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Global trend according to estimated number of occupational accidents and fatal work-related diseases at region and country level

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ABSTRACT

Background: Although occupational accidents and work-related diseases have been of interest for a long time, due to lack of proper recording and notification systems the official numbers of occupational accidents and work-related diseases are missing for many countries. Presently, the demand for effectiveness and an interest in the economic aspects of accidents have increased prevention activities at company and country levels. *Methods:* Occupational accident data of selected countries and of World Health Organization regional divisions together with the global burden of disease were used in estimating global occupational accidents and fatal work-related diseases. The trend of global occupational accidents and work-related diseases is presented at region and country levels. The years 1998, 2001, and 2003 are compared in the case of occupational accidents and the years 2000 and 2002 in the case of work-related diseases. *Results:* The total number of occupational accidents and fatal work-related diseases has increased, but the fatality rates per 100,000 workers have decreased. There were almost 360,000 fatal occupational accidents in 2003 and almost 2 million fatal work-related diseases in 2002. Every day more than 960,000 workers get hurt because of accidents. Each day 5,330 people die because of work-related diseases. *Conclusions:* Information on occupational accidents and work-related diseases is needed so that countries may understand better the importance of occupational health and safety at country and company level. Especially companies in developing countries are not familiar with occupational safety and health. Statistical data is essential for accident prevention; it is a starting point for the safety work.

1. Introduction

Attention has been given to occupational accidents in many countries for over 100 years. For the most part industrialized countries have introduced different laws and regulations for the prevention of occupational accidents and work-related diseases; and the number of occupational accidents has been followed up. In recent decades countries and companies have been increasingly interested in occupational accidents, at least partly because of the cost of accidents. The International Labour Organization (ILO) estimated that the total costs of occupational accidents and work-related diseases are 4% of the gross national product (GNP; ILO Safety in numbers 2003). The total GNP of the world was approximately $34 * 10^{12}$ USD in 2003 (Statistics Finland, 2005), which means that worldwide the annual cost of work-related injuries and diseases is approximately $1.36 * 10^{12}$ USD.

Work-related diseases are an increasing problem that countries are just becoming aware of. Recent studies show that the number of work-related diseases seems to be underestimated (Driscoll, Takala, Steenland, Corvalan, & Fingerhut, 2005a; Nelson et al., 2005; Steenland, Burnett, Lalich, Ward, & Hurrell, 2003), for example in the case of work-related cancers (Driscoll et al., 2005b; Zahm & Blair, 2003; Park, Bailer, Stayner, Halperin, & Gilbert, 2002; Morrell et al., 1998), musculoskeletal disorders (Punnett et al., 2005), respiratory diseases (Driscoll et al., 2005c; Leigh, Markowitz, Fahs, Chin, & Landrigan, 1997), psycho-social problems, and circulatory diseases (Nurminen & Karjalainen, 2001; Leigh et al., 1997).

In companies, prevention activities focus more often on occupational accidents than on work-related diseases. Results can be seen faster in the decrease in accident rates. Work-related diseases often have a long latent period (Nelson et al., 2005; Nurminen & Karjalainen, 2001) and might be the result of different work-related factors like working time (Caruso et al., 2006) and workload (Åkerstedt et al., 2004; Hamet & Tremblay, 2002). Exposures occurring now usually lead to ill health in the future. This is because either the level of exposure is underestimated (or unknown) or the risk posed by exposures (single or combination) is not properly recognized (Morrell et al., 1998).

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Table 1
Existing studies of country estimates.

Study	Country	Fatal occupational accidents per year	Fatal occupational accidents from ILO Laborsta year 2003	Occupational accidents per year	Occupational accidents from ILO Laborsta year 2003	Fatal work-related diseases per year	Work-related diseases per year
Mock et al., 2005	Ghana	9,661[a]	no official data				
Driscoll et al. (2004)	New Zealand	105	84	200,000	25,623	700 - 1,000	17,000 – 20,000[e]
Steenland et al. (2003)	United States	6,200	5,575		1,315,920	32,200-78,200	
Kobusingye et al. (2001)	Uganda	13,300 [b]	369[c]				
Nurminen and Karjalainen (2001)	Finland	82	49		56,268	1,810	
Morrell et al. (1998)	Australia					2,290[d]	
Leigh et al. (1997)	United Sates	6 500	5,575	13,200,000	1,315,920	60,300	862,200

[a] Mock et al., 2005 have estimated the annual injury mortality rate (commuting accidents not included). The authors used economically active population data from Appendix 1, Table A1 to calculate the number of fatal accidents.
[b] Kobusingye et al. (2001) have estimated the annual injury mortality rate, including traffic accidents. The authors used economically active population data from Appendix 1, Table A1 to calculate the number of fatal accidents.
[c] The number include both fatal and non-fatal occupational accidents.
[d] Covers only deaths caused by hazardous substances.
[e] New cases a year.

During the last decade, estimates of work-related morbidity and mortality have been made at country level. Table 1 presents estimates for different countries covering one year. A common result in all of these studies is that the estimates are higher than the official number of accidents for a country. The official number is added into the Table 1 and taken from the ILO Laborsta; the comparison year is 2003.

Several articles are available that discuss work-related injuries and diseases in different countries, regions, or business sectors. The background to these studies is usually that official figures are missing or lacking (Ooteghem, 2006; Liu, Zhong, & Xing, 2005; Dong & Platner, 2004; Leigh, Marcin, & Miller, 2004). Lack of published data on occupational accidents is also the case in many developed countries. The European Union (EU) collects occupational accident data from their member countries. The number of fatal occupational accidents is thought to be reliable, but even here there are different kinds of rules of inclusion in the statistics. Also, all accidents other than fatal ones are corrected in the case of some member countries. For example, the average reporting level in Denmark is 46%, in Greece 39%, in Ireland 38%, in Sweden 52%, and in the United Kingdom 43% (European statistics on… 2001).

The first global estimates were published by Leigh, Macaskill, Kuosma, and Mandryk (1999) and Takala (1999). Takala estimated that annually 1.1 million work-related deaths occur, comprising occupational accidents, commuting accidents, and occupational and work-related diseases. Leigh et al. estimated that approximately 100,000,000 occupational injuries and 700,000 occupational diseases occur annually.

Newer global estimates have been published by Concha-Barrientos, Nelson, Fingerhut, Driscoll, and Leigh (2005). They estimated that annually approximately 312,000 fatal unintentional occupational injuries occur. Hämäläinen, Takala, and Saarela (2007, 2006) estimated that annually about 2 million fatal work-related diseases and occupational accidents occur (345,000 fatal occupational accidents and 1.6 million work-related diseases). They also estimated that annually 263 million occupational accidents occur that cause at least four days of absence from work. This paper presents the trend of global occupational accidents and fatal work-related diseases at region and country levels. The estimated trend is based on three separate research studies of global estimates of occupational accidents and fatal work-related diseases.

2. Methods

Methods for estimating global occupational accidents and fatal work-related diseases are based on trusted sources. Research can be divided into two parts: (a) estimates of occupational accidents and (b) estimates of fatal work-related diseases. In both parts selected factors were collected.

Methods are explained in detail in two published articles (Hämäläinen et al., 2007, 2006). In this article, the most important aspects of methods are discussed. Some corrections and changes for the methods were made after the first research and those corrections and changes are presented.

An occupational accident is defined as an occurrence arising out of or in the course of work and resulting in a fatal or non-fatal occupational injury (ILO Code of Practice, 1996). A work-related disease is one that has been shown to have an association with work (Takala, 1999). Estimated numbers of occupational accidents and fatal work-related diseases are the number of workers injured or killed.

Estimates of occupational accidents and fatal work-related diseases were given by regions. The World Bank regional divisions were used in two earlier estimates of occupational accidents and work-related diseases. In this study, the World Health Organization (WHO) regional divisions were chosen instead of the World Bank regional divisions. The reason for this was that the World Bank changed its regional division in between the second and third research. The WHO regional division is also more accurate, containing more regional areas than the World Bank regional divisions. In addition, figures for the global burden of diseases were found for the WHO regional divisions. The WHO uses six main regions shown in Fig. 1.

These regions are divided further into 14 sub-regions. The sub-regions were used in order to obtain the best possible estimates. In the authors previous studies, China and India formed their own region. In the WHO divisions, China belongs to the WPRO and India to the SEARO region.

2.1. Occupational accidents

Occupational accidents are divided into fatal accidents and accidents causing at least four days of absence from work. This is the practice in the EU countries.

2.1.1. Fatal occupational accidents

The basis for calculations was the economically active population and the total employment information (covers both paid employment and self-employment), which was collected mainly from ILO Laborsta and website information of Population Statistics. The labor structure was divided into three categories: agriculture, industry, and service. This information, gathered from ILO Laborsta and Central Intelligence Agency (CIA) World Fact Book, was used for calculations. For these three sectors fatality rates were formed by region. The total employment figures were used if found; otherwise, the number of persons forming the economically active population was used.

Estimates of occupational accidents were made by regions. Information that was needed from each individual country were: (a) number of fatal occupational accidents by insured/covered

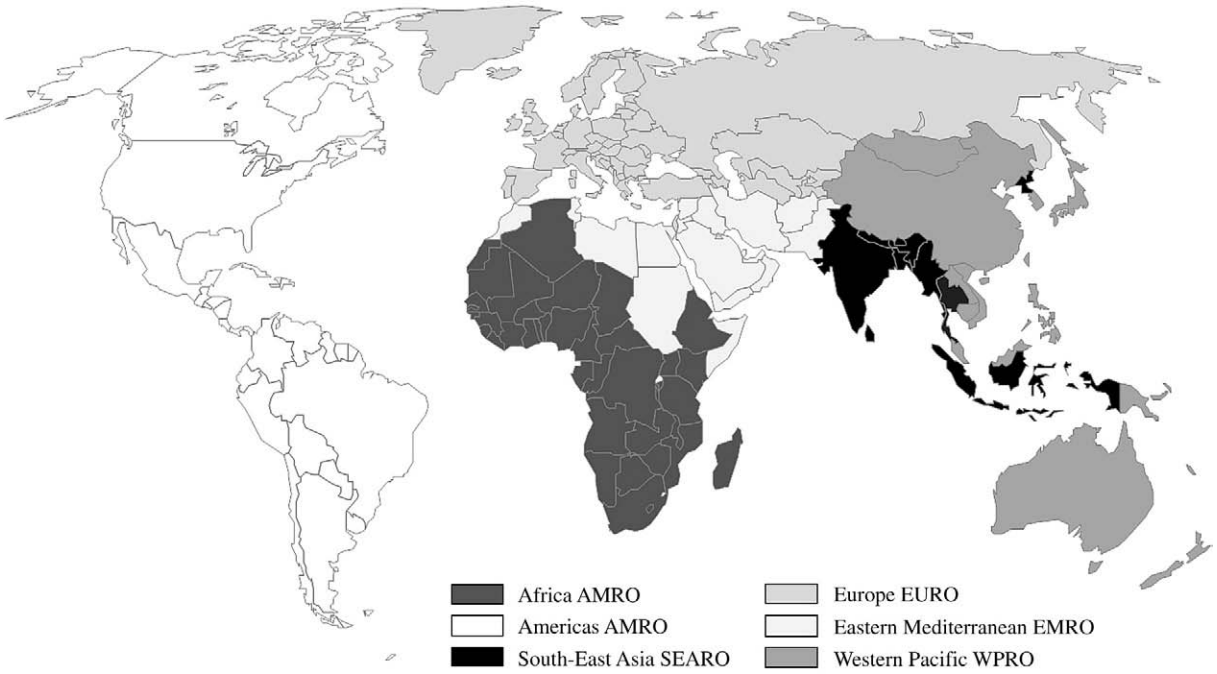

Fig. 1. The WHO six main regions.

employees; and (b) fatality rate per 100,000 insured/covered employees. However, only a few countries in each region have reliable information available. To make the calculations for regions, countries that best represent the region were chosen (Table 2). In practice, only whole EURO, AMRO A, and WPRO A regions have several countries that have required statistical information to make estimates. Countries used were chosen together with the ILO representative. For other regions only one representative country could be found.

China and India are exceptions. For these, their own specific estimates of occupational accidents numbers were calculated. However, these specific numbers are shown on the lists for the regions to which China and India belong. Estimates are partly based on employment figures, which are very high in these two countries. If the same fatal accident rates are used as for the rest of the region, the number of occupational accidents is increased probably beyond the true figures. Also, based on studies on China, Liu et al. (2005) have calculated that the fatality rate in China is 14.14 per 100,000 workers in the industrial sector, while Xia et al. (2000) have calculated it to be 11.5 in a new development region in Shanghai. These rates are smaller than the estimated rates for the whole WPRO B region. Similar studies cannot be found for India.

Table 2
Fatal accident rates per 100 000 employees by region in 2003.

Region	Agriculture	Industry	Service	Countries used on calculation
AFRO D	25.8	18.2	21.3	Zimbabwe, Algeria, Togo, Ghana
AFRO E	20.1	14.3	16.6	Zimbabwe, Mozambique, Namibia and South Africa
AMRO B and D	25.5	19.4	11.7	Argentina, Chile, Costa Rica and El Salvador
EMRO B and D	24.6	15.4	4.7	Tunisia, Bahrain, Turkey
India	9.5	18.3	4.8	Kazakhstan, Malaysia
EURO B	10.0	19.2	5.0	Kazakhstan, Romania, Slovakia, Turkey
EURO C	8.8	16.9	4.4	Kazakhstan, Estonia, Lithuania, Russia, Ukraine
SEARO B and D	33.6	12.9	7.6	Korea, Malaysia, China
WPRO B	33.6	12.9	7.6	Korea, Malaysia, China
China	12.4	23.9	6.2	Kazakhstan, China

AFRO=Africa, AMRO=Americas, SEARO=South-East Asia, EURO=Europe, EMRO=Eastern Mediterranean, WPRO=Western Pacific.

In the authors' previous studies, the accident figures of Established Market Economies (EME) were based on the figures reported to the ILO or on the statistics centers of these countries. The EU has its own statistics office, Eurostat. Its information was used for the EU 15 countries[1] (Dupré, 2001). Still, all figures were adjusted, because both sources of statistics covered only wage earners. The figures of fatal accidents were corrected using the ratio: total employment reported to the ILO per total employment reported to the EU (153 364 323/136 500 000 = 1.126). This ratio was used for all EME countries.

In this study, the ratio was formed differently. The fatal accident figures of the ILO Laborsta cover only wage earners. For the EU 15 countries, the number of fatal occupational accidents was taken from the Eurostat webpage (Eurostat, 2001). Currently Eurostat figures cover also self-employed persons and farmers. When the Eurostat number of occupational accidents for the EU 15 countries is compared with the ILO number of occupational accidents, it is seen that approximately 81.3% of all fatal accidents are covered in the ILO statistics. The figures for selected EU countries (i.e., Austria, Finland, France, Italy, Spain, and the United Kingdom) were used to form the ratio. These countries were chosen because the number of occupational accidents in 2003 for all of them could be found in both sources of statistics: the ILO and Eurostat. The figures for other EU countries were corrected using this ratio (100%/81.3%=1.23). This proportion was mainly used for the same countries as in the authors' previous studies: EURO A countries and other EU countries, most of AMRO A and WPRO A countries.

In other regions, only a few countries have reliable information available. Table 2 presents rates and countries of each region used in the calculations. The first country mentioned on the list is used to form the sectoral rates and the others are used in making revisions.

2.1.1.1. AFRO D and E. Calculated fatal accident rates are based on information for Zimbabwe (figures of 1996) because it was the only AFRO country for which all information needed was available. Correction for AFRO D was done using total rates for Algeria, Togo, and Ghana. For Algeria

[1] The EU 15 countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

and Togo the average for three years (2001-2003) was used. The figures for Ghana are based on the article of Mock, Adjei, Acheampong, and Simpson (2005). They have researched occupational injuries in Ghana and report high fatal occupational rates using confidence intervals. The present update study used the lowest limit (30) of lower boundaries from the research of Mock et al. (2005). Correction for the AFRO E region was done using figures for Mozambique, Namibia, and South Africa that were taken from the article of Loewenson (1999). This article was used because for the AFRO E region more recent information on total rates was not available.

2.1.1.2. AMRO B and D. Calculated rates are based on the information for Argentina (figures of 2000) because it was the only AMRO country for which all information needed was available and reliable. Correction of rates was done using the total rates for Chile, Costa Rica, and El Salvador (2001-2003). Rates for the AMRO D countries were not available. In the case of Cuba, which belongs to the AMRO A region, rates for the AMRO B were used.

2.1.1.3. SEARO B and C. Calculated rates of fatal accident are based on the information for the Republic of Korea (figures of 1998) because no information could be found for any SEARO countries. Also, these countries were assumed to be fairly similar to the WPRO B countries, and in the authors' former studies SEARO and WPRO countries formed together one region called Other Asia and Islands (OAI). Accident rates for India were formulated using the rates for Kazakhstan and the total rates for Malaysia. India does not have an authentic recording system and does not report information for all industries, and these figures for Kazakhstan and Malaysia are used to fill missing gaps.

2.1.1.4. EURO B and C. Calculated rates are based on the information for Kazakhstan (figures of 1999) because it represents best the average for the EURO B and C region, in which countries considerably differ from each other. Correction for the EURO B region was done using the total rates for Romania (2001-2003), Slovakia (2001-2003), and Turkey (2000-2001). Correction for the EURO C region was done using the total rates for Estonia (2001-2003), Lithuania (2001-2003), Russia (2000-2001), and Ukraine (2000-2002). For the EU countries Estonia, Hungary, Latvia, Lithuania, Poland, and Slovakia the same ratio was used as for other EU countries (100%/81.3%).

2.1.1.5. EMRO B and D. Calculated rates are based on the information for Tunisia (figures of 2001) because it was the only EMRO country for which all information needed was available. Correction is done using the total rates for Bahrain (2000-2002), Tunisia (1999-2001), and Turkey (1999-2001). The information for Turkey was used even though it does not belong to the EMRO region. Very limited data were available and in the authors' previous estimates Turkey belonged to this group (Middle Eastern Crescent).

2.1.1.6. WPRO B. Calculated rates are based on the information for the Republic of Korea (figures of 1998) because it was the only WPRO country for which all information needed was available. Correction was done using the total rates of Malaysia, China, and Republic of Korea. As was mentioned earlier, fatal accident rates for China were arrived at separately. The rates for China are based on the sectoral figures for Kazakhstan, as in former studies; they were revised using data by Liu et al. (2005) on industrial accidents in China. Brunei belongs to the WPRO A region, but its figures are based on WPRO B rates.

2.1.2. Non-fatal accidents

Accidents causing at least four days of absence from work were calculated using lower and upper limit estimates. Limits were calculated as in the authors' previous studies. The lower limit (0.13%) was calculated by using the proportions of fatalities for Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Spain, Sweden, and the United Kingdom with the accidents causing four days of absence and obtaining the average of these proportions.

In the case of the EU, the declaration rate of only a few countries is estimated to be 100% (Dupré, 2001). The upper limit (0.09%) is arrived at using the proportion of fatal accidents in Finland, France, Germany, and Luxemburg with the figures for accidents causing at least four days' absence. Accidents causing four days' absence for each country in all regions were then calculated using lower and upper limits. The average is arrived at by calculating the mean value of lower and upper limits. In this article only average estimates are presented.

2.2. Fatal work-related diseases

Previous studies of global estimates of fatal work-related diseases used mainly two sources of information: the Global Burden of Disease (GBD; Murray & Lopez (Ed.), 1996) and the Epidemiologic Estimate of the Proportion of Fatalities Related to Occupational Fraction in Finland (Nurminen & Karjalainen, 2001). In this update study, GBD statistics have been replaced by the WHO global burden of disease estimates. The attributable fractions for previous studies were mainly taken from Nurminen and Karjalainen (2001) and they are still used in this update study in order to make the estimates comparable.

Global estimates of fatal work-related diseases are estimates for year 2000 and 2002. The data of the global burden of disease can be found only for those years. Estimates were made according regions and by the groups of diseases. The regions used are the same as were mentioned earlier: The World Bank regional divisions were used in the two first studies and in the third study the WHO regional divisions were used.

Both GBD estimates provide worldwide estimates of deaths categorized by age, sex, and causes of disease, and was found to be the only source that covers the entire world. GBD figures include not only occupational diseases, but all diseases and deaths (WHO, 2002; Murray & Lopez, 1996). Diseases are further divided into more specific disease groups. In studies, only the seven main disease categories were used: communicable diseases, malignant neoplasms, respiratory diseases, circulatory diseases, neuropsychiatric conditions, digestive diseases, and genitourinary system diseases.

As all the diseases from GBD cannot be considered as work-related, some categories of diseases were disregarded for these studies, including: childhood-cluster diseases, maternal and perinatal conditions, and nutritional deficiencies. In both GBD, age groups were divided into seven different categories: 0-4, 5-14, 15-29, 30-44, 45-59, 60-69, and 70+. In this study, all age groups, except the 0-14 year group, were used, but limitations were made for all age groups depending on the disease group as Nurminen and Karjalainen (2001) had divided the age groups differently.

Work-related mortality was calculated by using either attributable or revised attributable fractions, depending on the region. For AFRO D and E (former SSA) and EURO B and C (former FSE) regions revised fractions were used. Communicable/non-communicable diseases had a lower emphasis.

In this article, fatal work-related diseases are presented by region and country level, not by disease groups. To obtain estimates of fatal

Table 3
Trend according to estimated number of fatal work-related diseases and occupational accidents.

Year	Fatal occupational accidents	Occupational accidents ≥4 days' absence	Fatal work-related diseases
1998	34,5436	263,621,966	1,646,965[a]
2001	35,1203	268,023,272	2,028,003
2003	35,7948	336,532,471	1,945,115

[a] The number of diseases calculated by age.

Table 4
Updated estimates of fatal work-related diseases in 2002 and occupational accidents in 2003.

Region	Economically active population	Total employment	GDP (USD mil.) 2003	Fatal occupational accidents reported to the ILO (2003)	Occupational accidents causing at least 3 days' absence, reported to the ILO (2003)	Fatal occupational accidents 2003	Occupational accidents causing at least 4 days' absence Average 2003	Fatal work-related diseases 2002	Fatal work-related mortality
AFRO D	132,866,600	15,280,337	210,542	738	49,285	31,843	29,937,739	118,849	150,692
AFRO E	131,234,211	14,925,556	264,376	0	0	23,646	22,230,937	241,510	265,156
AMRO A	163,464,100	153,401,100	11,876,375	6,538	1,664,774	8,042	7,560,855	93,726	101,768
AMRO B	201,671,598	178,241,947	1,678,967	2,175	731,916	28,514	26,807,839	87,394	112,768
AMRO D	20,813 456	12,114,500	128,171	21	11,366	2,616	2,459,693	19,718	22,334
SEARO B	154,615,946	133,266,800	399,711	829	57,694	23,925	22,493,982	89,534	113,459
SEARO D	569,693,174	44,322,000	685,741	192	1,052	69,510	65,351,517	428,339	497,849
EURO A	196,300,605	181,149,732	11,367,353	3,193	2,727,458	5,298	4,981,125	139,519	144,817
EURO B	93,080,120	58,932,408	634,232	1,246	108,356	7,176	6,746,581	56,881	64,057
EURO C	116,031,800	106,282,700	651,809	579	38,775	9,091	8,546,706	122 128	131 219
EMRO B	48,812,527	13,105,703	627,280	0	0	5,468	5,141,097	20,395	25,864
EMRO D	129,567,011	66,603,372	228,331	110	26,884	17,438	16,394,381	85,738	103,176
WPRO A	81,061,197	76,720,154	4,987,394	1,916	259,112	2,370	2,228,468	45,745	48,115
WPRO B	877,139,692	807,654,634	2,427,423	530	80,871	123,011	115,651,552	395,638	518,649
WORLD	2,916,352,037	1,862,000,943	36,167,705	18,067	5,757,543	357,948	336,532,471	1,945,115	2,303,064

work-related diseases at country level, the region estimates were divided according to proportion of employment. The total employment figure was always used when possible; otherwise the figure for the economically active population was used.

3. Results

According to the results, the total number of occupational accidents and fatal work-related diseases has increased (Table 3). The increase is quite slight in the case of fatal occupational accidents, but occupational accidents (non fatal) have increased considerably over five years. Accidents other than fatal occupational accidents have increased 20%. Increase in fatal work-related diseases is mostly explained because during the first study it calculated only diseases by age, not by gender based calculation.

The increase in other than fatal accidents is partly explained by the increase in the economically active population and in some regions by the increase in total employment. This update study also covers more countries than previous studies. In this study, the proportion of fatal occupational accidents versus occupational accidents that caused at least four days of absence from work was used. The proportion has increased.

There were almost 360,000 fatal occupational accidents in 2003 and almost 2 million fatal work-related diseases in 2002 (Table 4). Estimates indicate that occupational accidents are still a serious problem in the world. Every day approximately 1,020 workers die because of occupational accidents and more than 960,000 workers get hurt because of accidents. It should be noted that occupational accidents involving under four days of absence are not included in this figure. Each day 5,330 people in the world die because of work-related diseases.

The accidents reported to the ILO comprised 5% of the accidents estimated to have happened annually. The number of reported accidents varies between regions. While WPRO A (81%), AMRO A (76%), and EURO A (57%) countries provide good reports on their occupational accidents to the ILO, countries of AFRO, SEARO, EMRO, and WPRO B report to the ILO the extent of only close to 0%-1%.

Although the number of fatal occupational accidents has increased at the global level, the fatality rates per 100,000 workers have decreased. In 1998, the fatality rate was 16.4 and in 2003 it was 13.8. Fatality rates have decreased in most regions (Fig. 2).

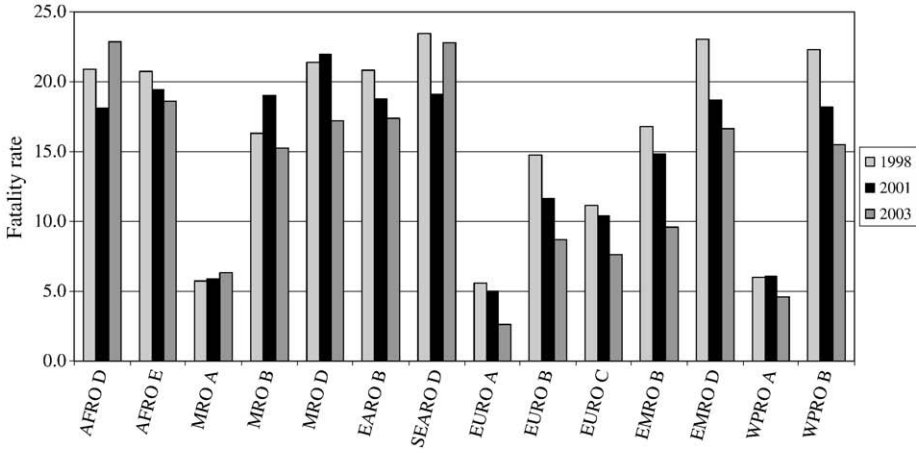

Fig. 2. Fatality rate per 100 000 workers.

The decrease is quite strong in EURO and EMRO regions as well as in SEARO B and WPRO B regions. In other regions fatality rates have remained relatively the same for six years, except in the AFRO D region, where the fatality rate has increased clearly. It is interesting that the total number of fatal occupational accidents has increased considerably in the WPRO B region and still the fatality rate per 100,000 workers has also decreased considerably.

However, accident rates per 100,000 workers have slightly increased globally. In 1998, the accident rate was 12,534 and in 2003 it was 12,966. In half of the regions the increase is clear (AFRO D and SEARO D regions) or accident rates have remained at about the same level. In EURO and EMRO regions as well as in the WPRO B region the rates have decreased the most.

The decrease in both accident rates can be explained partly by the increase in employment, both in terms of the economically active population and total employment (Table 5). The number of fatal occupational accidents and of other occupational accidents has been calculated using employment figures. The figures of total employment were used if relevant data were available; otherwise, data on the economically active population were used. Especially for the AFRO, SEARO, EMRO and WPRO B regions, data on total employment are missing and figures on the economically active population were used. At least in the case of these regions, the fatality and accident rates are probably too low.

The number of fatal work-related diseases has remained quite stable. As can be seen, in some regions diseases have increased quite a lot (e.g., in the AFRO E, SEARO D, and EURO C regions), but they have also decreased much in the AFRO D, EURO B, EMRO B, and WPRO B regions (Table 6). Rates per 100,000 workers for fatal work-related diseases cannot be shown for the regions because the number of fatal work-related diseases at country level is a proportion of the region employment figure.

3.1. AFRO countries

In the African region, the number of occupational accidents has increased and also rates in the case of AFRO D (Table A1 in Appendix 1). In all countries in the AFRO D area, the number has increased at least slightly. In Algeria, Equatorial Guinea, Niger, Nigeria, and Senegal it has increased most. The opposite situation is found in the AFRO E region where the number of fatal and other occupational accidents has decreased slightly in most of the countries. These differences between regions are probably explained by newer estimates used for AFRO D countries. Researchers may speculate that there may be a greater number of occupational accidents in this region than the official rates given, based on recent articles on different African countries (Ooteghem 2006; Mock et al., 2005, Kobusingye, Guwatudde, & Lett, 2001).

In AFRO D countries, the number of work-related diseases has decreased 30% and in AFRO E countries it has increased almost 20% in comparison with the previous fatal work-related estimates (Hämäläinen et al., 2007). The main reason for this is that WHO's GBD data, which were used as the source of information, has been corrected with respect to the estimates for the total mortality due to disease in AFRO regions. Also, some correction for attributable fractions has been done.

Table 5
Trend in employment.

	Economically active population (Millions)			Total employment (Millions)		
	1998	2001	2003	1998	2001	2003
AFRO D	109.4	130.9	132.9	1.1	7.0	15.3
AFRO E	136.4	137.6	131.2	9.4	18.6	14.9
AMRO A	153.3	158.1	163.5	145.6	150.1	153.4
AMRO B	169.7	193.4	201.7	101.3	172.4	178.2
AMRO D	22.7	25.7	20.8	13.3	19.6	12.1
SEARO B	131.1	137.0	154.6	119.2	130.5	133.3
SEARO D	549.7	550.6	569.7	492.5	472.7	44.3
EURO A	187.6	193.3	196.3	168.9	179.3	181.1
EURO B	83.5	84.1	93.1	72.1	70.5	58.9
EURO C	111.9	113.2	116.0	104.6	104.6	106.3
EMRO B	43.0	59.4	48.8	4.6	16.6	13.1
EMRO D	105.2	108.3	129.6	56.3	67.4	66.6
WPRO A	80.9	81.5	81.1	77.4	77.1	76.7
WPRO B	843.3	860.0	877.1	798.5	838.7	807.7

Table 6
Fatal work-related diseases by regions.

	Fatal work-related diseases	
	2000	2002
AFRO D	170,911	118,849
AFRO E	198,436	241,510
AMRO A	109,173	93,726
AMRO B	102,745	87,394
AMRO D	13,383	19,718
SEARO B	72,259	89,534
SEARO D	374,647	428,339
EURO A	133,916	139,519
EURO B	80,317	56,881
EURO C	97,013	122,128
EMRO B	46,254	20,395
EMRO D	98,600	85,738
WPRO A	55,780	45,745
WPRO B	474,570	395,638

3.2. AMRO countries

The estimates of fatal occupational accidents for the United States and Canada have remained quite stable for five years, but occupational accidents causing at least four days of absence have increased considerably (i.e., nearly 40% in Canada and 20% in the United States). In both countries estimates of fatal work-related diseases have slightly decreased (Table A2 in Appendix 1). In the AMRO B region the estimated number of fatal occupational accidents and fatality rates have at first increased considerably but then decreased. The same has happened also in the AMRO D region, where the number of occupational accidents and fatality rates has decreased in Guatemala and Peru. Because the model for estimating occupational accidents stresses employment figures, a considerable increase or decrease in these figures also affects the estimated numbers (Table A2 in Appendix 1).

In the case of occupational accidents causing at least four days of absence, estimates have at first increased significantly in both sub-regions and then remained quite the same in AMRO B regions, but decreased in AMRO D regions. It is notable that even the estimated number has decreased quite significantly for the AMRO D region and the accident rate has remained at the same level. Work-related diseases have decreased in almost all countries in the AMRO B region, but increased in AMRO D countries (Table A2 in Appendix 1).

3.3. SEARO countries

In the SEARO B region, the number of fatal occupational accidents and the fatality rate have decreased slightly, especially in Indonesia. The situation is the opposite in the case of other than fatal occupational accidents, which have increased as well as the accident rate. In the SEARO D region, the number of fatal accidents and the fatality rate has remained quite the same, but in Bangladesh fatal accidents have decreased while in Myanmar they have increased significantly. In both sub-regions, cases other than fatal occupational accidents as well as fatal work-related diseases have increased in all

countries. In India, Myanmar, and Nepal, the increase is quite large in cases other than fatal occupational accidents. Fatal work-related diseases in Indonesia, Sri Lanka, Thailand, Myanmar, and Nepal have increased remarkably (Table A3 in Appendix 1).

3.4. EURO countries

For EURO regions there seems to be a decreasing trend in both estimates of occupational accident figures during the five year period (1998-2003). Especially when considering the figures for former socialistic countries like Bulgaria, Croatia, the Czech Republic, Hungary, Latvia, Poland, Slovakia, and Slovenia, the drop is dramatic. Most of these countries are now new member countries of the EU and their own figures were used. They were corrected using the ratio 1.23. For countries other than EU countries, the fatal accident rate per 100,000 employees was used (Table 2) in estimating the number of fatal occupational accidents. This change does not explain the decrease in fatal occupational accidents. For example, old EU countries like Greece, Italy, and Spain succeeded in decreasing their number of fatal occupational accidents as well as Belarus, Georgia, Israel, Kyrgyzstan, and Ukraine (Table A4 in Appendix 1).

There is a rising trend in the number of fatal work-related diseases in EURO A and EURO C regions. In the case of EURO A countries, the increase is only slight, but in the EURO C region the increase is quite large. The trend in fatal work-related diseases in EURO B region is the opposite, showing a decrease of almost 30%. The reason for that is probably that Turkey belonged in previous estimates to the region of the Middle Eastern Crescent while now it belongs to the EURO B region. If the number of fatal work-related diseases for Turkey is excluded, the decrease is 15% (i.e., from 49,952 to 42,434 fatal work-related diseases; Table A4 in Appendix 1).

3.5. EMRO countries

The number of both occupational accidents and fatal work-related diseases is decreasing in EMRO B countries. The decrease is quite large, approximately 22% in the case of fatal occupational accidents and 44% in fatal work-related diseases. The fall in the number of occupational accidents is especially large in Saudi Arabia and Tunisia, and the fall in the number of work-related diseases is clear in every other country except Oman, for which the figure is estimated to be increasing. The situation is the same in EMRO D countries, but there the decrease is not as dramatic. In the case of occupational accidents causing at least four days of absence, the total number has increased, but it should be noted that the accident rate has decreased. Occupational accidents have been increasing in Egypt, Iraq, and Sudan, and the number of fatal work-related diseases has increased in Afghanistan and Pakistan (Table A5 in Appendix 1).

It is most difficult to provide estimates for this region since reliable figures are missing. Tunisia was the only country for which information on occupational accidents was found. Countries in this region differ from each other more than in other regions.

3.6. WPRO countries

The total number of occupational accidents, both fatal and other, has remained quite stable in the WPRO A region: the number of fatal occupational accidents has slightly decreased while all other have increased slightly. Still, on the whole, both rates have decreased. The number of fatal work-related diseases has decreased by almost 18%. Australia and Singapore have succeeded in decreasing their number of occupational accidents and fatal work-related diseases, but in New Zealand occupational accidents have increased significantly (fatal 40% and others 50%) during the five year period (1998-2003). Fatal work-related diseases have decreased in number mainly in Australia and Japan (Table A6 in Appendix 1).

In the WPRO B region, the total number of fatal accidents and occupational accidents causing at least four days of absence increased over five years: fatal accidents increased by 21% and other accidents by 35%, but also in this region the overall rates have decreased. The number of fatal work-related diseases has decreased by 17%. In both cases the increase and the decrease are mainly due to China: in 2003 there were 23,000 more fatal occupational accidents in China than in 1998. Also in Cambodia and Vietnam, the number of occupational accidents has increased. However, the Republic of Korea, Malaysia, and Philippines have succeeded in decreasing considerably the number of occupational accidents.

4. Discussion

According to the new estimates, more than 2.3 million people die every year because of fatal occupational accidents or work-related diseases. This means that every day approximately 7,000 people die from these causes. Also, more than 960,000 workers a day get hurt at work. Over a 10 year period both occupational accidents and fatal work-related diseases have increased (Table 3). Fatal work-related diseases and occupational accidents that cause at least four days of absence have especially increased. In 1994 Leigh et al. (1999) estimated that 700,000 workers die because of work-related diseases, in 2002 the estimation was twice as great, being near 2 million. The average figure for occupational accidents was estimated to be three times greater in 2003, being more than 300 million.

Although occupational accidents and work-related diseases are still a major worldwide problem and although total numbers have increased over 10 years, occupational accident rates per 100,000 workers have decreased or remained the same. This does not necessarily mean that the occupational safety and health situation is improving worldwide. The number of the economically active population and the total employment figures, which were used for the estimation of rates (Fig. 2), have increased in almost all regions. The figure for the economically active population was used for rates of the AFRO, SEARO, EMRO, and WPRO B regions because the total employment figure was missing for most of the countries. This decreases rates because the economically active population also contains unemployed persons. The decrease in rates is at least partly due to the changes in divisions, especially in the case of EMRO and EURO regions. Also China and India may have too low a total number of accidents. They are rural in many ways and agriculture is usually more dangerous compared with other types of work. This is true also of construction work, a lot of which is going on in these areas.

Estimations of occupational accidents are based on the information from the ILO. The proportion of reported accidents is very low (only 3.9%). Even countries in the European region do not report all their cases, this varies between different continents and countries. The fatalities and the average figures shown may be lower than the actual situation. The number of fatal occupational accidents for insured/covered workers is the basis for the calculations, and this figure is probably lower than the real number.

There is a downward trend in the number of occupational accidents in Europe. One reason for this decrease might be stricter legislation relating to occupational safety and health. This may be the case in new member states in the EU region. For example, the number of both fatal and other occupational accidents has decreased considerably in the Czech Republic, Estonia, Hungary, Latvia, Poland, Slovakia, and Slovenia. As an example, Poland started to change their legislation in accession time to the EU; this also included occupational and safety legislation and affected the number of occupational accidents (Koradecka & Dryzek, 2001). However, the decrease in these countries is also due to the way in which fatal accidents are calculated. In the previous studies they belonged to the region of the Former Socialist Economies of Europe. Rates for these countries were clearly higher than those for other European countries.

Table 7
The estimated number of occupational accidents versus occupational accidents reported to the EU.

Country	Estimated numbers of occupational accidents causing at least 4 days' absence			Occupational accidents reported to EU in 2003 (Eurostat 2006)
	Lower limit (0.13) 2003	Upper limit (0.09) 2003	Average 2003	
Austria	174,615	252,222	213,419	88,792
Belgium	64,615	93,333	78,974	77,807
Denmark	39,231	56,667	47,949	62,076
Finland	37,692	54,444	46,068	58,504
France	601,538	868,889	735,214	710,282
Germany	693,077	1,001,111	847,094	1,040,303
Greece	52,308	75,556	63,932	36,150
Ireland	61,501	88,834	75,167	21,547
Italy	762,308	1,101,111	931,709	599,708
Luxembourg	5,385	7,778	6,581	11,305
Netherlands	80,000	115,556	97,778	69,240
Spain	555,385	802,222	678,803	792,565
Sweden	43,077	62,222	52,650	51,387
United Kingdom	172,308	248,889	210,598	399,763

Although the number of occupational accidents causing at least four days of absence from work increased considerably over 10 years, it is probably underestimated (Table 7). Especially those countries (Finland, France, Germany, and Luxemburg) whose accident proportion was used in deciding the upper limit have more occupational accidents (France near average) than the estimate suggests. It can be seen that the upper limit is nearer the official one. Also, the estimates for Denmark and the United Kingdom are much lower than the official figures they have given to the EU. The upper limit cannot offer a real estimation for all countries. Also, a weakness in using limits is that if a country in any particular year has for some reason more fatal occupational accidents than usual, the number of occupational accidents causing at least four days of absence increases. This is probably the case with Austria, where the number of occupational accidents causing at least four days of absence is probably nearer 100,000 than 200,000.

The number of fatal work-related diseases has increased considerably in recent years and remains now near 2 million cases annually. However, this might still be an underestimation. Recent studies show that there is pressure to correct epidemiological data that is old and does not fit present knowledge (O'Neill, Pickvance, & Watterson, 2007; Rushton, Hutchings, & Brown, 2007). Problems for the future, especially in the case of work-related diseases, are increasing. Understanding how different hazardous substances and working conditions affect humans is inadequate. How will industrialized countries cope with such matters? The effects of current exposures need to be carefully considered, because the potential health effects may be important but not evident for many years (O'Neill et al., 2007; Morrell et al., 1998).

The objectives of this study have been multidimensional. Estimates had to be arrived at because information on occupational accidents was lacking or missing, especially figures on work-related diseases. The aim of the study is to provide countries with a better understanding of the importance of occupational health and safety at country and company level. Strong industrialization and urbanization increase work-related health and safety problems, but the awareness of workers are, in general, also increasing; hopefully occupational safety and health management will benefit from this. Good safety management is based on the prevention of accidents (Kjellén, 2000) and accident investigation has been used for a long time to learn and prevent future accidents (Heinrich, 1959).

Whereas in developed countries one tendency in the field of occupational safety is proactive safety management and the capability of responding to regular and irregular threats (Hollnagel, 2007), many companies in developing countries have no familiarity at all with occupational safety and health. They do not have enough knowledge and skills and they do not understand the present level of safety. The flow of industrial production to developing countries has increased and continues to increase. If the process of globalization is not carried out wisely, there will be an increase in the number of occupational health and safety problems, as well as of ergonomic problems, both in developing and developed countries (Glodstein, Helmer, & Fingerhut, 2001; Manuaba, 2001). The stress of global competition may lead employers to view the prevention of occupational injuries and the protection of workers' health as a barrier to trade (Glodstein et al., 2001). Competitiveness can be used to explain the number of fatal occupational accidents per 100,000 workers. Competitiveness is highest in the countries where the fatality rate is lowest (Hämäläinen, 2007; World Economic Forum, 2006; ILO Introductory Report, 2005). However, competitiveness also depends on region. Those countries in which competitiveness is highest are developed, industrialized countries (Hämäläinen, 2007).

In the future, methods for estimating the number of occupational accidents and work-related diseases will still have to be corrected. The WHO divisions into regions were used, but even when countries are located in the same area and have the same religion, they do not necessarily have the same political and economic situation. Even though countries are quite different from each other, one country is used to represent a whole region. There is a clear relationship between occupational accidents and type of work, but also safety culture at national and company level is of central importance. It would be better to use countries' own information in forming estimates. The same situation exists in the case of fatal work-related diseases: the attributable fractions used are based on information on industrialized countries. The attributable fraction should be calculated for each region separately. Although there are risks in using exposure data from developed countries to estimate problems in developing countries, the estimates may be considered rather as underestimates than overestimates. Occupational accidents have been investigated for a long time and the various factors contributing to them are well known. Also, even though studies are mainly done in developed countries, the human metabolism and response is the same around the world.

The problem was also that only fatal occupational accident figures can be found for some countries that were used to represent a whole region. Occupational accidents that caused at least four days of absence cannot be found for those countries. In many developing countries, only a couple of branches belong to that group. In the case of work-related diseases, estimates should also be obtained for cases other than fatal diseases. Muscular-skeletal disorders and neuropsychiatric diseases are increasing problems in developed countries and cause most of the diseases in question. These diseases do not typically cause death.

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Appendix 1

Table A1
Trend in employment, occupational accidents and fatal work-related diseases by country in the AFRO regions.

	Economically active population (thousand)			Total employment (thousand)			Fatal occupational accidents			Fatality rate			Occupational accidents causing ≥3 days' absence (in 2003 ≥4 days' absence)			Occupational accident rate			Fatal work-related diseases	
	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	2000	2002
AFRO D																				
Algeria		9,400	8,321		6,229	6,684		831	1,437		13.3	21.5		634,455	1,351,232		10,186	20,216	9,286	7,443
Angola	6,000	6,200	6,100	475			1,272	1,103	1,518	21.2	17.8	24.9	970,920	841,890	1,427,596	16,182	13,579	23,403	8,260	5,456
Benin	2,085	2,900	354				442	540	86	21.2	18.6	24.2	336,942	412,046	80,751	16,157	14,208	22,783	3,864	317
Burkina Faso	5,000	5,700	5,000	163			1,095	1,088	1,255	21.9	19.1	25.1	835,582	830,111	1,179,491	16,712	14,563	23,590	7,594	4,473
Cameroon	6,000	6,200	5,883				1,261	1,164	1,440	21.0	18.8	24.5	961,991	888,307	1,353,765	16,033	14,328	23,011	8,260	5 263
Cape Verde	121	121	227				24	21	52	20.1	17.7	22.9	18,453	16,311	48,951	15,305	13,480	21,555	161	203
Chad	2,294	3,800	3,900	15	15		500	721	970	21.8	19.0	24.9	381,306	549,927	912,267	16,624	14,472	23,391	5,063	3,489
Comoros	145	252	145				30	67	36	20.5	26.8	24.8	22,574	51,502	33,759	15,622	20,437	23,362	116	129
Equatorial Guinea	103	103	103		148		21	19	25	20.9	12.8	23.9	16,368	14,456	23,172	15,958	9,767	22,497	137	92
Gabon	600	600	650	58			123	111	153	20.6	18.6	23.5	94,212	85,072	143,825	15,702	14,179	22,127	799	581
Gambia	400	700	700				87	132	174	21.7	18.9	24.9	66,251	101,030	163,628	16,563	14,433	23,375	933	626
Ghana	9,000	9,400	10,300				1,852	1,715	2,432	20.6	18.2	23.6	1,413,178	1,308,695	2,286,723	15,702	13,922	22,201	12,524	9,213
Guinea	3,000	3,600	3,900				644	666	959	21.5	18.5	24.6	491,550	507,961	901,633	16,385	14,110	23,119	4,796	3,489
Guinea-Bissau	480	600	700				104	114	174	21.7	19.0	24.9	79,520	86,899	163,648	16,567	14,483	23,378	799	626
Liberia	704	1,300	1,300				149	242	315	21.1	18.6	24.2	113,651	184,472	295,802	16,136	14,190	22,754	1,732	1,163
Madagascar	7,000	7,600	7,574			8,099	1,513	1 435	1,992	21.6	18.9	24.6	1,154,749	1,095,330	1,873,195	16,496	14,412	23,130	10,126	6,775
Mali	5,000	5,400	5,600				1,105	1,043	1,406	22.1	19.3	25.1	843,328	795,693	1,321,925	16,867	14,735	23,606	7,194	5,009
Mauritania	750	1,300	1,300				151	241	302	20.1	18.5	23.2	115,092	183,788	284,044	15,346	14,138	21,850	1,732	1,163
Mauritius	514	539	548	436	491	495	94	90	102	18.3	18.3	20.6	71,627	68,561	95,762	13,935	13,969	19,342	717	490
Mayotte			49									0.0						0		44
Niger	5,000	5,300	5,400				1,092	1,011	1,359	21.8	19.1	25.2	833,712	771,614	1,277,557	16,674	14,559	23,658	7,061	4,830
Nigeria	48000	51,600	55,670				9,631	9,392	13,439	20.1	18.2	24.1	7,349,760	7,167,362	12,634,711	15,312	13,890	22,696	68,747	49,797
Réunion			310						67			21.5			62,680			20,226		277
Saint Helena			4						1			20.1			498			18,882		3
Sao Tome and Principe	31	35	49		49		6	6	12	20.6	13.1	23.5	4,809	4,893	10,846	15,713	9,985	22,135	47	44
Senegal	4,000	4,400	4,650				865	831	1,151	21.6	18.9	24.8	659,857	634,138	1,082,413	16,496	14,412	23,278	5,862	4,159
Seychelles	31	28	31		33		6	5	7	18.6	14.3	21.2	4,378	3,617	6,148	14,170	10,924	19,895	37	28
Sierra Leone	1,369	1,900	2,000				287	349	480	21.0	18.4	24.0	219,212	266,307	451,583	16,013	14,016	22,579	2,531	1,789
Togo	1,740	1,900	2,100		49		366	352	500	21.0	18.5	23.8	279,323	268,656	470,134	16,053	14,140	22,387	2,531	1,878
Total	109,366	130,878	132,867	1,147	7,013	15,280	22,719	23,289	31,843	20.9	18.1	22.9	17,338,343	17,773,091	29,937,739	15,949	13,828	21,532	170,911	118,849
AFRO E																				
Botswana	235	557	582	226	483	449	44	101	73	18.6	20.9	16.3	33,301	77,022	68,920	14,171	15,932	15,342	742	1,071
Burundi	4,000	3,800	2,999				886	733	594	22.1	19.3	19.8	675,914	559,149	558,927	16,898	14,714	18,637	5,063	5,519
Central African Republic	1,187	1,800	1,800				261	343	350	22.0	19.1	19.5	199,268	261,769	329,509	16,788	14,543	18,306	2,398	3,313
Congo, Democratic Republic of	200,00	21,600	21,500				4,148	3,984	4,047	20.7	18.4	18.8	3,165,274	3,040,348	3,804,416	15,826	14,076	17,695	28,778	39,566
Congo, Republic of	1,300	1,500					238	277		18.3	18.5		181,258	260,813		13,943	17,388	1,732	2,760	
Côte d'Ivoire	1,850	1,850	6,950				388	342	1,299	21.0	18.5	18.7	295,837	260,866	1,221,305	15,991	14,101	17,573	2,465	12,790
Eritrea	0	2,100	2,200	58			12	393	422		18.7	19.2	9,471	300,013	396,508	16,385	14,286	18,023	2,798	4,049
Ethiopia	26,000	28,300	3,613			2,854	5,596	5,318	467	21.5	18.8	16.4	4,270,815	4,058,577	438,790	16,426	14,341	15,373	37,704	6,649
Kenya	15,000	15,900	11,850		1,647		3,238	2,997	2,284	21.6	18.8	19.3	2,471,372	2,287,177	2,147,321	16,476	138,836	18,121	21,184	21,808
Lesotho	700	900	838				131	150	139	18.7	16.7	16.6	99,807	114,668	131,148	14,258	12,741	15,650	1,199	1,542
Malawi	5,000	5,100	5,300				1,087	970	1,028	21.7	19.0	19.4	829,362	740,045	966,734	16,587	14,511	18,240	6,795	9,754
Mozambique	9,000	9,400	9,800				1,945	1,780	1,891	21.6	18.9	19.3	1,484,678	1,358,194	1,777,963	16,496	14,449	18,142	12,524	18,035
Namibia	500	700	840		432		100	123	149	19.9	28.4	17.8	76,110	93,658	140,456	15,222	21,688	16,721	933	1,546
Rwanda	4,000	4,700	4,600				886	905	910	22.2	19.2	19.8	676,249	690,288	855,702	16,906	14,687	18,602	6,262	8,465
South Africa	13,790		16,192	9,110	11,335	11,622	2,643	1,908	1,903	19.2	16.8	16.4	2,016,915	1,455,861	1,789,424	14,626	12,844	15,397	15,102	29,798
Swaziland	116	400	400				22	75	76	18.9	18.6	19.0	16,750	56,871	71,389	14,386	14,218	17,847	533	736
Tanzania	16,000	17,700	19,000				3,435	3,313	3,642	21.5	18.7	19.2	2,621,600	2,528,678	3,424,385	16,385	14,286	18,023	23,582	34,966
Uganda	10,000	11,200	12,410				2,168	2,135	2,402	21.7	19.1	19.4	1,654,603	1,629,299	2,258,249	16,546	14,547	18,197	14,922	22,838
Zambia	4,000	4,400	4,630				792	788	900	19.8	17.9	19.4	604,619	601,399	846,091	15,115	13,668	18,274	5,862	8,521
Zimbabwe	5,000	5,900	4,230		4,665		1,045	1,097	790	20.9	23.5	18.7	797,500	836,814	742,889	15,950	17,936	17,562	7,861	7,784
Total	136,378	137,607	131,234	9,394	18,563	14,926	28,827	27,690	23,646	20.8	19.4	18.6	21,999,444	21,131,954	22,230,937	15,865	21,017	17,456	198,436	241,510

Table A2
Trend in employment, occupational accidents and fatal work-related diseases by country in the AMRO regions.

	Economically active population (thousand)			Total employment (thousand)			Fatal occupational accidents			Fatality rate			Occupational accidents causing ≥ 3 days' absence (in 2003 ≥ 4 days' absence)			Occupational accident rate			Fatal work-related diseases	
	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	2000	2002
AMRO A																				
Canada	15,632	16,246	16,954	14,139	15,077	15,665	899	1,035	1,185	6.4	6.9	7.6	686,000	789,711	1,114,103	4,852	5,238	7,112	10,962	9,571
United States	137,674	141,815	146,510	131,463	135,073	137,736	6,821	6,643	6,857	5.2	4.9	5.0	5,205,174	5,069,963	6,446,752	3,959	3,753	4,681	98,210	84,155
Total	153,306	158,061	163,464	145,602	150,150	153,401	7,719	7,678	8,042	5.8	5.9	6.3	5,891,174	5,859,674	7,560,855	4,406	4,496	5,896	109,173	93,726
AMRO B																				
Anguilla	4	6	6		6	6	1	1	1	22.7	17.7	13.6	418	761	720	9,504	13,491	12,765	3	3
Antigua and Barbuda	30	30	30					5	4	1.3	17.3	13.5	3,081	3,954	3,811	10,270	13,180	12,705	15	13
Argentina	13,270	9,723	10,143	11,670	8,143	8,571	1,705	1,554	1,279	14.6	19.1	14.9	1,301,085	1,186,013	1,202,901	11,149	14,564	14,035	4,789	4,370
Aruba		42	42					7	5		16.6	13.1		5,261	5,130		12,676	12,360	21	18
Bahamas		155	172	144	144	155	17	24	21	11.8	16.4	13.3	13,281	18,079	19,371	9,200	12,523	12,501	85	74
Barbados	136	136	146	120	129	130	16	23	18	13.4	17.6	13.7	12,267	17,310	16,628	10,257	13,439	12,840	76	63
Belize		76	90	86	78	85	17	15	14	20.2	19.9	16.8	13,183	11,808	13,391	15,402	15,181	15,806	46	39
Bermuda		34	37		38			6	5		16.0	12.3		4,585	4,259		12,195	11,549	22	16
Brazil	75,213	83,243	86,893	68,040	75,458	80,163	11,304	14,895	12,932	16.6	19.7	16.1	8,626,707	11,366,973	12,157,858	12,679	15,064	15,166	44,375	37,440
Cayman Islands			20						3		12.9				2,397			12,094		17
Chile	5,852	5,949	6,128	5,370	5,479	5,675	787	1,030	873	14.7	18.8	15.4	600,462	786,233	820,525	11,182	14,349	14,458	3,222	2,640
Colombia	6,653	19,516	20,409	5,655	16,498	17,467	1,028	3,400	1,609	18.2	20.6	9.2	784,314	2,595,107	1,512,790	13,870	15,730	8,661	9,702	8,794
Costa Rica	1,377	1,653	1,742	1,300	1,553	1,640	206	299	253	15.9	19.3	15.4	157,479	228,204	238,223	12,113	14,695	14,522	913	751
Cuba	5,000	5,600	4,550		3,843	4,024	890	766	681	17.8	19.9	16.9	679,401	584,393	640,138	13,588	15,207	15,908	2,260	2,459
Dominica	25	26	25				5	6	5	20.0	22.3	19.7	3,936	4,428	4,627	15,745	17,031	18,506	13	11
Dominican Republic	3,594	3,594	3,900	2,052	2,652		405	504	620	15.3	19.0	15.9	308,782	384,892	582,780	11,643	14,513	14,943	1,560	1,680
El,Salvador	3,000	2,445	2,633	2,228	2,451	2,520	400	492	406	18.0	20.1	16.1	304,968	375,829	381,500	13,691	15,332	15,138	1,442	1,135
Falkland Islands			1						0			25.0			258			23,470		1
Faroe Islands			24						4			16.5			3,765			15,524		10
French Guiana		59	59					11	9		19.0	15.8		8,504	8,759		14,462	14,896	30	49
Grenada	42	39	42				7	8	7	16.5	19.3	16.1	5,347	5,741	6,399	12,641	14,720	15,127	20	18
Guadeloupe			126						16			13.1			15,448			12,270		54
Guyana	245	278	418				43	57	73	17.5	20.4	17.4	32,882	43,187	68,491	13,394	15,535	16,385	143	180
Honduras		2,438	2,491	2,135	2,335	2,439	382	489	445	17.9	20.9	18.2	291,179	372,974	417,967	13,638	15,976	17,138	1,373	1,073
Jamaica	1,735	1,129	1,098	1,119	942	1,057	179	181	167	16.0	19.2	15.8	136,807	138,115	157,239	12,225	14,657	14,883	554	473
Martinique			166						24			14.4			22,443			13,528		71
Mexico	39,507	39,683	40,745	38,618	39,386	40,633	6,149	7,630	6,454	15.9	19.4	15.9	4,693,002	5,822,785	6,068,102	12,153	14,784	14,934	23,162	17,556
Montserrat			5						1			12.7			540			11,953		2
Netherlands Antilles		61	89		52	52		8	7		16.3	13.1		6,485	6,425		12,414	12,324	31	75
Panama	1,049	1,089	1,251	937	984	1,081	149	188	167	15.9	19.1	15.4	113,980	143,634	156,832	12,171	14,594	14,514	579	539
Paraguay	2,000	2,000	2,660	1,190			264	453	530	22.1	22.7	19.9	201,188	346,016	498,695	16,901	17,301	18,748	1,031	1,146
Puerto Rico		1,157	1,393		1,150	1,226		196	192		17.0	15.7		149,478	180,591		12,998	14,730	676	600
Saint Kitts and Nevis	18	18	18				4	4	4	22.0	22.6	19.9	3,017	3,129	3,399	16,603	17,219	18,706	9	8
Saint Lucia	44	44	44			63	8	9	10	18.3	19.8	16.0	5,757	6,629	9,533	13,143	15,136	15,019	23	19
Saint Pierre and Miquelon			3						1			17.3			532			16,304		3
Saint Vincent and the Grenadines	67	67	67				11	13	11	16.4	19.7	16.6	8,739	10,078	10,455	13,044	15,042	15,604	35	29
Suriname	100	86	104	88	73		14	14	17	15.9	19.1	16.0	10,654	10,639	15,644	12,073	14,607	15,043	43	45
Trinidad and Tobago		573	600	479	514	525	65	92	78	13.5	17.9	14.8	49,273	70,099	73,110	10,280	13,635	13,923	302	504
Turks and Caicos Islands			5						0			5.1			232			4,795		4
Uruguay	1,239	1,270	1,241	1,104	1,076	1,032	164	195	144	14.9	18.2	14.0	125,127	149,183	135,614	11,337	13,862	13,141	633	535
Venezuela	9,507	11,105	12,008	8,711	9,405	9,699	1,248	1,735	1,419	14.3	18.4	14.6	952,141	1,323,905	1,334,200	10,931	14,077	13,756	5,531	5,174
Virgin Islands		49	49		43			7	7		16.8	13.3		5,450	6,115		12,809	12,505	25	21
Total	169,709	193,370	201,672	101,323	172,431	178,242	25,471	34,318	28,514	16.3	19.0	15.3	19,438,459	26,189,863	26,807,839	12,530	14,500	14,361	102,745	87,394
AMRO D																				
Bolivia	3,645	3,824	3,576	2,017	2,096	2,118	441	470	416	21.9	22.4	19.6	336,627	358,786	391,341	16,689	17,118	18,473	1,233	3,388
Ecuador	3,560	4,121	3,920	3,151	3,673	3,531	574	759	517	18.2	20.7	14.6	437,685	579,428	485,699	13,889	15,774	13,755	2,160	3,713
Guatemala	3,489	3,982	3,680	3,201	4,512	1,402	718	1,018	277	22.4	22.6	19.8	548,180	777,099	260,376	17,125	17,224	18,573	2,653	3,486
Haiti	3,000	3,600	3,700				777	871	643	25.9	24.2	17.4	592,607	665,028	604,586	19,754	18,473	16,340	1,856	3,505
Nicaragua	1,630	1,900	2,200	1,442	1,702	1,702	298	367	313	20.7	21.6	18.4	227,106	280,226	294,152	15,752	16,467	17,286	1,001	2,084
Peru	7,407	8,271	3,738	6,929	7,620	3,361	1,316	1,565	450	19.0	20.5	13.4	1,004,061	1,194,207	423,538	14,490	15,672	12,600	4,481	3,541
Total	22,732	25,699	20,813	13,282	19,602	12,115	4,123	5,051	2,616	21.4	22.0	17.2	3,146,267	3,854,774	2,459,693	16,283	16,788	16,171	13,383	19,718

Table A3
Trend in employment, occupational accidents and fatal work-related diseases by country in the SEARO regions.

	Economically active population (thousand)			Total employment (thousand)			Fatal occupational accidents			Fatality rate			Occupational accidents causing ≥ 3 days' absence (in 2003 ≥ 4 days' absence)			Occupational accident rate			Fatal work-related diseases	
	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	2000	2002
SEARO B																				
Indonesia	9,1325	95,793	111,500	87,050	90,807	91,647	18,220	16,931	15,873	20.9	18.6	17.3	13,904,405	12,921,000	14,923,601	15,973	14,229	16,284	50,279	61,572
Sri Lanka	6,218	6,709	7,805	5,946	6,212	6,943	1,139	1,057	1,010	18.3	17.0	14.5	869,233	806,356	949,298	13,979	12,980	13,673	3,440	4,664
Thailand	33,560	34,488	35,311	32,140	33,484	34,677	7,490	6,953	7,042	23.3	20.8	20.3	5,716,226	5,305,945	6,621,083	17,785	15,846	19,094	18,540	23,297
Total	131,103	136,990	154,616	119,190	130,503	133,267	26,849	24,940	23,925	20.9	18.8	17.4	20,489,863	19,033,301	22,493,982	15,912	14,352	16,350	72,259	89,534
SEARO D																				
Bangladesh	56,014	60,291	46,325	54,597	51,764	44,322	14,403	11,768	9,652	26.4	22.7	21.8	10,991,526	8,980,468	9,074,601	20,132	17,349	20,474	28,661	34,831
Bhutan			1,270						405			31.9			380,776			29,978		955
India	458,720	443,860	473,300	419,560	402,510		48,176	40,133	46,928	11.5	10.0	9.9	36,765,877	30,627,865	44,120,055	8,763	7,609	9,322	325,350	355,863
Korea, Democratic,of		11,700	9,600					2,021	1,956		17.3	20.4		1,542,565	1,838,523		13,184	19,151	5,372	7,218
Maldives		88	88		86			12	13		13.8	14.3		9,100	11,810		10,551	13,420	48	66
Myanmar (Burma)	24,000	23,700	27,010	18,359	18,359		4,773	4,447	7,069	26.0	24.2	26.2	3,642,812	3,393,420	6,645,868	19,842	18,484	24,605	10,165	20,308
Nepal	11,000	11,000	11,700				3,293	2,934	3,372	29.9	26.7	28.8	2,512,964	2,238,960	3,170,090	22,845	20,354	27,095	5,051	8,797
Timot-Leste			400						117			29.2			109,793			27,448		301
Total	549,734	550,639	569,693	492,516	472,719	44,322	70,645	61,314	69,510	23.4	19.1	22.8	53,913,179	46,792,378	65,351,517	17,896	14,588	21,437	374,647	428,339

Table A4
Trend in employment, occupational accidents and fatal work-related diseases by country in the EURO regions.

	Economically active population (thousand)			Total employment (thousand)			Fatal occupational accidents			Fatality rate			Occupational accidents causing ≥ 3 days' absence (in 2003 ≥ 4 days' absence)			Occupational accident rate			Fatal work-related diseases	
	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	2000	2002
EURO A																				
Andorra		33	33		27														20	23
Austria	4,200	3,940	3,967	3,962	3,800	3,798	158	137	227	4.0	3.6	6.0	120,351	104,837	213,419	3,038	2,759	5,619	2,763	2,820
Belgium	4,260	4,401	4,070	4,241	4,051	4,070	155	78	84	3.7	1.9	2.1	118,632	59,293	78,974	2,797	1,464	1,940	2,946	2,893
Croatia	2,040	1,953	1,793	1,385	1,470	1,536	178	184	58	12.9	12.5	3.8	135,884	140,287	54,352	9,812	9,547	3,538	1,363	1,275
Cyprus	309	315	341	287	310	327	45	40	10	15.5	12.9	3.0	33,963	30,394	9,251	11,834	9,820	2,828	461	242
Czech Republic	5,153	5,172	5,133	4,818	4,728	4,733	593	525	245	12.3	11.1	5.2	452,810	400,872	230,128	9,398	8,479	4,862	4,387	3,648
Denmark	2,867	2,862	2,850	2,685	2,725	2,693	90	56	51	3.4	2.1	1.9	68,772	42,966	47,949	2,561	1,577	1,781	1,981	2,026
Finland	2,508	2,626	2,620	2,222	2,388	2,385	65	64	49	2.9	2.7	2.1	49,606	48,842	46,068	2,232	2,045	1,932	1,736	1,862
France	26,435	26,385	27,125	22,842	24,113	24,631	683	730	782	3.0	3.0	3.2	521,237	557,105	735,214	2,282	2,310	2,985	17,533	19,279
Germany	39,694	39,966	40,195	35,994	36,816	36,172	1,287	1,107	901	3.6	3.0	2.5	982,184	844,816	847,094	2,729	2,295	2,342	26,769	28,568
Gibraltar		15	13		14														10	9
Greece	4,400	4,362	4,507	3,921	3,918	4,104	88	90	68	2.2	2.3	1.7	67,053	68,745	63,932	1,710	1,755	1,558	2,848	3,203
Greenland			25																	17
Guernsey			32																	23
Iceland	148	163	162	133	159	157	2	1	5	1.7	0.7	3.1	1,719	859	4,626	1,293	540	2,952	116	115
Ireland	1,539	1,782	1,876	1,521	1,717	1,836	79	74	80	5.2	4.3	4.4	60,175	56,715	75,167	3,956	3,304	4,094	1,248	1,333
Isle of Man			40			39			0			0.0								28
Israel	2,210	2,503	2,610	1,762	2,422	2,330	257	317	108	14.6	13.1	4.6	196,313	241,760	101,538	11,142	9,981	4,357	3,611	1,855
Italy	22,849	23,901	23,900	20,242	21,634	22,133	1,388	1,397	991	6.9	6.5	4.5	1,059,087	1,066,411	931,709	5,232	4,929	4,210	15,730	16,987
Jersey			48																	34,

EURO A																				
Liechtenstein			29																	21
Luxembourg	242	189	195	237	277	293	7	16	7	3.0	5.8	2.4	5,342	12,211	6,581	2,254	4,408	2,243	201	139
Malta	144	156	160	137	146	147	1	7	15	0.8	4.6	10.0	860	5,156	13,877	626	3,541	9,437	106	113
Monaco			31																	22
Netherlands	7,616	8,150	8,370	6,609	7,865	7,935	99	116	104	1.5	1.5	1.3	75,649	88,510	97,778	1,145	1,125	1,232	5,719	5,949
Norway	2,285	2,361	2,373	2,249	2,278	2,269	72	42	60	3.2	1.8	2.7	55,018	31,795	56,665	2,446	1,396	2,497	1,656	1,687
Portugal	4,396	5,211	5,470	4,493	5,000	5,128	266	414	346	5.9	8.3	6.7	202,877	316,228	325,299	4,515	6,325	6,344	3,635	3,888
San Marino		20	20		11	19		1	0		8.8			763			6,691		8	14
Slovenia	983	927	958	907	914	896	112	122	49	12.3	13.3	5.5	85,336	93,022	46,257	9,409	10,177	5,163	848	681
Spain	16,441	17,815	19,538	13,205	15,946	17,296	1,177	1,160	722	8.9	7.3	4.2	898,333	885,095	678,803	6,803	5,551	3,925	11,594	13,887
Sweden	4,264	4,415	4,450	3,978	4,239	4,234	77	63	56	1.9	1.5	1.3	58,456	48,122	52,650	1,469	1,135	1,243	3,082	3,163
Switzerland	3,928	4,039	4,133	3,848	4,156	4,167	118	81	57	3.1	2.0	1.4	90,263	61,871	53,195	2,346	1,489	1,277	3,022	2,938
United Kingdom	28,716	29,638	29,235	27,212	28,225	27,821	225	236	224	0.8	0.8	0.8	171,930	180,456	210,598	632	639	757	20,522	20,778
Total	187,626	193,299	196,301	168,890	179,347	181,150	7,222	7,059	5,298	5.6	5.0	2.6	5,511,848	5,387,129	4,981,125	4,236	3,825	2,472	133,916	139,519
EURO B																				
Albania	2,000	1,347	1,347	1,078	1,063	926	108	125	91	10.0	11.8	9.8	82,433	95,523	85,375	7,647	8,986	9,220	986	823
Armenia	1,476	1,412	1,232	740	1,265	1,108	70	146	107	9.5	11.5	9.6	53,759	111,398	100,452	7,266	8,807	9,069	1,174	753
Azerbaijan	2,927	3,748	3,801	3,702	3,715	3,747	619	325	324	16.7	8.7	8.6	472,085	247,847	304,318	12,754	6,672	8,122	3,447	2,323
Bosnia,and Herzegovina		1,900	1,026					254	128		13.4	12.4		194,054	120,017		10,213	11,698	1,558	627
Bulgaria	4,000	3,413	3,283	3,030	2,752	2,834	346	317	288	11.4	11.5	10.2	264,165	241,837	270,674	8,718	8,789	9,551	2,553	2,006
Georgia	2,367	2,113	2,050	1,731	1,878	1,815	306	199	162	17.7	10.6	8.9	233,571	151,601	152,287	13,493	8,074	8,393	1,742	1,253
Kyrgyzstan	1,763		2,300	1,705	1,764	1,807	316	186	164	18.6	10.6	9.1	241,486	142,184	154,502	14,164	8,059	8,550	1,637	1,406
Macedonia	1,000	863	861	310	599	545	43	75	60	13.9	12.6	10.9	32,769	57,427	55,951	10,571	9,582	10,264	556	526
Poland	17,100	17,376	16,948	15,849	14,207	13,617	1,588	1,463	633	10.0	10.3	4.7	1,212,275	1,116,420	595,557	7,649	7,858	4,374	13,182	10,357
Romania	11,756	11,447	9,914	10,845	10,697	9,223	1,564	1,209	1,016	14.4	11.3	11.0	1,193,770	922,875	955,493	11,008	8,628	10,360	9,925	6,059
Serbia and Montenegro			3,900									0.0								2,383
Slovakia	2,618	2,634	2,629	2,167	2,124	2,165	229	257	116	10.6	12.1	5.3	174,637	196,269	108,704	8,059	9,242	5,022	1,970	1,607
Tajikistan	1,778	2,500	3,187	1,143	1,143		212	116	302	18.6	10.1	9.5	161,897	88,180	284,231	14,164	7,715	8,918	1,061	1,948
Turkey	22,359	22,269	23,641	21,594	20,367	21,147	4,122	3,776	2,099	19.1	18.5	9.9	3,145,632	2,881,405	1,973,423	14,567	14,147	9,332	30,365	14,447
Turkmenistan	2,340	2,340	2,320				420	239	217	17.9	10.2	9.3	320,442	182,704	203,680	13,694	7,808	8,779	1,918	1,418
Uzbekistan	10,000	10,700	14,640	8,158	8,885		1,471	957	1,470	18.0	10.8	10.0	1,122,575	730,141	1,381,916	13,761	8,218	9,439	8,244	8,947
Total	83,485	84,061	93,080	72,051	70,458	58,932	11,415	9,644	7,176	14.7	11.6	8.7	8,711,495	7,359,865	6,746,581	11,251	8,853	8,193	80,317	56,881
EURO C																				
Belarus	5,000	4,520	4,480	4,417	4,417	3,929	496	494	358	11.2	11.2	9.1	378,683	377,167	336,571	8,574	8,538	8,566	4,099	4,515
Estonia	710	661	661	640	578	594	59	53	38	9.2	9.2	6.4	45,130	40,636	35,849	7,049	7,034	6,032	536	683
Hungary	4,048	4,011	4,166	3,619	3,860	3,922	372	389	164	10.3	10.1	4.2	284,196	297,221	153,804	7,853	7,701	3,922	3,581	4,507
Kazakstan	7,000	7,053	7,657	6,127	6,699	6,985	655	743	564	10.7	11.1	8.1	500,084	566,948	530,071	8,162	8,463	7,588	6,215	8,027
Latvia	1,043	1,106	1,126		1,037	1,007	105	105	50	10.1	10.1	5.0	79,757	80,168	47,413	7,647	7,731	4,709	962	1,157
Lithuania	1,820	1,794	1,642	1,656	1,522	1,438	184	169	144	11.1	11.1	10.0	140,281	128,796	135,301	8,471	8,463	9,409	1,412	1,652
Moldova, rep. of	1,700	1,617	1,474	1,496	1,499	1,357	135	146	113	9.0	9.7	8.3	103,327	111,080	105,817	6,905	7,410	7,801	1,391	1,559
Russia Federation	68,264	69,731	72,212	63,600	64,710	66,496	6,974	6,276	5,816	11.0	9.7	8.7	5,322,065	4,789,749	5,468,474	8,368	7,402	8,224	60,040	76,410
Ukraine	22,300	22,755	22,614	22,998	20,238	20,555	3,985	2,341	1,844	17.3	11.6	9.0	3,041,308	1,786,662	1,733,404	13,224	8,828	8,433	18,778	23,619
Total	111,886	113,246	116,032	104,554	104,559	106,283	12,966	10,717	9,091	11.1	10.4	7.6	9,894,830	8,178,427	8,546,706	8,473	7,952	7,187	97,013	122,128

Table A5
Trend in employment, occupational accidents and fatal work-related diseases by country in the EMRO regions.

	Economically active population (thousand)			Total employment (thousand)			Fatal occupational accidents			Fatality rate			Occupational accidents causing ≥ 3 days' absence (in 2003 ≥ 4 days' absence)			Occupational accident rate			Fatal work-related diseases	
	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	2000	2002
EMRO B																				
Bahrain	295	308	308	148	157		23	22	26	15.7	13.7	8.3	17,751	16,458	24,084	12,015	10,456	7,811	235	129
Iran	19,000	21,000	23,000				3,198	3,609	3,069	16.8	17.2	13.3	2,440,579	2,754,122	2,885,714	12,845	13,115	12,547	17,699	9,610
Jordan	1,150	1,360	1,410				179	164	99	15.6	12.1	7.0	136,630	125,243	93,226	11,881	9,209	6,612	1,146	589
Kuwait	1,300	23,363	1,420	1,243	1,243		165	138	83	13.3	11.1	5.9	125,987	104,955	78,260	10,135	8,443	5,511	1,853	593
Lebanon	1300	1,362	2,600				206	200	269	15.9	14.7	10.3	157,586	152,509	252,462	12,122	11,196	9,710	1,148	1,086
Libyan Arab Jamahiriya	1,500	1,500	1,590				247	232	178	16.4	15.4	11.2	188,286	176,690	167,216	12,552	11,779	10,517	1,264	664
Oman	850	366	872	79	70	282	15	14	20	18.9	20.3	7.1	11,399	10,898	18,923	14,393	2,978	6,719	105	364
Qatar	233	280	140			310	35	37	29	15.1	13.1	9.2	26,900	27,958	26,865	11,545	9,981	8,658	236	58
Saudi Arabia	7,000		6,620		5,809	5,913	1,096	829	465	15.7	14.3	7.9	836,360	632,529	437,482	11,948	10,890	7,399	8,660	2,766
Syrian Arab Republic	5,000	5,457	5,032		4,844	4,822	884	889	656	17.7	18.4	13.6	674,632	678,724	616,915	13,493	14,012	12,794	7,222	2,103
Tunisia	4,000	2,978	3,461	2,635	2,705		654	425	399	24.8	15.7	11.5	499,411	324,317	375,417	18,953	11,990	10,849	4,033	1,446
United Arab Emirates	1,400	1,400	2,360	1,779	1,779	1,779	283	224	175	15.9	12.6	9.8	216,139	170,644	164,533	12,149	9,592	9,249	2,652	986
Total	43,028	59,375	48,813	4,641	16,608	13,106	6,986	6,781	5,468	16.8	14.9	9.6	5,331,660	5,175,046	5,141,097	12,836	10,303	9,031	46,254	20,395
EMRO D																				
Afghanistan	10,000	10,000	11,800				1,988	2,678	2,559	19.9	26.8	21.7	1,517,158	2,043,737	2,406,292	15,172	20,437	20,392	4,591	7,808
Djibouti	282	396	282				60	75	59	21.3	18.9	21.0	45,739	57,018	55,764	16,219	14,399	19,775	528	187
Egypt	23,000	19,253	20,703	16,183	17,557	18,119	3,884	2,942	2,311	24.0	16.8	12.8	2,964,288	2,245,058	2,172,982	18,317	12,787	11,993	26,175	13,700
Iraq	6,000	6,500	6,700				850	829	532	14.2	12.8	7.9	648,379	632,765	500,404	10,806	9,735	7,469	5,478	4,434
Morocco	11,000	10,605	10,902	4,168	9,330	9,603	1,993	1,823	1,497	47.8	19.5	15.6	1,521,126	1,390,907	1,407,172	36,492	14,908	14,654	13,910	7,214
Pakistan	35,230	39,974	55,700	35,934	36,847	38,882	7,444	6,800	5,948	20.7	18.5	15.3	5,680,740	5,189,279	5,592,129	15,809	14,083	14,382	20,402	36,858
Somalia	3,700	3,900	4,100				791	730	833	21.4	18.7	20.3	603,478	556,809	783,545	16,310	14,277	19,111	5,196	2,713
Sudan	11,000	12,700	13,400				2,308	2,360	2,863	21.0	18.6	21.4	1,761,719	1,800,696	2,692,129	16,016	14,179	20,091	16,920	8,867
Yemen	5,000	5,000	5,980		3,622		849	639	834	17.0	17.6	13.9	647,768	487,775	783,963	12,955	13,468	13,110	5,400	3,957
Total	105,212	108,328	129,567	56,285	67,355	66,603	20,167	18,874	17,438	23.0	18.7	16.7	15,390,396	14,404,045	16,394,381	17,566	14,253	15,664	98,600	85,738

Table A6
Trend in employment, occupational accidents and fatal work-related diseases by country in the WPRO regions.

	Economically active population (thousand)			Total employment (thousand)			Fatal occupational accidents			Fatality rate			Occupational accidents causing ≥ 3 days' absence (in 2003 ≥ 4 days' absence)			Occupational accident rate			Fatal work-related diseases	
	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	1998	2001	2003	2000	2002
WPRO A																				
Australia	9,221	9,796	10,067	8,617	9,124	9,459	275	236	186	3.2	2.6	2.0	209,754	180,456	174,872	2,434	1,978	1,849	6,634	5,640
Brunei	112	143	158			146	11	17	13	10.0	11.5	9.1	8,574	12,596	12,485	7,658	8,784	8,537	66	87
Japan	67,870	67,520	66,670	65,140	64,120	63,160	2,077	2,016	2,002	3.2	3.1	3.2	1,585,193	1,538,175	1,882,222	2,434	2,399	2,980	46,621	37,659
New Zealand	1,814	1,926	2,015	1,725	1,823	1,921	61	78	101	3.5	4.3	5.3	46,553	59,293	94,957	2,699	3,252	4,943	1,326	1,145
Singapore	1,932	2,120	2,152	1,870	2,047	2,034	183	178	68	9.8	8.7	3.3	139,334	135,750	63,932	7,452	6,633	3,144	1,133	1,213
Total	80,948	81,505	81,061	77,352	77,114	76,720	2,607	2,524	2,370	5.9	6.0	4.6	1,989,408	1,926,270	2,228,468	4,535	4,609	4,290	55,780	45,745
WPRO B																				
American Samoa	14	14					3	3		21.6	18.0		2,304	2,367		16,457	16,906	7	6	
Cambodia	6,000	6,500	7,000		6,243		1,696	1,572	1,905	28.3	25.2	27.2	1,294,239	1,199,928	1,790,809	21,571	19,219	25,583	3,457	3,157
China	705,200	737,060	737,060	699,570	730,250	737,400	73,595	90,011	97,248		12.3	13.2	56,164,425	68,692,311	91,429,458		9,407	12,399	414,024	332,454
Cook Islands	6	7	7				1	1	1	11.4	14.7	15.9	520	767	1,022	8,679	11,248	14,982	3	3
Fiji	235	298	298	235	114		48	21	58	20.2	18.0	19.5	36,263	15,705	54,490	15,431	13,740	18,299	63	134
French Polynesia	75	70		58			6	8		11.1	12.0		4,918	7,889		8,458	11,270	32	32	
Guam		0	62						4			6.5			3,769			6,074		28
Hong Kong	2,811	3,427	3,501		3,252	3,219		261	276		8.0	8.6		199,505	259,499		6,134	8,061		1,579
Kiribati	8	33	8				2	8	2	27.2	24.1	26.1	1,636	6,075	1,929	20,785	18,408	24,507	15	4
Korea, Rebublic of	21,604	22,181	22,917	19,994	21,068	22,139	3,148	2,214	2,514	15.7	10.5	11.4	2,402,234	1,689,820	2,363,219	12,015	8,021	10,674	11,665	10,337
Laos	3,040	2,600	2,900					667	804	28.8	25.7	27.7	668,285	509,267	756,085	21,983	19,587	26,072	1,194	1,308
Macau	207	217	232	201	203	203	20	23	18		11.6	9.1	15,316	17,899	17,334		8,826	8,556		104
Malaysia	8,569	9,616	10,490	8,600	9,535	9,870	1,578	1,207	1,250	18.3	12.7	12.7	1,203,955	920,940	1,175,504	14,000	9,659	11,910	5,279	4,732
Marshall Islands		29						4			14.3			3,851			13,418		13	
Micronesia			65						8			12.8			7,780			12,034		29
Mongolia	1,300	841	960	793	832	927	157	147	179	19.9	17.7	19.3	120,084	112,363	168,129	15,153	13,500	18,147	461	433
Nauru			8																	4
New Caledonia		79						8			10.6			7,942			10,002		36	
Norfolk Island			1						0			10.2			129			9,590		1
Northern Mariana Islands		35						3			8.3			2,723			7,843		16	
Palau			10						1			6.7			622			6,318		4
Papua New Guinea	2,000	2,600	2,700	2,000		2,345	579	671	621	29.0	25.8	26.5	442,174	512,244	584,200	22,109	19,702	24,915	1,194	1,218
Philippines	53,272	33,354	35,109	30,109	30 085	31,553	6,019	5,594	5,713	20.0	18.6	18.1	4,593,516	4,269,339	5,371,204	15,256	14,191	17,023	16,658	15,836
Samoa			90						21			23.4			19,765			21,961		41
Solomon Islands	27	30	27		33		6	8	7	20.8	25.3	27.4	4,264	6,378	6,905	15,885	19,327	25,728	18	12
Taiwan			10,310						1,141			11.1			1,072,839			10,406		4,650
Tonga	35	35	34				8	7	8	23.4	20.8	22.5	6,259	5,573	7,185	17,866	15,907	21,188	16	15
Tuvalu			7						2			25.6			1,685			24,066		3
Vanuatu			130						32			24.8			30,229			23,283		59
Vietnam	39,000	41,100	42,980	36,994	36 994		9,988	8,900	11,171	27.0	24.1	26.0	7,622,429	6,792,118	10,502,990	20,605	18,360	24,437	20,483	19,386
Wallis and Futuna		8																	4	
Total	843,314	859,988	877,140	798,495	838,668	807,655	97,720	111,324	123,011	22.3	18.2	15.5	74,575,600	84,957,454	115,651,552	17,026	13,897	14,552	474,570	395,638