Set limits on the daily distances and time spent driving, both during the day and night. Rules and regulations on driving and rest times must be observed.



- Use **motorways** wherever possible: they are much safer than trunk roads or secondary roads.

#### Implementing a new organisation of work

These measures may lead to the implementation of a new **organisation of work**, with new rules and work methods (particularly through better management of emergencies and delays). The **benefits** of such measures have been proven in terms of safety and, in the longer run, efficiency.

Such measures may be undertaken **in cooperation with regular clients and/or suppliers**. A joint approach to the prevention of occupational road traffic risks will enable:

- better **organisation of rounds** (with emphasis on planning in order to better understand the time constraints specified by the client and organise rounds accordingly);
- the integration of safety considerations in defining **deadlines for delivery**;
- better coordination of tasks for the receipt or delivery of goods.

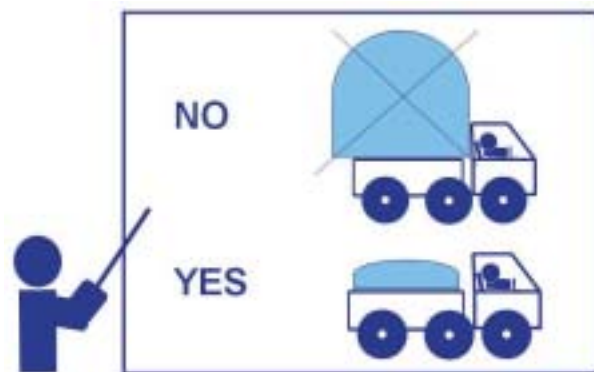
### Vehicles

Company vehicles are common modes of transport used at work and are driven on public roads; company vehicle drivers must therefore abide by the highway code. Company vehicles must be adapted to the type of travel and mission to be carried out (short trips, transport of persons, material or freight).

**The use of motorcycles should be avoided as much as possible while on mission!**

**Using appropriate vehicles for the mission to be carried out**

- The vehicle must be adapted and fitted according to the persons and/or loads to be transported.
- Make sure there is a separation between the passenger compartment and the area used for transporting loads (materials, goods, tools, etc.).
- The area used for transporting loads must provide adequate stowage and distribution of loads.
- The capacity/power of the vehicle must be sufficient to ensure the safe transport of the load. Overloading the vehicle considerably increases risks.



### Passive safety systems

All **company vehicles** should be equipped with **passive safety systems**, such as electronic braking systems, overload indicators, airbags, adjustable speed-limiting devices, crumple zones, power steering, etc.

Vehicles used by sales representatives and large fleets are often appropriately equipped, but this **remains a problem for light commercial vehicles** and private vehicles used for work.

**Appropriate equipment and maintenance contribute to safety**

Many light commercial vehicles (LCVs) are **inappropriately equipped**; half of such vehicles lack appropriate load-securing systems, 60% do not have electronic braking systems, 40% do not have driver airbags and 80% have no passenger airbags.

When purchasing or hiring a vehicle, employers should make sure that these **safety features are provided as standard**. This is essential to ensure the safety of workers: providing a vehicle in poor condition is tantamount to letting workers operate **dangerous machinery**.

**Enterprises with a large fleet of vehicles should ensure that vehicles are appropriately maintained; this involves**

- Identifying a **person responsible for the fleet**.
- **Planning for the servicing of vehicles**. Servicing requirements should be defined by the company. The frequency of controls should depend on the conditions under which vehicles are used.
- **Monitor** the status of the fleet on a daily basis.
- Create and maintain a **service history** for each vehicle of the fleet.
- Vehicle users should be requested to report any problems encountered during use. In order to ensure efficiency, this feedback should be provided according to established administrative procedures (report form, intervention request form, etc.).

### Travelling and communicating

The use of **mobile phones** has become widespread and the majority of workers use them in their daily activities when on mission. This is why companies should regulate their use at work, **especially while driving**.



An appropriate **communication policy** should be implemented to enable workers on mission to stay in contact with their company and clients, without putting their safety or that of others at risk while on the road. This policy should be designed both to take account of the needs of the enterprise and to ensure the safety of workers. The communication policy is a document stating the conditions under which workers may use their mobile phones when on mission.

### Guidelines for a better communication policy

- Using a hand-held mobile phone while driving is **illegal**.
- Accident risks are significantly increased when using a mobile phone while driving.
- Calls should be timed on rest breaks.
- Redirect calls to voicemail while driving.
- Use call forwarding.
- Mobile phones should be used only when the vehicle is not on the road (using mobile phones when driving is forbidden).

The communication policy should enable the worker to remain in contact with the enterprise or clients without taking risks while driving. Even though certain workers need to communicate more than others, including during road journeys, **on no account should calls be made or received while driving**.

Using a mobile phone while driving distracts the driver. Numerous studies have found that using mobile phones while driving **increases accident risks, even when using a hands-free kit**.

Although using a hands-free kit is not illegal as such, the French highway code sets out that “drivers must be constantly in a position to conveniently and swiftly execute the manoeuvres required of them”. **Drivers can therefore be prosecuted for** inappropriate and dangerous use of hands-free equipment, especially in the event of an accident.

Enterprises should therefore **forbid the use of mobile phones while driving**, regardless of the technical equipment used. Such rules should be laid down in the company’s communication policy and be communicated to all members of staff.

### Specific competencies

Company vehicles used for road journeys have very different characteristics and may require drivers to have **specific competences**. This may include commercial vehicles used to transport heavy loads or minibuses used to transport several members of staff. Moreover driving tens of thousands of kilometres per year in sometimes difficult circumstances (rain, ice, poor visibility) also requires specific skills.

In all cases, **employers should**:

- Ensure that workers have a valid driving licence for the vehicle they are required to drive.
- Provide adequate additional training to workers particularly exposed to occupational road traffic risks.
- Draw up a checklist of competences for workers required to drive a company vehicle.

- Define additional training needs for drivers. Driver training is only useful if it is adapted to the activity carried out: type of vehicle, distance travelled, load-securing techniques and driving with heavy loads, manoeuvring, etc.
- Establish a training plan and subsequent monitoring.
- Driver training may be complemented by first aid lessons to minimise the consequences of accidents.

Such driver training activities can only be useful if a **regular monitoring and update** of competences are carried out.



### 3.7 Psychosocial risk factors

According to ESAW data, in 2005 around 25 000 non-fatal accidents were caused by aggressions and threats by other members of staff (5 000 cases) or by persons from outside the company (20 000 cases). These aggressions involved women in 40% of cases (by comparison, women accounted for only 23% of all non-fatal accidents at work in 2005). In addition, more than 7 000 such accidents led to mental stress or shock.

In the light of these results it seems necessary to address the questions of **work-related stress, psychological harassment and risk of aggression**.

#### Work-related stress

In the course of the past 15 years, **stress** has emerged as a **major risk factor** which organisations and enterprises must face: in the EU, one in five workers report suffering from health complications related to stress on the workplace. However there are methods to prevent this. Priority should be given to a **collective preventive strategy**, as it is more efficient at reducing stress over time. This involves **reducing the sources of stress in the enterprise** by acting directly on the organisation, working conditions, social relations at work and/or the workstation.

Stress is a **psychosocial risk factor**, which also includes violence from persons outside and within the company, such as psychological harassment and poor well-being at work. Although psychosocial risks may have specific causes, effects and consequences, these can be related to each other. A stressful work atmosphere can, for instance, more easily bring about situations of harassment.

Stress consists of a pattern of “stone-age” reactions preparing the human organism for fight or flight, i.e. for physical activity. Stress was adequate when stone-age man was facing a wolf pack, but not so when today’s worker is struggling to adjust to rotating shifts, highly monotonous and fragmented tasks or threatening or overdemanding customers<sup>5</sup>.

<sup>5</sup> Guidance on work-related stress: Spice of life or kiss of death? (European Commission: Directorate-General for Employment and Social Affairs– 1999).

One speaks of stress at work when **persons feel an imbalance** between what is asked of them in the context of work and the resources available to carry out this task. Stressful situations that are endured for long periods of time always have a detrimental effect on the health of individuals. Such situations also have **negative repercussions** on the enterprise; this is why there is no such thing as “good stress”.

Stress “appears when there is an imbalance between the perceived constraints imposed by the environment and the individual’s perception of his or her resources to face these constraints. Although the assessment process of these constraints and resources is purely

**psychological**, the effects of stress are not. Stress also affects physical health, well-being and productivity”.

The above definition outlines **three main notions**:

- factors of stress, i.e. situations which promote the emergence of stress;
- the person who physically and psychologically reacts to the stressful situation;
- visible effects on the behaviour or health of workers, and on the enterprise as a whole if stress affects a large number of workers.

Stress should be **addressed by the enterprise** as soon as complaints of poor well-being at work become repeated and the implicated stress factors are work-related (intensification of work, multiple sources of pressure, demanding customers, etc.) In such cases, stress is not a manifestation of personal weakness, but rather a sign of more general **failures within the enterprise**.

Stress prevention is included in the **general context of occupational risk prevention**. Ensuring the physical and psychological health and safety of workers at work is an obligation for enterprises. As for other occupational risks, an assessment of work-related stress should be carried out and preventive measures implemented.

Priority should be given to the promotion of a work organisation that does not negatively affect the physical and psychological health of workers. **Collective preventive measures** to fight work-related stress should be implemented as they are more efficient over time. This involves reducing the sources of stress by acting directly on the organisation, working conditions, social relations at work, workstation, etc.

There are also other types of measures aiming to strengthen the individual resilience of workers in the face of potentially stressful situations, such as individual stress management, conflict-management training, etc. However, the benefits of such measures are only temporary.

Despite these differences in perception, certain characteristics of work situations have been identified as potential sources of stress. These can be sorted in **five main categories**.

#### Main factors of stress at work

- Factors linked to the task or contents of the task to be carried out: high quantity requirements (workload, productivity, time pressure, amount of information to process, etc.).





- High quality requirements (precision, quality, attention, etc.).
- Difficulties linked to the task (monotonous work, lack of autonomy, repetitive and fragmented work, etc.).
- Inherent risks to the execution of the task (e.g. fatal medical error by a surgeon).

#### Stress factors related to the organisation of work

- Lack of control on the distribution and planning of tasks within the enterprise.
- Insufficient instructions or details on the task to be carried out: e.g. what is required of me? How can I achieve this? On what basis will my work be evaluated?
- Contradictions in task requirements: how can the task be carried out both quickly and neatly? What is the priority: the client or keeping within set quotas?
- Working hours out of step with biological rhythms and unsuited to social and family life.
- New work organisation (lean supply chain, versatility of workers, etc.).
- Instability of work contracts (contracts with uncertain prospects, sub-contracting, etc.).

#### Stress factors related to work relations

- Lack of help and support from colleagues and/or line managers.
- Management lacks staff participation, is too strict or inadequate.
- Little or no work recognition.

#### Stress factors related to the physical and technical environment

- Physical nuisances on the workplace environment (noise, heat, humidity, etc.).
- Poor design of the work premises and/or the workstation (lack of space, inappropriate lighting, etc.).

#### Stress factors related to the socioeconomic environment

- Poor economic health of the enterprise or uncertainty regarding its future.
- Over-competitive environment, both at national and international levels.

### Collective preventive strategy

Collective stress prevention measures, or risk prevention at source, are part of the overall approach to prevent occupational risks. This involves first and foremost **promoting of an organisation of work** which is not detrimental to the physical and psychological health of workers.

The decision to implement such measures **rests solely with the management** of the enterprise. Such preventive measures can provide a satisfactory answer to internal debates on working conditions, or can be implemented in response to certain alarming situations (suspicions of harassment, violence between colleagues, high number of musculoskeletal disorders, loss of motivation among workers, absenteeism, suicide, etc.)

Creation of a dedicated working group (including staff representatives):

- Agreement between stakeholders of the enterprise to examine and, if necessary, review the organisation of work (if certain aspects to the organisation of work prove to be a source of stress).
- Ensure that all workers are informed and involved in the process.
- Resort to external help for certain stages of the preventive procedure.

For whatever reason an enterprise may wish to take action against work-related stress, it **may not have the necessary resources** to tackle such an issue. In such cases it must seek help from **external experts** who will guide it through the key stages of the process, including a detailed analysis of the situation, which requires specific skills and a guarantee of impartiality.

As causes of stress may vary, **step-by-step approaches** need to be adapted according to the enterprise or situation. Ready-made universal solutions to fight stress should therefore be **treated with caution**. Solutions should be tailored to each enterprise following a detailed analysis of intrinsic stress factors.

At each step of the process, specific measures may be taken for persons suffering from stress and needing to be cared for rapidly.

#### Preliminary analysis

The preliminary analysis is carried out beforehand and is instrumental in making the preventive strategy possible. During this phase, one or several persons from within the enterprise are designated by the social partners to **collect data** available in the enterprise and summarise them in the form of **psychosocial risk indicators**.

The relevant indicators will be selected and formatted, and will then be **analysed** according to variations over time, disparities within the enterprise and in relation to national data. If several indicators are found to present degraded working conditions, this will more easily convince the management that preventive measures are needed. These indicators will also need to be monitored during the process so as to **assess the benefits of preventive measures**.

#### Creation of a working group on work-related stress

A **dedicated working group** should be created as soon as the decision is taken to implement a collective preventive strategy to tackle work-related stress. The composition of the working group varies according to the size and structure of the enterprise, but it should be



representative of all workers affected by stress and include staff representatives.

The main objectives of the working group on work-related stress include:

- steering the collective preventive strategy so as to ensure its sustainability over time;
- involving all stakeholders in the enterprise and keeping them informed of progress achieved;
- providing guidance in the choice and implementation of analysis tools;
- assisting external experts in the analysis of collected data;
- taking part in the design of possible measures;
- monitoring and assessing implemented measures.

During the process, the working group should gain experience in the field of psychosocial analysis methods, and should gradually develop its own methods so as to become autonomous in the prevention of work-related stress.

### Detailed analysis

The preliminary analysis should enable stress situations in the enterprise to be highlighted. The next step involves assessing the **precise levels of stress** generated, identifying sources of stress and workers who are most at risk.

Various methods, both qualitative and quantitative, may be used:

- Observing activities and working conditions;
- Organising face-to-face or group meetings, creating discussion groups;
- Organising surveys on the perception of working conditions, stress and job satisfaction;
- Creating indicators on health.

### Communication of results

When the analysis has been carried out with support from the working group, the results **should be communicated** to the various stakeholders. This is a delicate operation, as it can disclose **failures within the enterprise**, which are often met with denial; it can also reveal **significant discrepancies** between initial hypotheses and results.

### Creation and implementation of a preventive strategy

Following the analysis, the working group should consult persons affected by stress to identify possible measures to **reduce the sources of stress**. These measures should be sorted in order of importance. Although the working group and possible external experts put forward proposals, it is the enterprise which ultimately decides which measures are to be implemented. Such measures may include solutions whose effects will be felt in both the short and medium term.

Examples of collective preventive measures include:

- **adapting** the work to the capacities and resources of workers (taking account of the age of workers, for instance);
- **organising** work so as to make it stimulating and enable workers to use their skills;
- clearly **defining** the roles and responsibilities of workers;
- giving workers the opportunity to **take part in decisions** and measures which will have an impact on their work;
- **improving internal communication** and reducing uncertainties;
- **fostering exchange and dialogue** between all stakeholders in the enterprise.

### Assessment and monitoring of preventive measures

In order to be complete, an **assessment and monitoring should also be carried out in the framework of the preventive strategy** (particularly through the monitoring of the indicators selected during the preliminary analysis). This will make it possible to take remedial action should it be required.

## Psychological harassment

Psychological harassment has always been present in the world of work. The practice is old, but its denomination is relatively new, and is also known as bullying or mobbing; this can include:

- refusing to communicate;
- lack of or conflicting instructions;
- depriving workers of work or overburdening them;
- requiring workers to carry out futile tasks or tasks above their competences;
- relegating workers to the sidelines and making them work in degrading conditions;
- continuous criticism and frequent sarcasm;
- bullying and humiliations;
- slander, insults and threats.



Lack of support and recognition on the part of managers and colleagues is an aggravating factor of the effects of psychological harassment at work.

Various studies have shown that **such practices have become more common in recent years**. Moreover, the current situation on the job market prevents victims from leaving and working elsewhere. The current limitations of collective preventive strategies to fight work-related stress and high demands on workers in terms of productivity contribute to exacerbating the problem. The consequences for victims of harassment can range from **psychosomatic disorders** and depression to suicide.

### Can harassment be defined?

Psychological harassment at work has been defined as **set of repeated actions** "aiming to or resulting in a degradation of working conditions which may infringe workers' rights, be detrimental to their dignity, physical or mental health or compromise their future career".

Psychological harassment can take on various forms, including:

- gratuitous and perverse harassment, aiming only to destroy;
- harassment to drive a worker out, which may or may not involve bypassing normal dismissal procedures;
- strategic harassment, used as a management strategy to set workers in competition and improve productivity.

Taken individually, such hostile attitudes may seem harmless. But if they are **repeated on a daily basis**, they can have serious repercussions on the physical and psychological health of workers. Harassment is to be considered as a form of violence within the enterprise. However, not all aggressive behaviour, conflicts and forms of pressure can be equated to harassment.

### Who are the victims?

There is no **typical profile** for harassment victims. Contrary to widespread belief, harassment victims are not necessarily fragile persons. In fact, victims are often workers who choose to resist pressure from colleagues and line managers, or even from subordinates. "Men or women, young recruits, recently promoted executives or senior workers close to retirement": anyone can fall victim to harassment at work.

### Who is doing the harassing?

Psychological harassment at work may be carried out:

- between colleagues of the same rank;
- from line managers to subordinates, but the reverse can also be true.

It may also happen that a group of persons within the enterprise chooses to isolate a person and make a "scapegoat" out of him or her.

Psychological harassment can result from a **conflict that has turned sour**, or can be a deliberate strategy to get rid of someone.

Psychological harassment at work should be placed in its rightful context. If harassment is possible in the enterprise, it is because the company has not been capable of implementing adequate structures to prevent it. Harassers are often fully integrated in the enterprise, which provides them with justification for their actions. The deliberate deterioration of working conditions around the harasser is often founded on organisational problems or failures. The absence of opposing forces or an ombudsman also influences harassment in the enterprise.

At first, harassment can cause stress symptoms, such as nervousness, irritability, anxiety, sleeping disorders, heartburn, high blood pressure, muscle pain, etc. After a few months these symptoms can develop into psychological disorders. Some react with excessive aggressiveness which is often interpreted as paranoia. Others may respond with a feeling of exhaustion, chronic fatigue and a loss of self-esteem which can lead to depression. People suffering from depression can also suffer from attention and memory disorders, a feeling of discouragement, pessimism, guilt, isolation and a loss of self-confidence and professionalism.

Possible consequences of harassment include personality disorders, deteriorating health, disability, unemployment and suicide.

Harassed and stressed workers having lost all self-confidence will have difficulty in taking initiatives or making decisions, which will be reflected in the quality of their work. Even if workers invest all their energy to "resist the pressure", they will eventually need to stop working to receive treatment. As a consequence, absenteeism and deteriorating working conditions will have a negative impact on the enterprise itself.

### Preventive measures

**Acknowledging psychological harassment of workers currently seems difficult**, but compensation and prevention appear to be even more so. Indeed, data currently available chiefly refer to legal proceedings to ensure that harassment victims obtain compensation for the harm or prejudice suffered. Only situations that cause major failures within the enterprise give rise to preventive measures or the implementation of a future preventive strategy. But consequences for harassment victims can be tragic and priority should be given to the implementation of a preventive strategy.

The **underlying causes** of exclusion and harassment behaviours at work seem to include:

- lack of consultation concerning the organisation of work and the design of tasks;
- the management style.

**Harassment preventive measures** should therefore focus on the following aspects:

- Raising awareness among workers.



- Ensuring that line managers are capable of handling conflicts that may arise among workers and, especially, are able to detect the signs of harassment at an early stage.

To this effect, the creation of **collective consultation structures** is highly important in handling such situations.

### Work and aggression

According to the ESAW data, around 27% of all aggressions registered in 2005 involved service workers and shop and market sales workers. Moreover, 20% of such accidents were observed in health and social work, 12% in public administration and 12% in transport and communication.

The current magnitude of this phenomenon is particularly worrying:

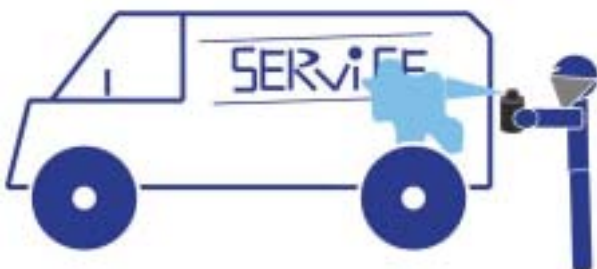
- for workers, who demand compensation for physical or psychological aggressions endured;
- for employers, who may incur civil or criminal liability for aggressions occurring on the work premises.

Aggressions can be of **three types**:

- Predatory violence (burglary, theft and extortion, murder), which affects only a limited number of professions, particularly financial intermediation.



- Physical violence, threats and insults affect a wide range of professions confronted with violence from clients or the public. This is especially relevant in the services sector.
- Acts of destruction or vandalism on material goods. Workers facing this type of aggression may feel violated in their work or professional identity.



Such types of external aggression may lead to death or have serious consequences on the physical and psychological health of victims, regardless of the level of physical violence endured.

A scale of physical injuries resulting from violence is presented below:

- absence of visible physical injury;
- bruises, scratches or single mark;
- bruises, scratches or multiple marks;
- wounds requiring a suture;
- serious wounds requiring surgical intervention;
- wounds presenting a risk to the victim's life;
- fatal injuries.

### Psychological consequences

The **extent** of psychological consequences of violence depend on the **circumstances of the aggression**, the staff itself and the environment of the victim during the aggression.

Reactions to post-traumatic stress can be immediate, such as the inability to speak or to move (psychic paralysis) or a state of agitation (screaming, crying, moaning, desire to flee). This acute state of stress can linger in case of repeated traumatising events (insults, humiliations).

If the level of psychological shock is high, stress symptoms can persist for several weeks or months after the trauma. In such cases this is referred to as chronic post-traumatic stress disorder (PTSD).

This involves a series of symptoms:

- Psychological symptoms: sense of reliving the trauma, anxiety, chronic depression, substance abuse, attempted suicide.
- Physical symptoms: sleeping, digestive or neurological disorders.
- Behavioural symptoms: professional overinvestment, compulsive behaviour, trouble concentrating, lack of interest, demotivation, avoidance symptoms.

Appropriate psychological support will help in preventing the appearance of psychological disorders. Post-traumatic stress disorder can also appear several months or years after the trauma.

The time it takes to recover from post-traumatic stress depends in particular on the quality of the treatment given to the victim. The provision of psychological support often helps in preventing complications or long-term symptoms following the trauma.

### Occupations most exposed to the risk of aggression

The occupations most exposed to the risk of aggression include:

- Handling of money and valuables: cashiers, bank couriers, bank or post office clerks, porters, security guards, sales assistants.
- Health, consulting or training services: nurses, ambulance drivers, social workers, teachers.
- Control and law enforcement: police officers, ticket inspectors, park wardens.
- Working with potentially violent persons: prison warders, hotel and restaurant workers, health establishment workers.
- Lone workers: vendors (newsvendors, shopkeepers), door-to-door salesmen, taxi drivers, public transport drivers, repairmen, delivery persons, petrol station workers, motorway toll booth attendants, etc.

### Situations conducive to violence

#### For the victim:

- Working alone or in an isolated environment with unusual working hours.
- Exercising a profession particularly exposed to the risk of violence (investigative journalism, military, police force, etc.).
- Working directly in contact with the public (administrations, trade, teaching, postal services, public transport, hotels and restaurants, health services, social work, etc.).
- Handling money or valuables (banking sector, retailing).
- Working while in poor physical and psychological conditions, which encourages the victim to create his own climate of aggressiveness.

#### For the assailant:

- Individual psychosocial factors (mental illness, violent past or dealings with criminal justice), pathological factors (neurological disorders, brain damage), or factors linked to alcohol or substance abuse.
- Macro-social factors (socioeconomic inequalities, joblessness, job insecurity, access to firearms, alcohol and drugs, influence of the media).

Almost all EU countries have witnessed an **increase in cases of violence at work**. However, there is a lack of sufficiently detailed data, and these generally only concern serious and fatal cases. As a result, the phenomenon of violence at work may be under-reported, and consequently underestimated.

A survey carried out in 1996<sup>6</sup> by the European foundation for the improvement of living and working conditions (EUROFOUND) revealed that 16% of the working population in the EU (147 million persons) were exposed

to various forms of violence. This mainly included psychological violence (9% of the working population), physical violence (4%) and sexual harassment (2%). However it should be noted that the survey did not specify the origin of the aggression (internal or external to the enterprise).

<sup>6</sup> Second European Working Conditions Survey  
<http://www.eurofound.europa.eu/>

### Preventive measures against the risk of aggression

Employers should begin by assessing the risks to which exposed workers are subjected by analysing the general organisation of the enterprise as well as the workstations, the layout of the premises, working hours and working procedures, in order to identify the main risks of aggression.

The next step involves drawing up a **corporate safety policy** (or for the branch of activity) and, if possible, providing solutions to improve the safety of workers.

It is crucial to involve workers and/or staff representatives at this stage, not in the identification of risk factors, but also in the implementation of selected preventive measures.

#### General proposals for preventive measures

There are no universal solutions to prevent the risk of aggression; preventive measures should take account of the specific characteristics of individual working environments.

#### Possible measures: from collective to individual preventive measures

- Set up a programme to combat violence on the premises of the enterprise.
- Reduce risks through better organisation of work and through the provision of instructions on how to act in the event of an incident.
- Reduce risks through the design and layout (or refitting) of the work premises (access control, access control interlocking doors, protective screens).
- Install collective protective systems (video or radio surveillance, alarm systems and warning devices, reinforced glass).
- Provide training on managing conflicts and stress (through “coping” techniques to help control emotions during an aggression).
- Provide training on the detection of potentially violent persons (so as to prevent violence from escalating).
- Provide personal protective equipment (bullet-proof vests).



### Can the aggression be prevented?

It is not always easy or possible to regain control of a potentially violent situation; however, in certain cases there is a possibility of calming the situation before it degenerates.

A potential assailant has the choice between three possibilities: attack, retreat or compromise. Workers in contact with the potential assailant may, through their **attitude**, behaviour and words, **influence** the potential assailant and bring him to retreat peacefully or to a compromise.

To this effect, training may be provided to workers exposed to the risk of aggression.

### A few questions and recommendations in dealing with potentially violent situations

- With whom or what is the potential assailant angry: other workers, the enterprise or himself?
- Call for help from someone with more experience (if you feel you are not able to manage the situation).
- Do not be afraid of leaving the premises and calling for help.
- Never underestimate the potential assailant.
- Remain calm and polite, but be firm.
- Listen to what the potential assailant has to say; engage in a sensible dialogue about the problem and do not hesitate to use compliant phrases such as “Maybe you’re right”.
- Use simple words and repeat explanations if necessary.
- Invite the potential assailant to ask questions.
- Rephrase sentences to show you have understood (or not).
- State the limits of what you are able to do for the potential assailant.
- Be honest, do not lie.
- Do not give orders or advice.
- Avoid aggressive attitudes (folded arms, hand on hips, pointing fingers, raised arms).
- Keep your distance.
- Never attack or hit someone who is angry.



## Chapter 4 - Conclusion







***Health and safety at work and accident prevention are both a right and a responsibility shared by all. Accident prevention is always a win-win situation. It is an investment for the future.***

Occupational risk prevention is without a doubt a key element in the improvement of health and safety conditions at work.

Improving working conditions not only reduces the number of accidents as well as the related costs and suffering of victims and their families, but also has a significant impact on the economic performance of the enterprise.

Accident prevention is an investment which has positive human, social and economic repercussions.

Today, citizens are increasingly aware of risks posed to health and the environment, both within and outside the workplace. This sociological change has led to increasing consideration being given to occupational and environmental risks.

Objectives relating to sustainable development and corporate responsibility require a holistic approach combining well-being at work and ethical business management, thus bringing together previously conflicting objectives, including:

- Taking account of environmental impact;
- Improving working conditions;
- Studying the possible existence of delayed hazards.

Current trends indicate that users are increasingly demanding products that are clean, safe and that have been manufactured in decent working conditions.

The definition and implementation of a prevention policy conducive to reducing occupational risks is founded on a number of principles.

Today, enterprises are implementing management plans where health and safety aspects are on a par with other technical, economic and financial considerations. If principles on health and safety are observed, they can help management in defining and steering a preventive strategy.

Preventive policies should always be founded on respect of the individual, and should aim to eliminate harmful effects on health as well as occupational accidents.

Everyone in the enterprise should be involved in matters of health and safety at work, including the management, supervisory staff and workers. The implementation of a preventive strategy should be carried out with the clear objective of improving working conditions in the enterprise.

The prevention of occupational risks should be founded on the analysis of concrete tasks carried out in the enterprise. This requires the input of all persons involved in the production processes or activities of the enterprise.

The corporate preventive strategy should be integrated at all levels of activity, including research departments, purchasing departments, methods and production, as all have an important role to play.

Health and safety policies should also be designed in accordance with corporate policies for the environment, quality assurance and management, so as to avoid setting possibly conflicting objectives for workers.

The management of health and safety at work encompasses many technical, human and organisational areas of action; a joint approach including all these aspects would provide many advantages.

The identification and assessment of risks are key elements in the implementation of a health and safety policy.

Prevention should therefore be integrated by design in the layout of the premises, the choice of equipment, the definition of workstations and working methods, as well as the choice of products used.

The prevention of occupational risks lies at the heart of employers' and workers' interests, as it improves working conditions, which in turn promotes the development and viability of the enterprise through improved productivity, image and social relations within the enterprise.









European Commission

**Causes and circumstances of accidents at work in the EU**

Luxembourg: Office for Official Publications of the European Communities

2009 — 231 pp — 21 × 29.7 cm

ISBN 978-92-79-11806-7

doi 10.2767/39711

This report presents the detailed analysis of causes and circumstances of accidents at work in the European Union. This publication consists of two parts "Statistical analysis of ESAW Phase III data" and "Implications on preventive measures". The aim of the first part is to describe the situation regarding accidents at work in statistical terms using available ESAW data, and in particular ESAW Phase III data related to the causes and circumstances of accidents at work. On the basis of conclusions drawn from the statistical analysis, the second part provides considerations and suggestions on possible measures that could be implemented in the prevention of accidents at work.

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