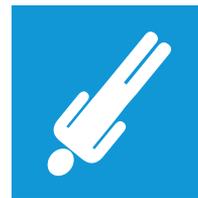


Occupational diseases  
in Finland in 2002

New cases of occupational diseases  
reported to the Finnish Register of  
Occupational Diseases



# **Occupational diseases in Finland in 2002**

New cases of occupational diseases  
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Occupational Diseases

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# Preface

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This publication presents a statistical summary of occupational diseases in Finland. The first part of the publication is a review, which aims to give an overall picture of the incidence of occupational diseases in 2002, and of the main trends in recent years. The second part consists of statistical tables, which in greater detail describe the occurrence of occupational diseases in Finland in 2002.

The statistics are based on the Register of Occupational Diseases, established in 1964, and maintained by the Finnish Institute of Occupational Health (FIOH). The Register's status as a research register was consolidated in the Finnish legislation in 1993. The unit of observation in the register is a filed claim of an occupational disease. Appendix 1 describes the Register of Occupational Diseases in more detail, and appendices 2-4 include the definition of an occupational disease in the Finnish legislation. Unlike in the national insurance statistics, the cases are recorded according to the year of reporting and not according to the insurance technical date of occurrence, which may differ several years in the case of diseases with a long latency time. In addition to cases diagnosed in wage-earners, the statistics also cover farmers, who are recorded in separate statistics in the insurance system.

Comments and questions concerning the occupational disease statistics will be appreciated and should be addressed to Dr. Timo Kauppinen (Finnish Institute of Occupational Health, Topeliuksenkatu 41 a A, FIN-00250 Helsinki, Finland, fax int.+ 358-9-2414634)

Helsinki, February 2004

*The authors*

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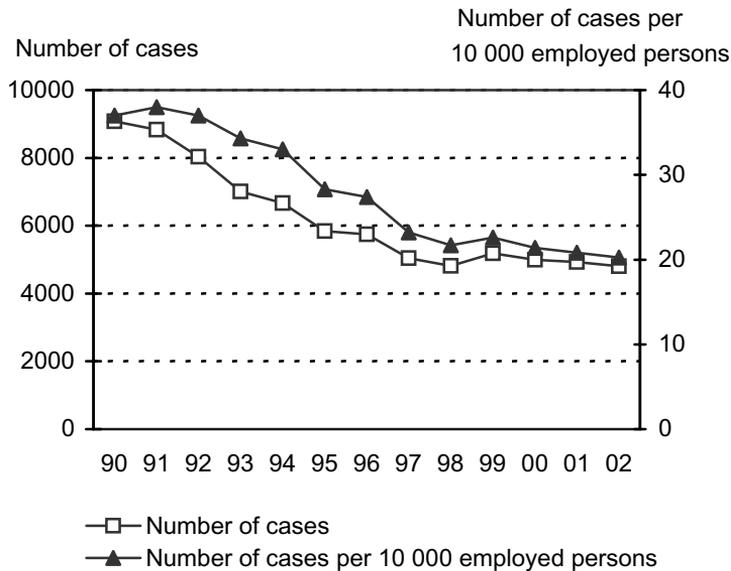


# **Review of occupational diseases in 2002**

- 1 Occupational diseases
- 2 Hearing loss
- 3 Repetitive strain injuries
- 4 Allergic respiratory diseases
- 5 Skin diseases
- 6 Asbestos-induced diseases
- 7 Cancers
- 8 Occupational diseases in 2002  
by EU classification
- 9 Summary

# 1 Occupational diseases

Occupational diseases in 1990 - 2002



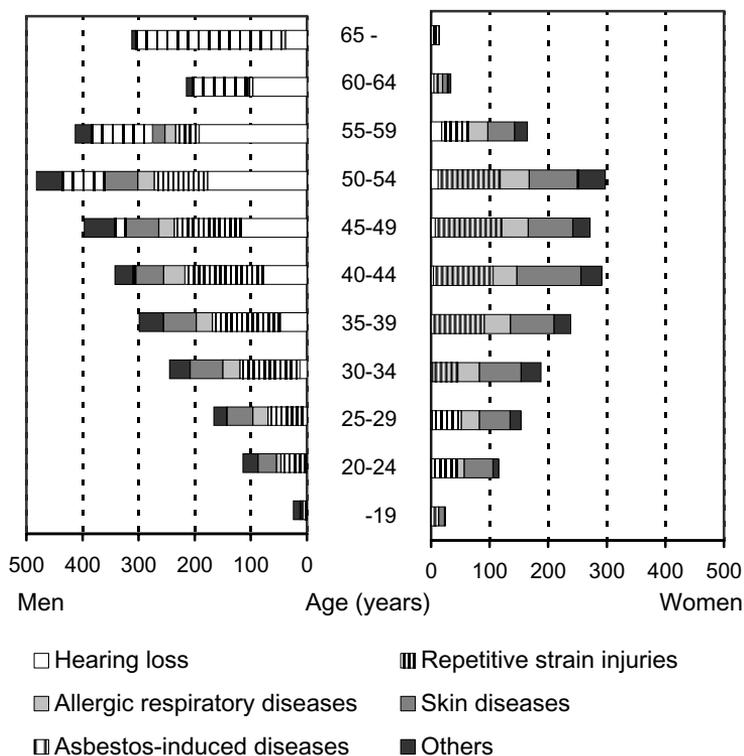
In 2002 a total of 4807 occupational diseases were reported by physicians or insurance companies to the Finnish Register of Occupational Diseases maintained by the Finnish Institute of Occupational Health (FIOH). This is 119 cases (2%) less than in 2001. Of the main occupational disease categories, the numbers of allergic respiratory diseases and noise-induced hearing loss have decreased during the last years.

The reporting and incidence of occupational diseases is influenced by various factors, such as changes in the legislation, unemployment rate, and diagnostic or reporting practice. Large screening campaigns and changes in the willingness of the workers to come forward with their symptoms or diseases may also affect the occupational disease statistics. For example, the steep increase in 1990–92 and the subsequent decrease in the number of cases of asbestos-induced diseases in 1992–95 is a reflection of a screening campaign undertaken by FIOH in 1990–92.

The statistics presented in this publication differ somewhat from the statistics maintained by the Finnish Federation of Accident Insurance Institutions (FAII). In this publication, cases are included according to the date of diagnosis, whereas in the FAII statistics the reported cases of occupational disease are included according to the administrative date of occurrence as defined by the insurance legislation which may differ greatly from the actual date of diagnosis, e.g. in cases of asbestos-induced disease and cases of hearing loss. The present statistics also include occupational diseases of farmers which are not included in the FAII statistics.

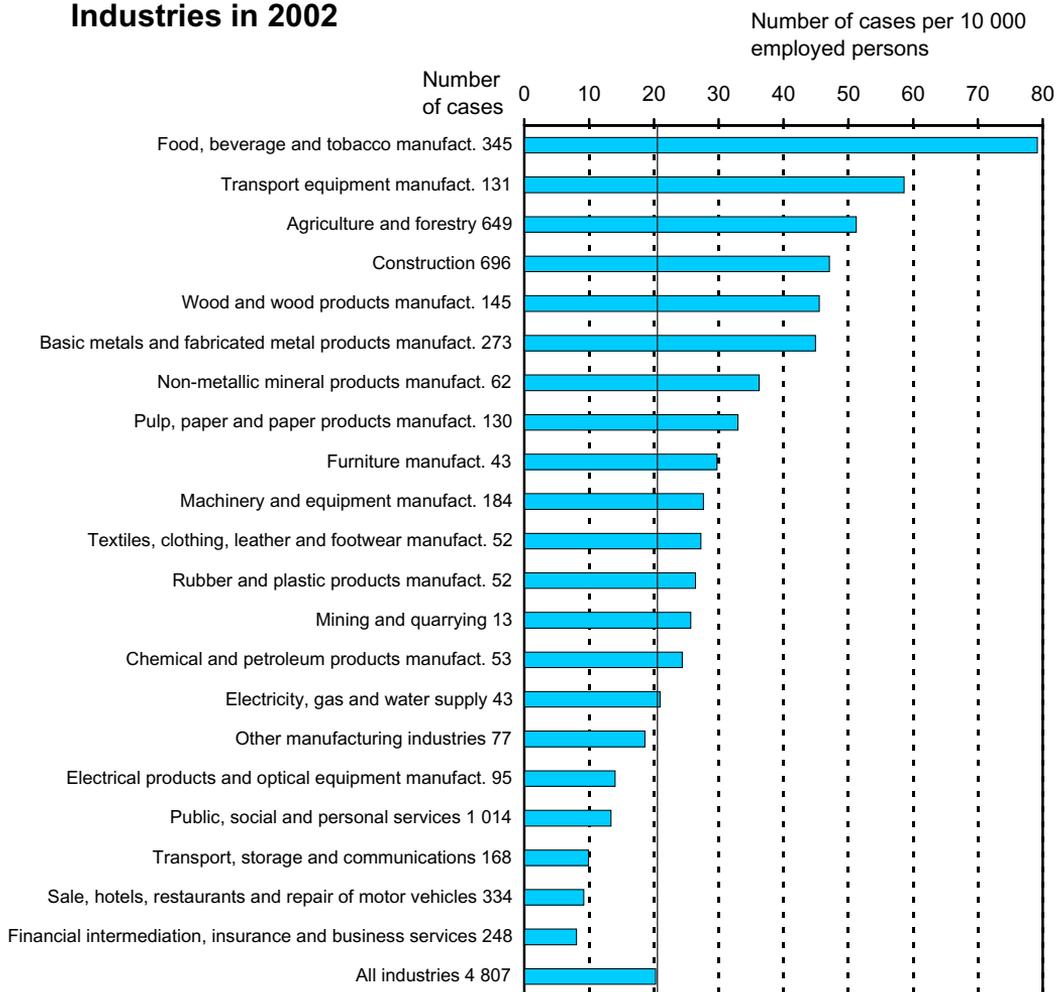
In 2002, for every 10,000 employed workers, 20 cases of occupational disease were reported. The association between employment and the number of occupational diseases is complex, as some diseases take longer to develop than others. Workplace noise, for example, leads to a slow deterioration in hearing over a number of years, whereas a large proportion of the repetitive strain injuries and irritant contact dermatites develop rapidly. The cases reported in 2002 thus reflect the working conditions of the 1990s or the first years of the 2000s. Furthermore, some occupational diseases may not manifest themselves before the general retirement age (65 years), for example asbestosis and lung cancer. In spite of these problems, the incidence rates are calculated using the employment figures of the same year in which the case was reported. There has been a slight but steady decline in the incidence of occupational diseases per number of employed workers.

## Age and gender in 2002



In 2002, 3009 cases of occupational diseases were reported in men and 1798 in women. The proportion of cases among women (37%) was about the same as in the previous years. Among both men and women, the highest number of cases was reported in the age category of 50–54 years. The mean age of new cases of occupational disease was 48 years for men and 42 years for women. This difference in the mean age is explained mainly by asbestos-induced diseases and noise-induced hearing loss, which are common in men and occur mainly in workers aged 50 years or more. Table 1 contains more detailed information on the age and gender distribution of occupational diseases.

## Industries in 2002

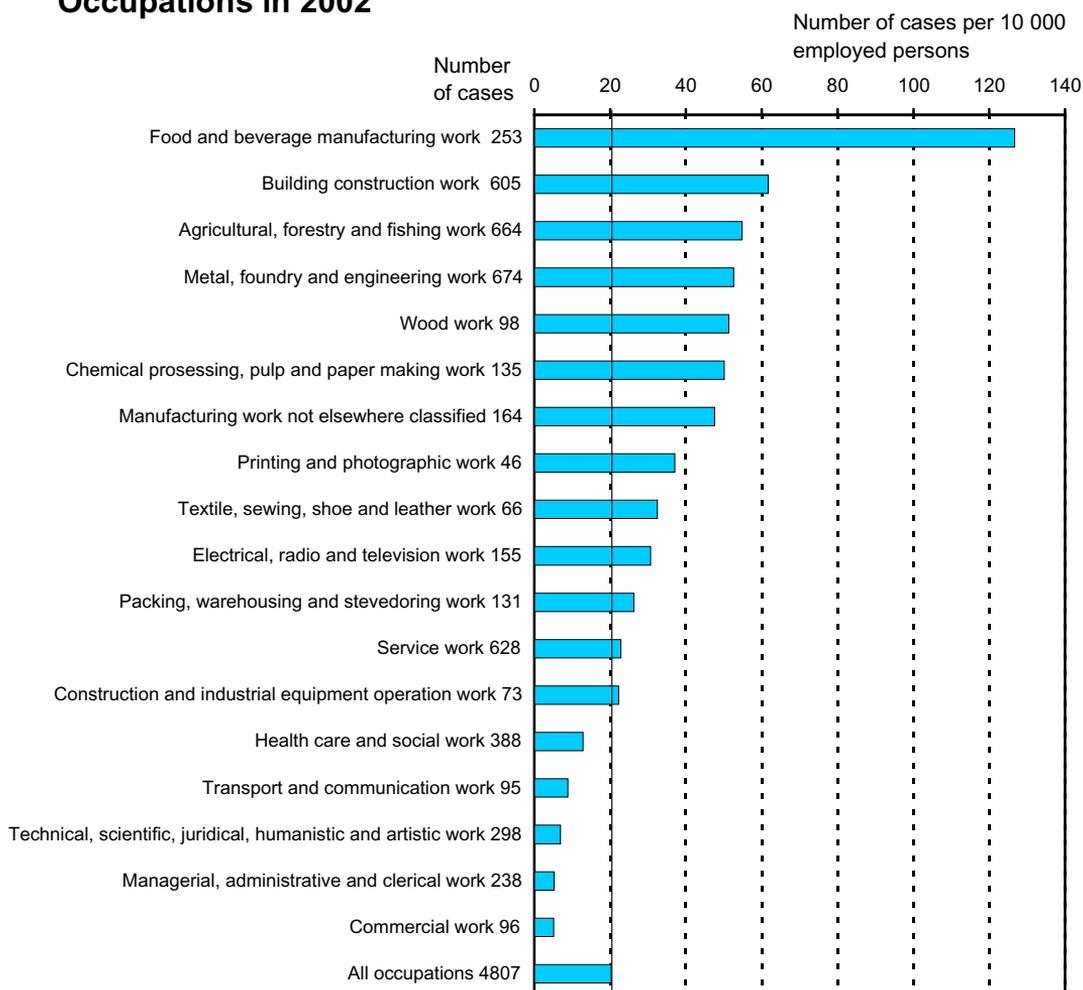


The highest absolute numbers of occupational diseases occurred in public, social and personal services, in the construction industry, and in agriculture and forestry. The highest incidence rate of occupational diseases, however, occurred in the food, beverage and tobacco industry, and the manufacture of transport equipment, followed by agriculture and forestry, construction and the manufacture of wood and wood products. The most important occupational disease group in the food, beverage and tobacco industry was repetitive strain injuries (62% of all cases). In the manufacture of transport equipment 37% of the reported cases suffered from noise-induced hearing loss.

In agriculture and forestry, repetitive strain injuries accounted for 30%, allergic respiratory diseases for 26% and skin diseases for 21% of the reported occupational diseases. Repetitive monotonous work (29%) and animal epithelia (29%) were the most important causes of occupational disease in agriculture and forestry.

In construction, asbestos-induced diseases accounted for 37% of all reported cases. More detailed information on the causes of occupational diseases is given in Table 3, and on the distribution of occupational diseases across industries in Table 4 (see Appendices).

## Occupations in 2002



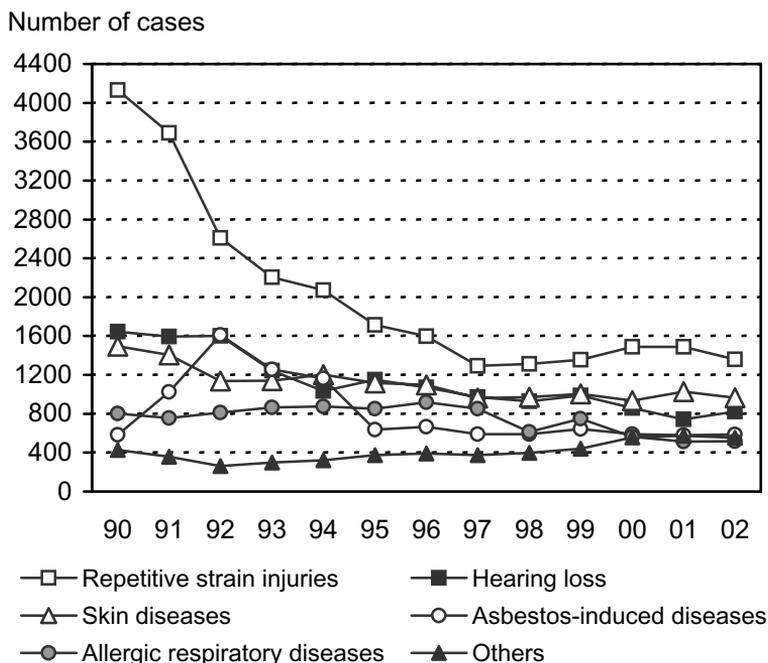
In general, a more accurate estimate of an individual's risk of occupational disease can be given according to his/her occupation, rather than according to the industry where he/she works. This is due to the fact that the industry-specific rates include also the white-collar workers from the same industry.

As in previous years, the highest incidence rate of occupational diseases was observed for work in the food and beverage industry. In this occupational category, there was a slight decrease both in the absolute number and the incidence rate of occupational diseases as compared to previous years.

In construction work, in agriculture, forestry and fishing, and in metal work, both the number of cases and the incidence rate of occupational diseases were high. In these industries, 600–700 cases were reported in 2002. In construction work the incidence rate increased by 13% and in agriculture, forestry and fishing by 8% from 2001. In metal work the incidence remained at the same level as in previous years.

Table 5 contains more detailed information on the occupational distribution of occupational diseases (see Appendices).

## Occupational diseases in 1990 - 2002



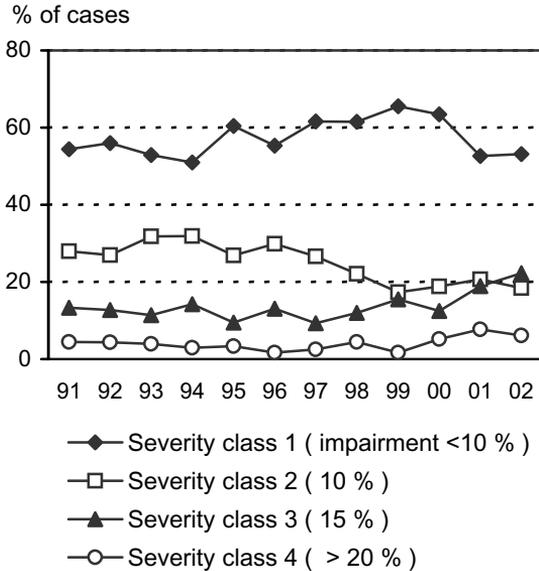
In this review, the reported occupational diseases are discussed in terms of six disease groups: 1) noise-induced hearing loss, 2) repetitive strain injuries, 3) allergic respiratory diseases, 4) skin diseases, 5) asbestos-induced diseases, and 6) other occupational diseases. In addition, information is presented on reported occupational cancers, which are almost entirely attributable to the inhalation of asbestos dust.

Repetitive strain injuries include, for example, tenosynovitis, peritendinitis, epicondylitis, bursitis, and mononeuropathy. Allergic respiratory diseases include asthma, allergic rhinitis, and allergic alveolitis. Skin diseases include, for example, irritant contact dermatitis, allergic contact dermatitis, infectious diseases of the skin, protein contact dermatitis, contact urticaria, as well as paronychia. Asbestos-induced diseases include, for example, pleural adhesions and calcifications, asbestosis, asbestos-induced lung cancer, as well as pleural and peritoneal mesothelioma. Other diseases include, for example, conjunctivitis, various types of intoxication, silicosis, epidemic nephritis, tuberculosis, and the hand-arm vibration syndrome.

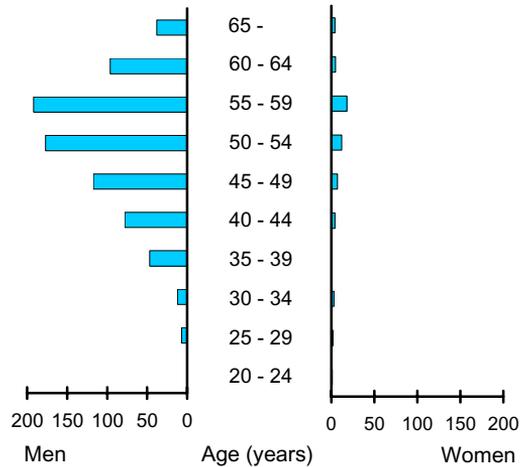
The number of cases of epidemic nephritis (91) increased in agriculture (24 in 2001). The changes in the number of cases of this occupational disease usually follow the overall trends of epidemic nephritis in Finland. The annual numbers of cases of silicosis, tuberculosis and vibration syndrome are relatively low in Finland and have not shown any marked changes since the 1990s. Table 2 presents reported occupational diseases by diagnosis and gender.

# 2 Hearing loss

**Severity in 1991 - 2002**



**Distribution of age and gender in 2002**

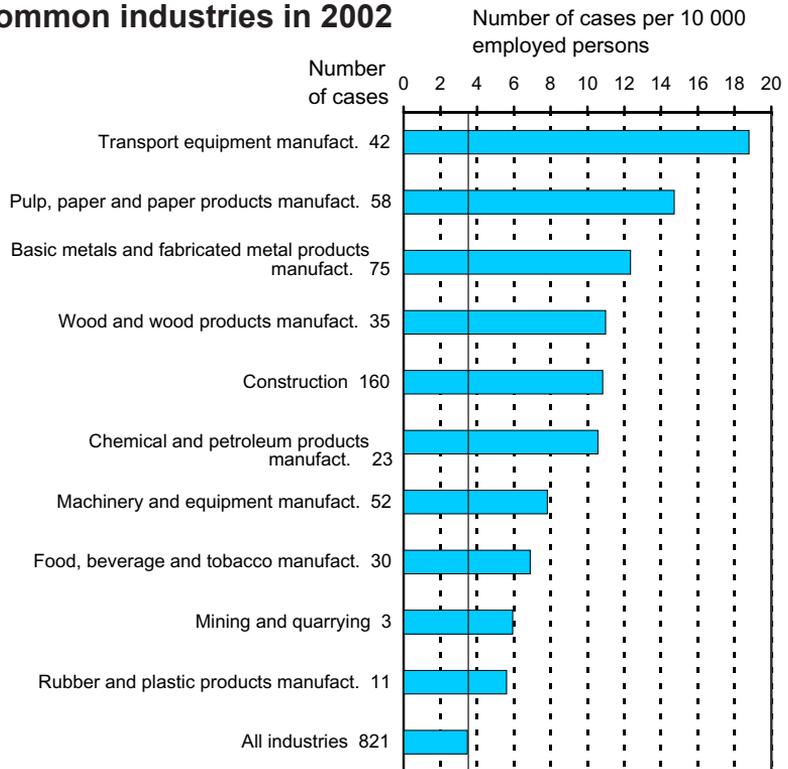


Noise-induced hearing loss will typically develop within one or two decades from the beginning of exposure, but the time required is influenced by the level of noise, the daily duration of exposure, the frequency of the noise and the number of intense noise peaks. The cases of noise-induced hearing loss in 2002 are thus usually related to exposure in the 1980s. The number of reported cases has decreased in 1987–2002 from about 2000 annual cases to less than 1000 annual cases. Altogether 821 cases were reported in 2002. Over 90% of the cases in 2002 were reported among men, and the incidence of reported cases was highest in those aged 55 to 59 years.

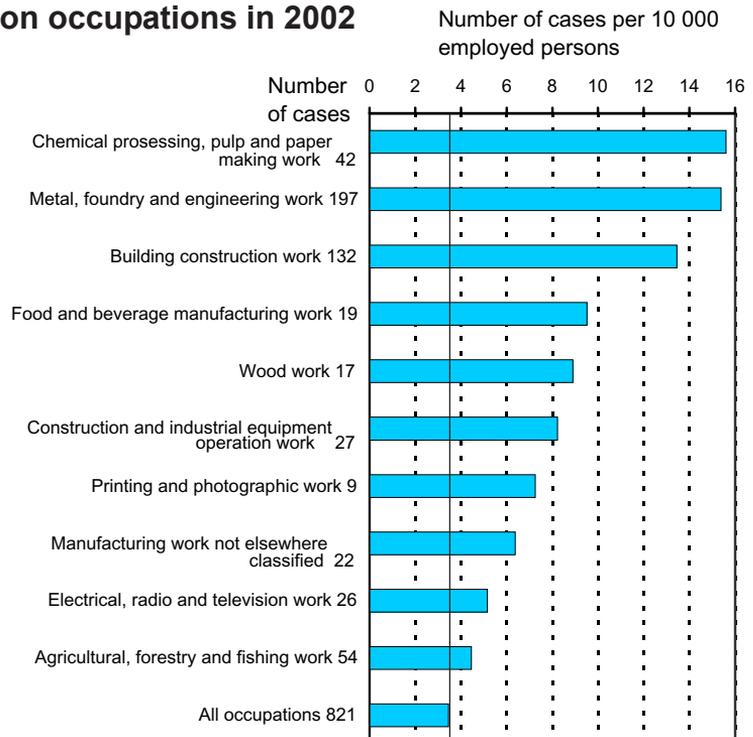
Information on severity was provided only in 22% of the reported cases of noise-induced hearing loss. In over 50% of these, the severity was below 10%, i.e. below the cut-off level of financial reimbursement.

In 2002, the industry-specific incidence per current number of employed workers was highest in the manufacture of transport equipment and in the manufacture of pulp, paper and paper products. The highest occupation-specific incidence rates were observed in chemical processing and pulp and paper making work, and in metal, foundry and engineering work.

## Most common industries in 2002

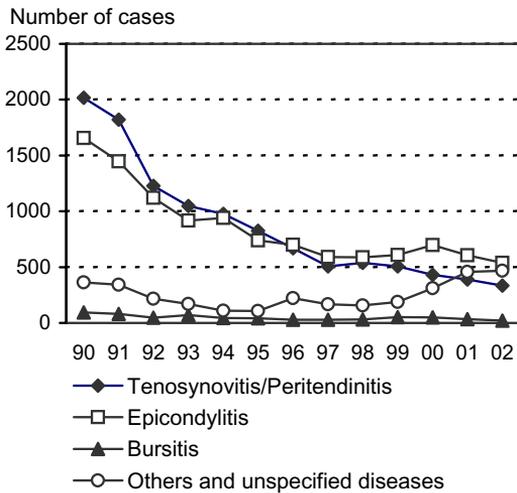


## Most common occupations in 2002

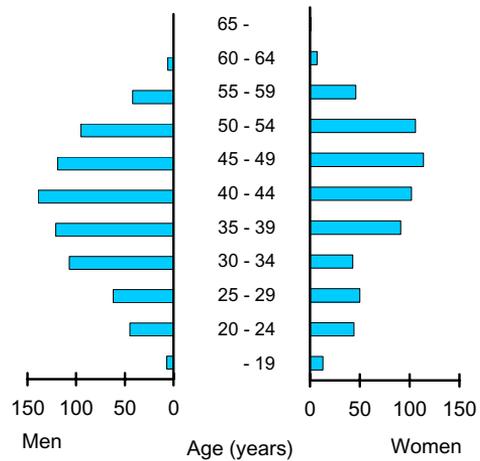


# 3 Repetitive strain injuries

Diagnoses in 1990 - 2002



Distribution of age and gender in 2002



Repetitive strain injuries peaked in 1990 at 4131 cases. Thereafter these diseases have more than halved to 1360 in 2002. In 1990 repetitive strain injuries comprised 45% of all new occupational diseases, and had dropped to 28% in 2002. Nevertheless, repetitive strain injuries still remained the largest occupational disease group in 2002.

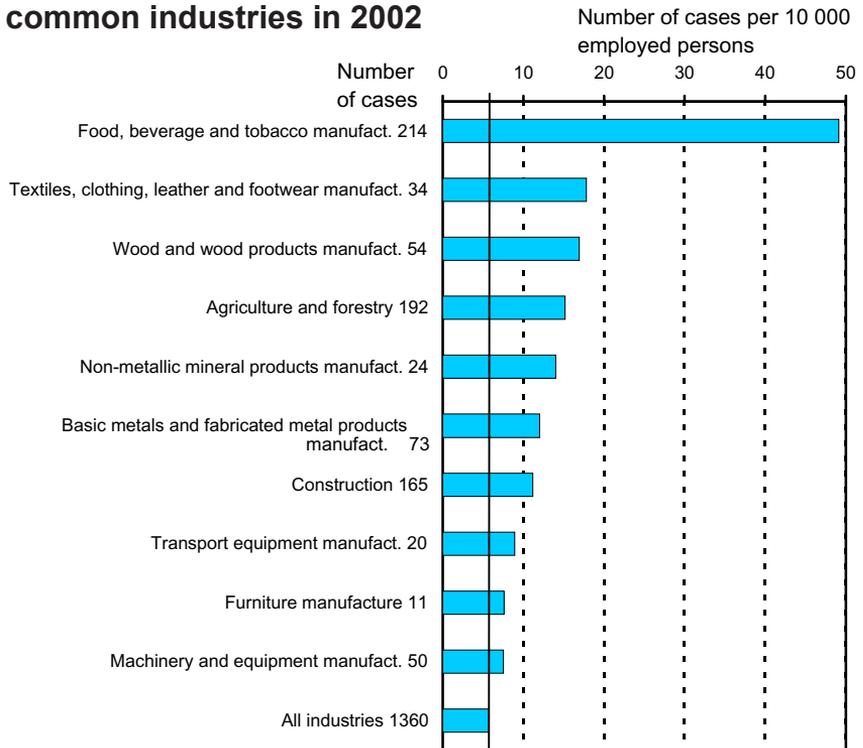
The most common repetitive strain injury was tenosynovitis/peritendinitis. The proportion of ‘other and unspecified repetitive strain injuries’ has increased during the last years. The reason for this is the growing electronic transfer of data from insurance companies to FROD which has increased the number of inaccurately coded cases.

Of all repetitive strain injuries, 55% occurred in men and 45% in women. The relative proportion of men in this disease group is slightly larger than the proportion of men in the entire working population. The highest number of new cases occurred in the age group of 40–44 years for men, and in the age group of 45–49 years for women.

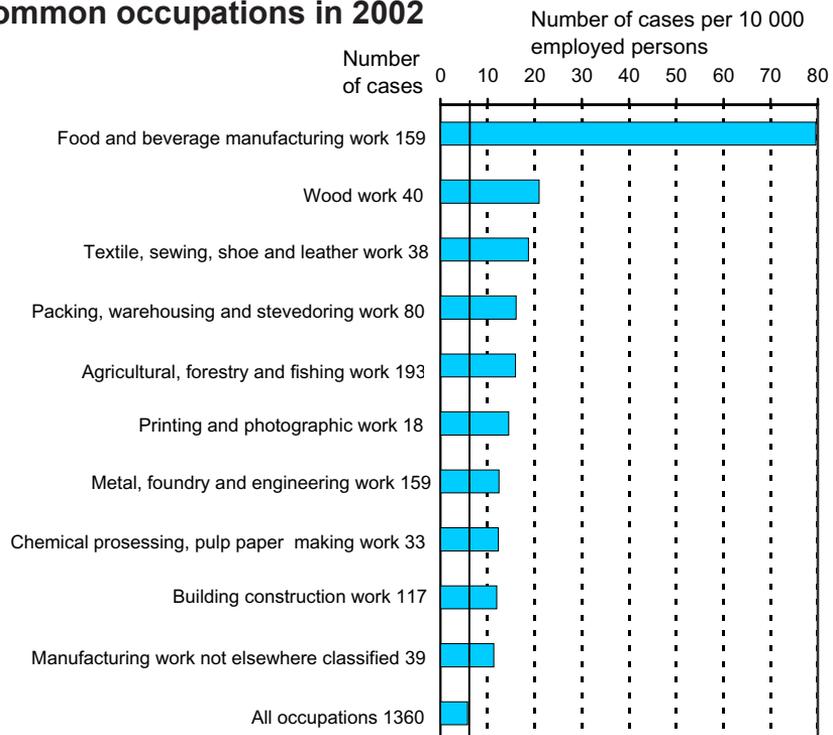
The incidence of repetitive strain injuries was 5.7 cases per 10 000 employed workers. In the food, beverage and tobacco industry the incidence was eight times the average: 49 cases/10 000 employed workers. The highest absolute numbers of new cases in this disease group were reported in the food, beverage and tobacco industry, in agriculture and forestry, and in construction.

Of the occupational categories, work in the food and beverage industry had by far the highest incidence rate (80 cases/10 000 employed). The incidence rate was 14 times the average. A high incidence rate was also reported in wood work (21 cases/10 000 employed) and in textile, sewing, shoe and leather work (18 cases/10 000 employed). The highest absolute numbers of new cases were reported in agriculture, forestry, and fishing (193 cases), in food and beverage manufacturing work (159 cases), in metal, foundry, and machine-shop work (159 cases) and in construction work (117 cases).

## Most common industries in 2002



## Most common occupations in 2002

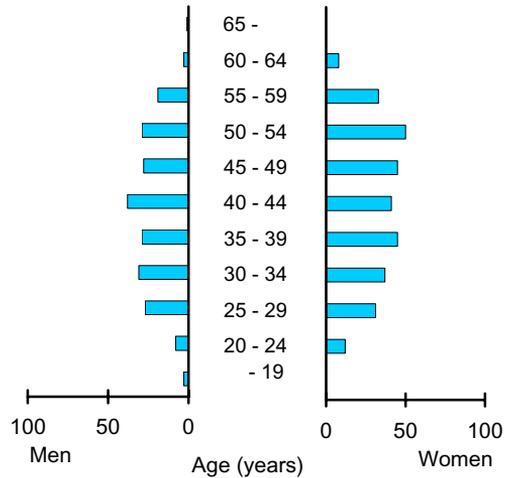
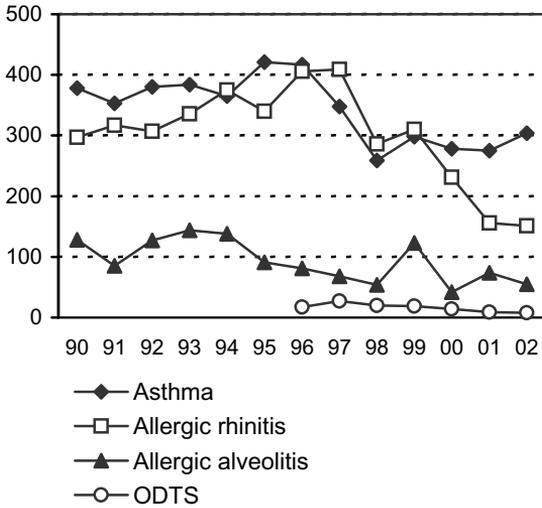


# 4 Allergic respiratory diseases

Diagnoses in 1990 - 2002

Distribution of age and gender in 2002

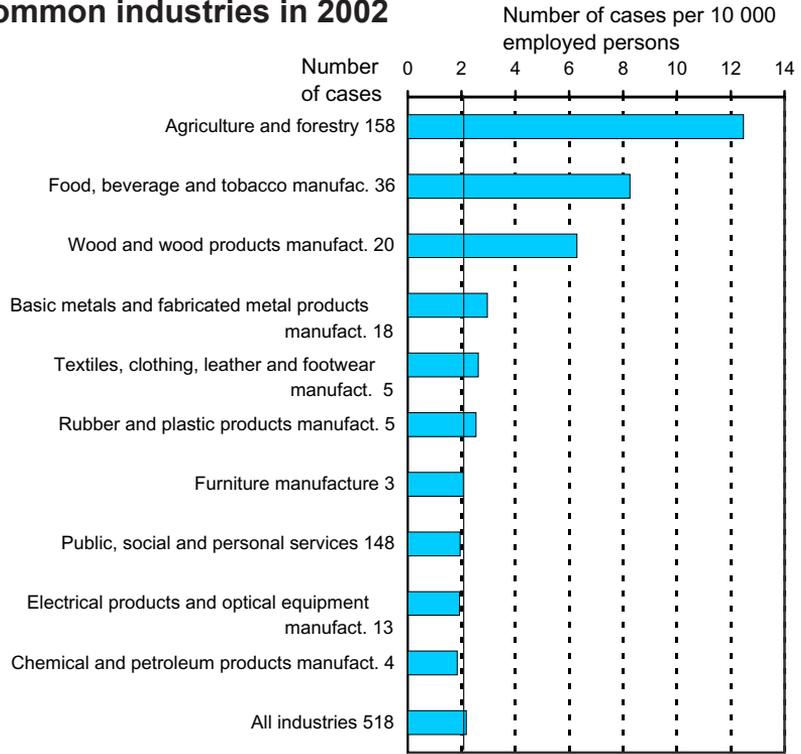
Number of cases



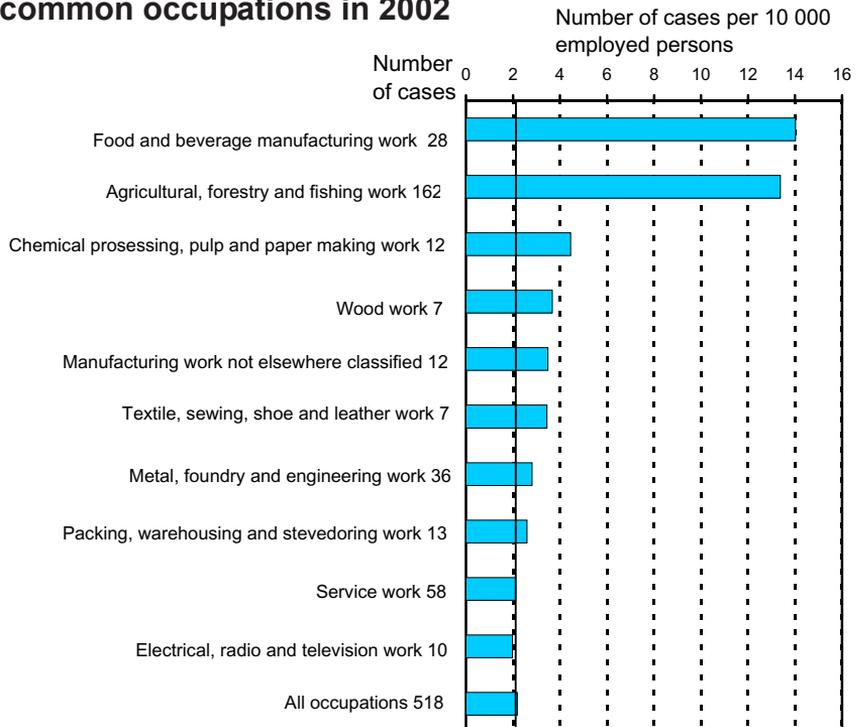
In 2002 a total of 518 cases of allergic respiratory disease were reported; this is about the same as in previous years. There were 302 reported cases among women and 216 among men. These were 304 cases of occupational asthma (275 in 2001), 151 cases of occupational allergic rhinitis (156 in 2001) and 55 cases of occupational allergic alveolitis (74 in 2001). In addition, 8 cases of organic dust toxic syndrome (ODTS) were reported. The number of cases of occupational allergic rhinitis has decreased clearly in 1997–2002. This decrease has partly been induced by inaccuracy of the received data on rhinitis in 2000–2002.

The incidence rate of occupational allergic respiratory diseases was 2.2/10,000 employed workers (2.2 in 2001). The most risk-prone occupations are found in the food and beverage industry, where 14 cases were reported for each 10,000 employed workers. Baker's asthma and rhinitis were primarily due to flours and baking additive enzymes. Work in agriculture and forestry came second with 13 cases/10,000 employed. The number of cases of occupational asthma in agriculture and forestry decreased to 58 (67 in 2001), and it was clearly less than the 150–200 annual cases reported in the early 1990s. This decrease is due to the diminished number of workers in these occupations, as well as to changes in type and average size of farms. The number of cases of occupational, allergic rhinitis in agriculture and forestry decreased from 74 in 2001 to 62 in 2002, and it was also lower than in the early 1990s. Occupations in the food and beverage industry and agriculture and forestry accounted for 37% of all reported cases of occupational respiratory diseases.

## Most common industries in 2002



## Most common occupations in 2002



The most common causative agents for occupational asthma were moulds or mould spores (26% of all cases) and flours, grains and animal feed (14%). There were 22 cases of asthma caused by exposure to animal epithelia and 19 cases caused by exposure to storage mites. Allergic rhinitis was most often caused by flours (40 cases), animal epithelia (39 cases), moulds (15 cases) and storage mites (18 cases). The causative agents of allergic respiratory diseases are listed in Table 6 (see Appendices).

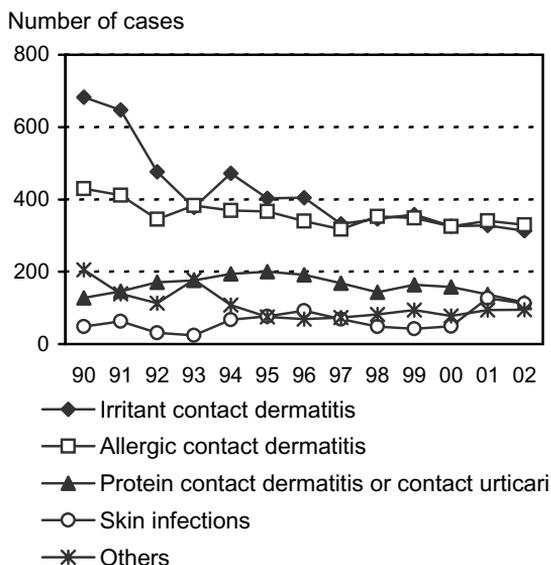
Isocyanates caused 6 new cases of occupational asthma (3 in 2001). Chemicals used in hairdressing, mainly persulfates caused 7 cases of occupational asthma or rhinitis (6 in 2001).

In health care and nursing occupations, the natural rubber in protective gloves caused only one case of respiratory allergy (asthma).

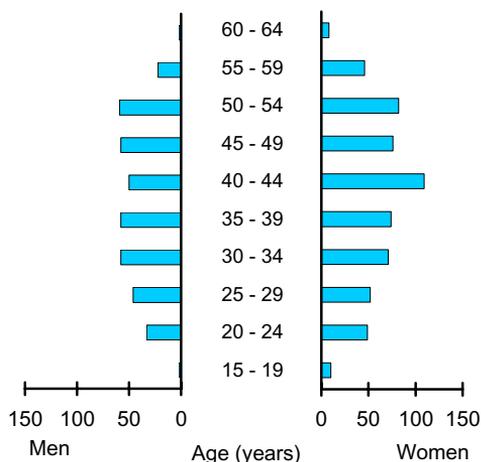
There were 55 cases of allergic alveolitis, of which 38 were farmer's lung (57 cases in 2001). The decrease was due to the dry weather conditions during summer 2001 and consequent low exposure to mouldy hay during the next winter. There were 15 cases of allergic alveolitis and 8 cases of ODTs, most of which were reported from work sites with water-damaged building materials.

# 5 Skin diseases

**Diagnoses in 1990 - 2002**



**Distribution of age and gender in 2002**

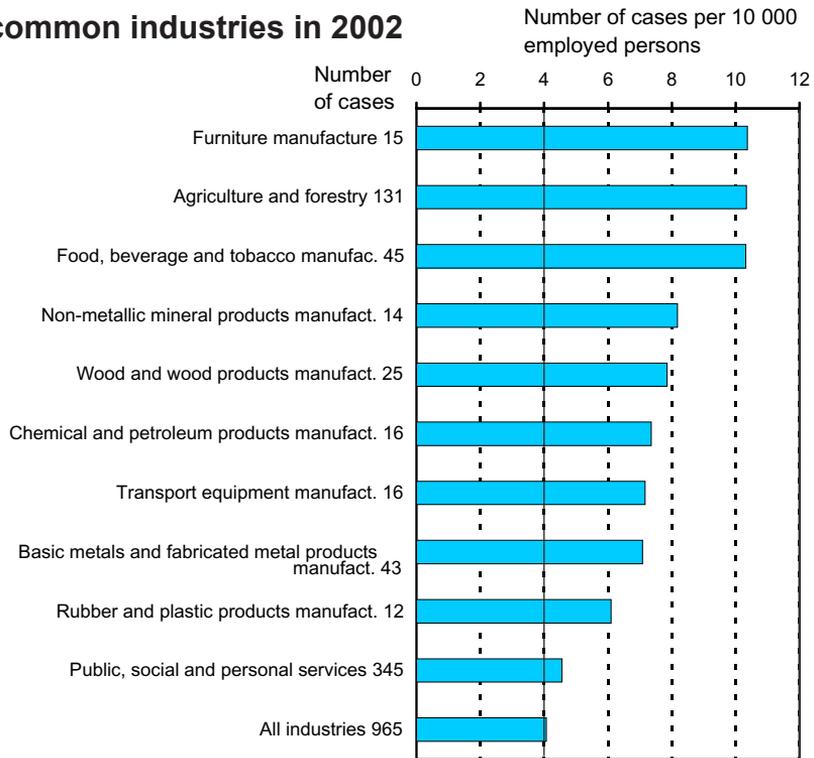


Of all occupational diseases reported in 2002, 20% (965) were skin diseases. Of these, 330 were allergic contact dermatitis, 313 irritant contact dermatitis, 115 protein contact dermatitis or contact urticaria, 112 skin infections, and 95 other skin diseases. Other skin diseases included 41 unspecified cases of contact dermatitis, 4 paronychias, 1 oil acne, 28 other skin diseases including chemical burns, and 21 occupational skin diseases for which exact diagnoses were not reported.

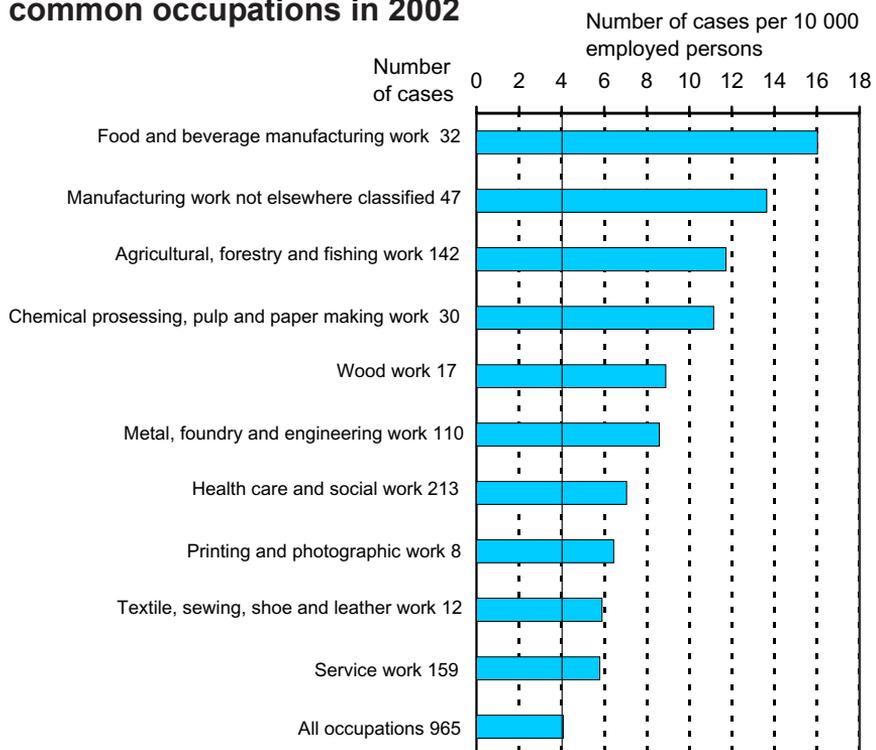
There were 6% less cases of occupational skin diseases than in 2001. There were only minor changes in the relative importance of individual classes of dermatoses. The number of allergic contact dermatitis decreased (a reduction of 11 cases), the number of irritant contact dermatitis decreased by 15 cases, and the number of protein contact dermatitis or contact urticaria by 22 cases. The number of skin infections decreased by 12% (15 cases). The proportion of allergic skin diseases, i.e. allergic contact dermatitis, protein contact dermatitis and contact urticaria, remained stable, accounting for 46% of all skin diseases.

Women accounted for 60% of the reported cases. The average age of a new skin disease case was 39 years among men and 40 years among women. The mean age was considerably lower for cases with skin disease than for all cases of occupational disease (46 years). In their work, women are more often exposed to the common causes of occupational skin disease: cleansing agents, animal-derived substances, foodstuffs, rubber allergens, i.e. rubber chemicals and the natural rubber latex (NRL) proteins, and “wet” work.

## Most common industries in 2002



## Most common occupations in 2002



A high incidence rate was found in agriculture and forestry, where skin diseases were caused by exposure to animal-derived substances (cow epithelium), flour, grain and fodder dust, cleansing agents, dermatophytes, rubber gloves, and wet and dirty working conditions. High incidence rates were also found in furniture manufacture, and in food, beverage and tobacco manufacture.

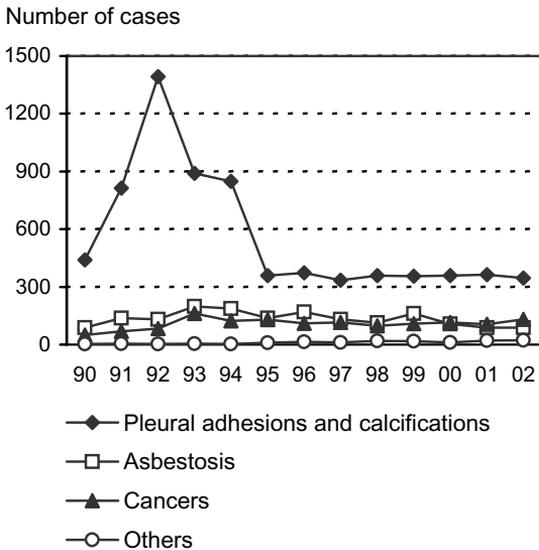
The highest occupation-specific risk occurred in the food and beverage manufacturing, where 16 cases were reported/10,000 employed, in manufacturing work not elsewhere classified (14 cases/10,000), and in agriculture, forestry and fishing (12 cases/10,000).

Itch mites causing skin infections were the most common cause of skin diseases (9%, 90 cases). Cleansing agents were still a common cause of occupational skin disease, and they accounted for 6% (59 cases) of all skin diseases. These were nearly all cases of irritant contact dermatitis. Of the skin diseases caused by exposure to rubber chemicals, the majority were allergic contact dermatitis due to rubber gloves. The most common plastic chemicals causing occupational allergic skin diseases were epoxy resins and epoxy paints and glues (28 cases), and acrylates and metacrylates (23 cases).

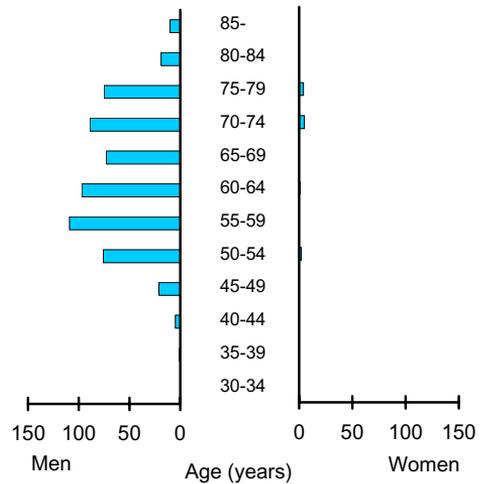
Animal-related skin diseases were mostly caused by cow epithelium. Both cow-induced dermatoses (48 cases), flours, grains and fodders (33 cases) and NRL-induced dermatoses (11 cases) were primarily protein contact dermatitis or contact urticaria. Protective gloves and other products made of NRL can also cause delayed type allergic contact dermatitis. In such cases the allergenic agents are usually rubber chemicals. The causative agents of the skin diseases are listed in Table 7 (see Appendices).

# 6 Asbestos-induced diseases

Diagnoses in 1990 - 2002



Distribution of age and gender in 2002

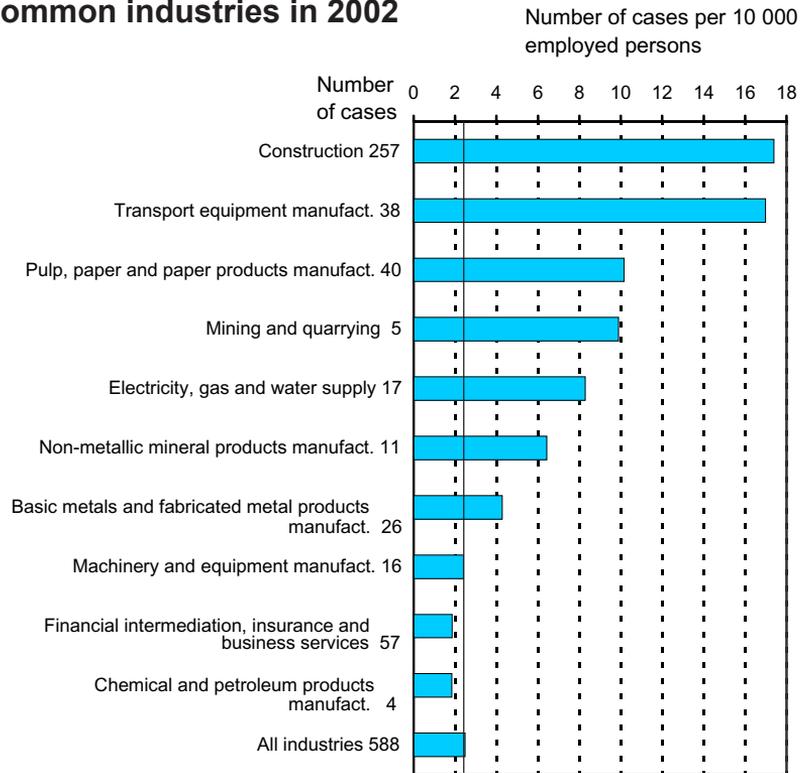


The number of asbestos-induced diseases increased by 2% from 2001 (588 cases, 579 cases in 2001). There were 346 cases of benign pleural disease, mainly cases of bilateral pleural plaques, 88 cases of asbestosis, 132 cases of asbestos-related malignancies and 22 other asbestos-induced diseases. The annual number of benign pleural diseases has returned to the level preceding a national radiographic screening campaign among nearly 20,000 construction workers undertaken in 1990–92, with further clinical examinations still going on in 1993 and 1994. The numbers of cases of notified asbestos-related malignancies remained at about the same level as in 1995–2001 (see the figure above).

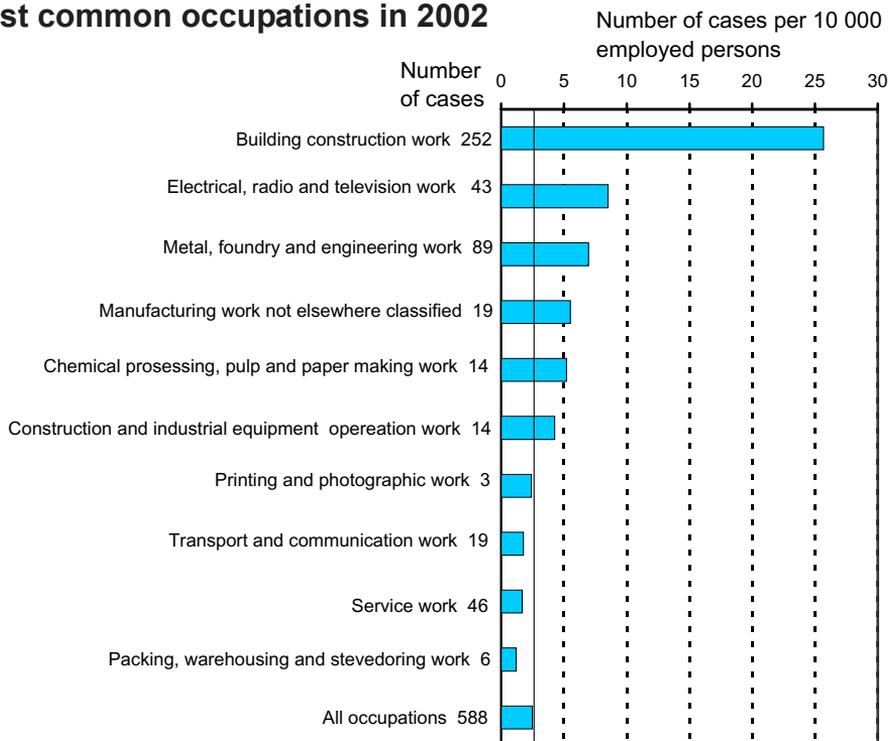
The highest number of asbestos-induced diseases was reported in construction, but numerous cases were also reported in relation to the manufacture of transport vehicles (including shipbuilding), and some industries where exposure to asbestos used to be frequent among maintenance workers, e.g. in the pulp and paper industry, and paper product manufacture, manufacture of basic metals, as well as in electrical, gas and water supply work. The most common occupations were building construction work and metal, foundry and engineering work, which accounted for more than half of the cases. In the statistics, the occupation and industry of cases with asbestos-induced disease refer to the occupation and industry at the time of exposure.

Asbestos-induced diseases have a long latency period, and the heaviest exposure occurred before latter part of the 1970s. Most of the disease cases are therefore seen in the oldest age categories.

## Most common industries in 2002

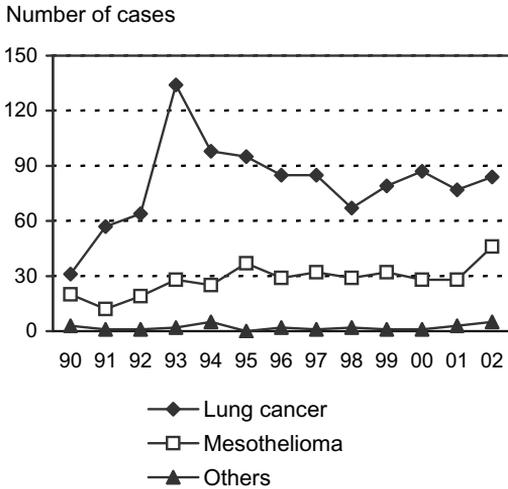


## Most common occupations in 2002

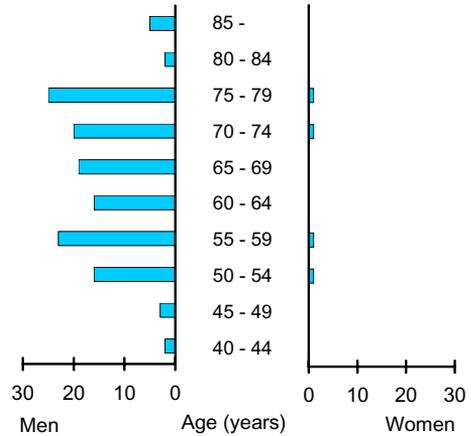


# 7 Cancers

**Diagnoses in 1990 - 2002**



**Distribution of age and gender in 2002**

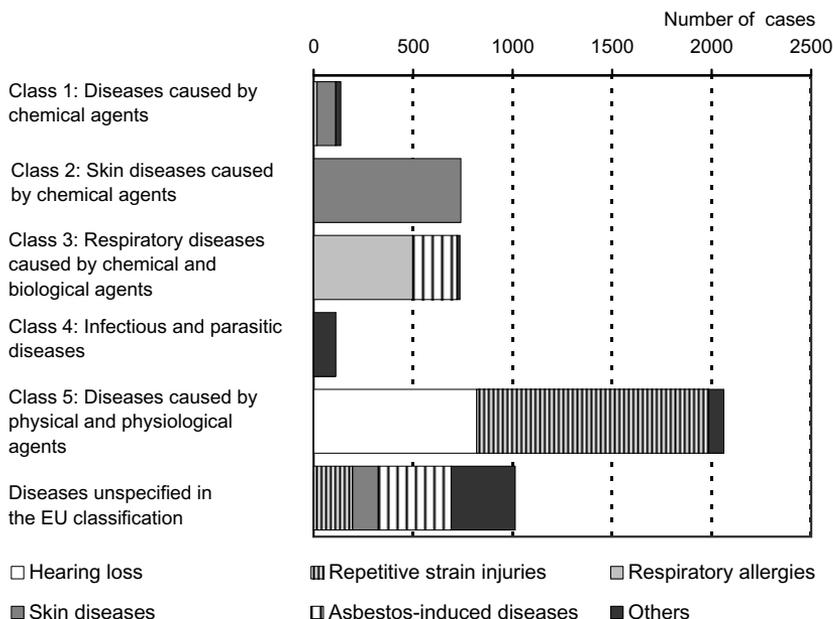


Altogether 135 cases of occupational cancer were reported in 2002, i.e. 25% more than in 2001. More than 60% of the patients were men above 60 years of age, but the youngest patients with an occupational mesothelioma were less than 50 -years of age. Altogether 4 cases of occupational cancer were reported in women.

There were 48 cases of occupational mesothelioma in 2002. The reason for the 50% increase from 2001 may be a series of articles on diagnostic and exposure assessment instructions published in the Finnish medical journals. In all of the mesothelioma cases, asbestos was reported as the causative agent. Altogether 84 cases of occupational lung cancer were reported in 2002; all of these were reported to be asbestos-related. A peak in the annual number of reported cases of lung cancer occurred in 1993, after the publication of a guidebook on exposure assessment of asbestos-related cancers, which was distributed to pulmonary hospitals at the end of 1992. Many cases diagnosed already in 1991 or 1992 were probably reported as occupational diseases in 1993. Thereafter the annual number of reported cases of lung cancer has remained at about the same level. Very few cases of cancer other than lung cancer or mesothelioma are reported as occupational cancers in Finland. In 2002, one case of myeloid leukemia (due to exposure to an unspecified chemical), multiple myeloma (an unspecified chemical) and thyroid tumour (beta radiation) were reported.

The compensation of asbestos-induced cancers in Finland is based on a relative risk of > 2. Mesothelioma is compensated if any exposure to asbestos at work can be verified. Lung cancer is compensated (i) in patients with asbestosis, (ii) in insulators and asbestos sprayers, and (iii) in patients with > 10 years of employment in other risk jobs (e.g. construction), the compensation of lung cancer is based on a detailed individual exposure assessment.

# 8 Occupational Diseases in 2002 by EU Classification



On May 22, 1990, the Commission of the European Communities published a recommendation on occupational diseases (90/326/EEC) which included, among others, a recommendation for the compilation of statistics on occupational diseases in the member states, and a list called Annex 1 of the European Schedule of Occupational Diseases. Eurostat has collected pilot data concerning 31 occupational disease items and cases recognised in 1995. The analysis of the pilot data revealed several problems that reduce the comparability of statistical data from national occupational disease recognition systems. These include differences in the coverage of the national workforce, actual recognition criteria, recognition of mild cases and inclusion of specific diagnoses into the items of the European Schedule of Occupational Diseases (see Karjalainen and Virtanen, Eurostat Working Papers, Population and social conditions 3/1999/E/n:o 2).

In the above figure, which presents the occupational diseases reported in Finland during 2002, classes 1–5 have been drawn from Annex 1 the European Schedule of Occupational Diseases. The patterns on the bars correspond to the disease groups referred to throughout this review. Table 8 gives more detailed information on the diseases and causes according to classes 1–5.

Of the occupational diseases reported in Finland, 3793 (79%) could be classified according to the above-mentioned European recommendation. Asbestos-induced benign pleural diseases account for the largest number of incompatible diagnoses (346 cases), although some member states include these conditions under the general item of asbestosis. Many diseases found on the European list are actually quite rare nowadays in Finland. No cases were reported in 2002 for about half of the occupational diseases mentioned on the European list. The European Commission has recently updated the above-mentioned recommendation and the annexed lists (3297/2003/EC).

# 9 Summary

The Finnish Register of Occupational Diseases was established in 1964. Information on occupational diseases diagnosed by Finnish physicians is obtained from the local labour protection authorities and insurance companies. Unlike in insurance statistics, the cases are recorded according to the year of reporting and not according to the insurance technical date of occurrence, which may differ several years in diseases with a long latency time. In addition to cases diagnosed in wage-earners, the statistics also cover farmers, who are recorded in separate statistics in the insurance system.

In 2002 a total of 4807 cases were reported. This figure is 2% less than in 2001. The annual incidence rate of the reported occupational diseases was 20 cases per 10,000 employed workers in 2002. The numbers of cases are given by diagnosis in Table 2 (p. 29) and according to the European list in Table 8 (p. 45).

The most common occupational diseases are still repetitive strain injuries, although their annual incidence has fallen since 1990. A total of 1360 cases were reported in 2002. This is 9% less than in 2001. The incidence rate was 5.7 cases per 10,000 employed workers. The highest incidence rate occurred in food-processing work, where 49 cases per 10,000 employed workers were reported.

There were 518 cases of allergic respiratory diseases, about the same amount as in 2001. The numbers of reported cases of asthma ( $n = 304$ ) have remained at the same level and those of rhinitis ( $n = 151$ ) have decreased during the latest years. There were 55 cases of allergic alveolitis, of which 38 were farmer's lung (57 cases in 2001). The decrease was due to the dry weather conditions during summer 2001 and consequent low exposure to mouldy hay during the next winter. The incidence rate of reported allergic respiratory diseases was the highest in agriculture and food-processing work, which accounted for 37% of all cases. Animal epithelia, flour dust and storage mites caused 40% of the cases of asthma and allergic rhinitis.

Occupational skin diseases totalled 965 cases in 2002, i.e. 6% less than the year before. The incidence rate was highest in food-processing work. Irritant contact dermatitis was most often caused by wet work and detergents (32%), allergic contact dermatitis by nickel (12%) and protein contact dermatitis or contact urticaria by animal epithelia, flours and natural rubber (Latex) (43%, 23% and 8%, respectively).

The cases of noise-induced hearing loss numbered 821, which is 10% more than in 2001. The incidence rate was highest in transfer equipment manufacture.

In 2002 there were 588 new cases of asbestos-related diseases, 48 cases of mesothelioma, 84 cases of lung cancer, 88 cases of asbestosis, and 346 cases of pleural plaques.

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# **Tables on occupational diseases in 2002**

- 1 Diseases by age and gender
- 2 Diagnoses by gender
- 3 Causes by gender
- 4 Diseases by industry
- 5 Diseases by occupation
- 6 Allergic respiratory diseases: cause and diagnosis
- 7 Skin diseases: cause and diagnosis
- 8 Diseases by EU classification and gender

**Table 1** Diseases by age and gender

Age	Hear- ing loss	Repeti- tive strain injuries	Allergic respir- atory diseases	Skin dis- eases	Asbestos- induced diseases	Others	All
15 - 19	-	20	3	12	-	14	49
20 - 24	2	89	20	82	-	37	230
25 - 29	9	112	58	98	1	42	320
30 - 34	15	150	68	129	-	71	433
35 - 39	47	212	74	132	1	72	538
40 - 44	82	241	79	159	5	68	634
45 - 49	124	233	73	134	21	84	669
50 - 54	189	201	79	141	78	92	780
55 - 59	210	88	52	68	109	51	578
60 - 64	101	13	11	10	98	16	249
65-	42	1	1	-	275	8	327
<b>Total</b>	<b>821</b>	<b>1360</b>	<b>518</b>	<b>965</b>	<b>588</b>	<b>555</b>	<b>4807</b>
<b>Men</b>							
15 - 19	-	7	3	2	-	12	24
20 - 24	1	45	8	33	-	27	114
25 - 29	7	62	27	46	1	23	166
30 - 34	12	107	31	58	-	37	245
35 - 39	47	121	29	58	1	43	299
40 - 44	78	139	38	50	5	32	342
45 - 49	117	119	28	58	21	54	397
50 - 54	177	95	29	59	76	46	482
55 - 59	192	42	19	22	109	29	413
60 - 64	96	6	3	2	97	11	215
65-	38	-	1	-	266	7	312
<b>Total</b>	<b>765</b>	<b>743</b>	<b>216</b>	<b>388</b>	<b>576</b>	<b>321</b>	<b>3009</b>
<b>Women</b>							
15 - 19	-	13	-	10	-	2	25
20 - 24	1	44	12	49	-	10	116
25 - 29	2	50	31	52	-	19	154
30 - 34	3	43	37	71	-	34	188
35 - 39	-	91	45	74	-	29	239
40 - 44	4	102	41	109	-	36	292
45 - 49	7	114	45	76	-	30	272
50 - 54	12	106	50	82	2	46	298
55 - 59	18	46	33	46	-	22	165
60 - 64	5	7	8	8	1	5	34
65-	4	1	-	-	9	1	15
<b>Total</b>	<b>56</b>	<b>617</b>	<b>302</b>	<b>577</b>	<b>12</b>	<b>234</b>	<b>1798</b>

**Table 2** Diagnoses<sup>1</sup> by gender

<b>Disease</b>	<b>Men</b>	<b>Women</b>	<b>Total</b>
<i>Infectious and parasitic diseases</i>	<i>91</i>	<i>139</i>	<i>230</i>
Epidemic nephritis	75	16	91
Mycosis	1	19	20
Scabies	7	83	90
Tuberculosis	3	12	15
Others	5	9	14
<i>Neoplasms</i>	<i>133</i>	<i>4</i>	<i>137</i>
Bronchial cancer	83	1	84
Mesothelioma	46	2	48
Others	4	1	5
<i>Mental and behavioural disorders</i>	<i>5</i>	<i>3</i>	<i>8</i>
<i>Diseases of the nervous system</i>	<i>37</i>	<i>37</i>	<i>74</i>
Mononeuropathy, upper extremity	18	31	49
Mononeuropathy, lower extremity	3	2	5
Toxic encephalopathy	9	4	13
Others	7	-	7
<i>Diseases of the eye</i>	<i>69</i>	<i>11</i>	<i>80</i>
Conjunctivitis	7	10	17
Keratoconjunctivitis caused by UV-light	61	1	62
Others	1	-	1
<i>Diseases of the ear</i>	<i>760</i>	<i>56</i>	<i>816</i>
Noise-induced hearing loss	758	54	812
Others	2	2	4
<i>Diseases of the circulatory system</i>	<i>11</i>	<i>1</i>	<i>12</i>
Hand and arm vibration syndrome	11	1	12
<i>Diseases of the respiratory system</i>	<i>716</i>	<i>435</i>	<i>1151</i>
Asthma	135	172	307
Allergic rhinitis	58	96	154
Allergic alveolitis	23	32	55
Organic dust toxic syndrome	3	5	8
Asbestosis	86	2	88
Pleural plaques and adhesions	340	6	346
Silicosis	6	-	6
Other irritant and hypersensitivity symptoms of the upper respiratory tract	24	85	109
Others	40	38	78
<i>Diseases of the gastrointestinal organs</i>	<i>1</i>	<i>-</i>	<i>1</i>

<sup>1</sup>According to ICD-10

<b>Disease</b>	<b>Men</b>	<b>Women</b>	<b>Total</b>
<i>Diseases of the skin and subcutaneous tissue*</i>	368	469	837
<i>Diseases of the musculoskeletal system</i>	705	582	1287
Epicondylitis	278	260	538
Tenosynovitis, peritendinitis	162	116	278
Bursitis	20	1	21
Others	245	205	450
<i>Injury and poisoning</i>	29	5	34
Poisoning	11	2	13
Others	18	3	21
<i>Others</i>	84	56	140
Total	3009	1798	4807

\*Skin infections and skin injuries are included under other headings  
The numbers of cases in this and other tables may differ slightly due to different case definitions applied.

**Table 3** Causes by gender

<b>Cause</b>	<b>Men</b>	<b>Women</b>	<b>Total</b>
<i>Physical factors</i>	<i>846</i>	<i>65</i>	<i>911</i>
Noise	765	56	821
Vibration	12	1	13
Overpressure	1	-	1
Temperature	2	1	3
Humidity	-	1	1
Warm moisture	2	2	4
Ionizing radiation	1	1	2
Non-ionizing radiation	63	3	66
<i>Chemical agents</i>	<i>1224</i>	<i>710</i>	<i>1934</i>
Aromatic hydrocarbons	2	1	3
Monohydric alcohols	3	1	4
Dihydric alcohols (glycols)	1	-	1
Phenols and phenolates (not chlorophenols)	-	2	2
Chlorophenols and chlorophenolates	-	1	1
Ethers of aromatic alcohols	-	1	1
Epoxides	6	2	8
Aliphatic aldehydes	7	16	23
Aldehydes (not specified)	1	-	1
Aliphatic ketones	1	-	1
Quinones	-	1	1
Aliphatic carboxylic acids	4	-	4
Percarboxylic acids and acyl peroxides	1	-	1
Carboxylic acid anhydrides	8	1	9
Esters of aliphatic carboxylic acids (e.g. acrylates)	15	13	28
Hydroperoxides and peroxides	-	1	1
Amines	4	6	10
Amides (e.g. thiuram sulfides)	3	16	19
Organic cyanides and nitriles (cyano compounds)	-	1	1
Isocyanates	8	3	11
Hydrazine, azo, diazo, and diazonium compounds	1	-	1
Heterocyclic compounds (oxygen in ring)	1	1	2
Heterocyclic compounds (nitrogen in ring)	-	1	1
Heterocyclic compounds (sulfur in ring)	2	2	4
Polysaccharides	2	-	2
Organic zinc compounds	-	2	2
Carbon monoxide and carbon dioxide	2	1	3
Inorganic gases containing sulfur	1	-	1
Inorganic gases containing chlorine	3	-	3
Inorganic acids	3	-	3
Inorganic bases	3	2	5
Boron and its compounds	1	1	2

<b>Cause</b>	<b>Men</b>	<b>Women</b>	<b>Total</b>
Arsenic and its compounds	2	-	2
Sulfur, carbon disulfide and ammonium sulfate derivatives	2	3	5
Tin, lead and their compounds	5	-	5
Copper and platinum metals and their compounds	1	-	1
Zinc, cadmium, mercury and their compounds	-	2	2
Chromium group metals and their compounds	15	1	16
Cobalt, nickel and their compounds	16	27	43
Metals and metallic compounds (not specified)	4	-	4
Crude oil based organic solvent mixtures	2	-	2
Organic solvent mixtures (not specified)	35	7	42
Crude oil based fuels	2	-	2
Oils and lubricants	47	3	50
Synthetic resins and plastics	23	17	40
Natural rubber (latex)	1	12	13
Natural resins, balsams and their derivatives (except latex)	11	14	25
Resins, plastics and their derivatives (not specified)	3	6	9
Paints	7	1	8
Varnishes	1	-	1
Synthetic glues	6	4	10
Natural glues	1	-	1
Glues (not specified)	1	2	3
Rubbers	-	1	1
Printing inks	1	1	2
Fur dyes	-	1	1
Hair dyes	-	10	10
Pharmaceuticals	1	4	5
Rubber chemicals	15	23	38
Detergents	14	48	62
Disinfectants	1	5	6
Cosmetics	1	23	24
Perfumes and aromatic substances	-	5	5
Photographic chemicals	-	1	1
Preservatives and antimicrobial agents	5	5	10
Other known substances classified according to their use	1	3	4
Silicon dioxides	7	-	7
Asbestos (all types)	576	12	588
Talc	1	-	1
Synthetic mineral fibers	2	2	4
Sulfate minerals	1	-	1
Cement, concrete	15	1	16
Other known minerals and synthetic fibers	1	-	1
Textiles	-	5	5
Flours, grains and fodders	44	79	123
Wood (all species)	23	4	27

<b>Cause</b>	<b>Men</b>	<b>Women</b>	<b>Total</b>
Plants	4	45	49
Plant-derived dusts and substances	3	3	6
Animal epithelia, hairs or secretions/excretions	42	74	116
Other animal-derived dusts or substances	6	2	8
Enzymes	1	1	2
Organic materials, not listed elsewhere (not specified)	35	37	72
Sprays, fumes, dusts and smoke (mixtures)	22	4	26
Wet work	9	35	44
Dirty work	17	13	30
Handling of foodstuffs	8	13	21
Other chemical agents (not specified)	100	75	175
<i>Biological agents</i>	<i>181</i>	<i>377</i>	<i>558</i>
Yeasts	-	1	1
Molds	54	210	264
Dermatophytes	1	18	19
Eubacteria	1	11	12
Actinomycetes	4	12	16
Other known bacteria	1	1	2
Bacteria (not specified)	1	3	4
Herpesviruses	-	2	2
Poxviruses	-	1	1
Other known viruses	76	17	93
Mites	39	94	133
Insects	-	1	1
Intestinal parasites	-	1	1
Toxins and toxoids	1	-	1
Other biological agents (not specified)	3	5	8
<i>Physical and psychophysical loading factors</i>	<i>748</i>	<i>625</i>	<i>1373</i>
Static muscular load due to work postures	1	-	1
Repetitive work	711	605	1316
Nonphysiological working postures	2	1	3
Nonphysiological compression or stretching	21	2	23
Mechanical friction of the skin	5	6	11
Other known physical and mechanical loading factors	2	7	9
Physical and mechanical loading factors (not specified)	6	2	8
Other known psychophysical loading factors	-	2	2
<i>Psychosocial factors</i>	<i>-</i>	<i>3</i>	<i>3</i>
Continuous haste	-	1	1
Other known psychosocial stressors	-	1	1
Psychosocial stressors (not specified)	-	1	1
<i>Unknown factors</i>	<i>10</i>	<i>18</i>	<i>28</i>
<b>Total</b>	<b>3009</b>	<b>1798</b>	<b>4807</b>

**Table 4** Diseases by industry

Industry	Hear- ing loss	Repeti- tive strain injuries	Allergic respir- atory diseases	Skin dis- eases	Asbestos- induced diseases	Others	Total
<i>Agriculture, hunting and forestry</i>	<i>54</i>	<i>188</i>	<i>158</i>	<i>131</i>	<i>5</i>	<i>108</i>	<i>644</i>
Agriculture, hunting and related service activities	31	181	158	130	5	100	605
Forestry, logging and related service activities	23	7	-	1	-	8	39
<i>Fishing</i>	<i>-</i>	<i>4</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>1</i>	<i>5</i>
Fishing, operation of fish hatcheries and fish farms; service activities	-	4	-	-	-	1	5
<i>Mining and quarrying</i>	<i>3</i>	<i>1</i>	<i>-</i>	<i>-</i>	<i>5</i>	<i>4</i>	<i>13</i>
Mining of coal and lignite; extraction of peat	1	-	-	-	-	-	1
Mining of metal ores	1	-	-	-	3	1	5
Other mining and quarrying	1	1	-	-	2	3	7
<i>Manufacturing</i>	<i>360</i>	<i>581</i>	<i>130</i>	<i>275</i>	<i>154</i>	<i>143</i>	<i>1643</i>
Manufacture of food products and beverages	30	214	36	45	5	15	345
Manufacture of textiles	2	12	-	1	2	2	19
Manufacture of wearing apparel; dressing and dyeing of fur	1	7	-	4	-	-	12
Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	-	15	5	-	-	1	21
Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	35	54	20	25	4	7	145
Manufacture of pulp, paper and paper products	58	15	4	9	40	4	130
Publishing, printing and reproduction of recorded media	10	26	4	10	1	11	62
Manufacture of coke, refined petroleum products and nuclear fuel	18	-	-	1	-	-	19
Manufacture of chemicals and chemical products	5	6	4	15	4	-	34
Manufacture of rubber and plastic products	11	12	5	12	3	9	52

Industry	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	Total
Manufacture of other non-metallic mineral products	7	24	3	14	11	3	62
Manufacture of basic metals	23	14	5	5	6	6	59
Manufacture of fabricated metal products, except machinery and equipment	52	59	13	38	20	32	214
Manufacture of machinery and equipment n.e.c.	52	50	11	29	16	26	184
Manufacture of office machinery and computers	-	1	-	-	-	-	1
Manufacture of electrical machinery and apparatus n.e.c.	4	18	8	10	1	2	43
Manufacture of radio, television and communication equipment and apparatus	-	18	4	8	-	-	30
Manufacture of medical, precision and optical instruments, watches and clocks	3	2	1	12	1	2	21
Manufacture of motor vehicles, trailers and semi-trailers	1	11	1	4	1	3	21
Manufacture of other transport equipment	42	9	2	12	37	9	111
Manufacture of furniture; manufacturing n.e.c.	6	14	4	21	2	11	58
<i>Electricity, gas and water supply</i>	<i>9</i>	<i>10</i>	<i>3</i>	<i>1</i>	<i>17</i>	<i>3</i>	<i>43</i>
Electricity, gas, steam and hot water supply	8	8	3	-	14	2	35
Collection, purification and distribution of water	1	2	-	1	3	1	8
<i>Construction</i>	<i>160</i>	<i>165</i>	<i>12</i>	<i>56</i>	<i>257</i>	<i>46</i>	<i>696</i>
<i>Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods</i>	<i>26</i>	<i>81</i>	<i>22</i>	<i>60</i>	<i>28</i>	<i>21</i>	<i>238</i>
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	20	14	6	25	16	8	89
Wholesale trade and commission trade, except of motor vehicles and motorcycles	3	32	3	6	5	7	56
Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	3	35	13	29	7	6	93
<i>Hotels and restaurants</i>	<i>3</i>	<i>19</i>	<i>19</i>	<i>47</i>	<i>-</i>	<i>6</i>	<i>94</i>

Industry	Hear- ing loss	Repeti- tive strain injuries	Allergic respir- atory diseases	Skin dis- eases	Asbestos- induced diseases	Others	Total
<i>Transport, storage and communication</i>	50	52	12	18	26	10	168
Land transport; transport via pipelines	23	26	5	10	11	6	81
Water transport	3	-	-	4	3	-	10
Air transport	3	1	-	-	-	-	4
Supporting and auxiliary transport activities; activities of travel agencies	15	12	6	2	10	3	48
Post and telecommunications	6	13	1	2	2	1	25
<i>Financial intermediation</i>	-	10	5	7	-	7	29
Financial intermediation, except insurance and pension funding	-	9	4	4	-	5	22
Insurance and pension funding, except compulsory social security	-	1	1	3	-	2	7
<i>Real estate, renting and business activities</i>	33	78	8	25	57	18	219
Real estate activities	7	15	-	5	34	3	64
Renting of machinery and equipment without operator and of personal and household goods	-	-	-	-	1	1	2
Computer and related activities	-	2	-	-	-	1	3
Research and development	-	3	1	3	1	2	10
Other business activities	26	58	7	17	21	11	140
<i>Public administration and defence; compulsory social security</i>	93	45	36	53	17	40	284
<i>Education</i>	18	16	34	29	3	42	142
<i>Health and social work</i>	1	72	57	216	8	79	433
<i>Other community, social and personal service activities</i>	8	38	22	47	2	27	144
Sewage and refuse disposal, sanitation and similar activities	4	3	-	1	1	2	11
Activities of membership organizations n.e.c.	-	5	2	4	-	8	19
Recreational, cultural and sporting activities	3	9	6	4	1	7	30
Other service activities	1	21	14	38	-	10	84
<i>Industry unknown</i>	3	-	-	-	9	-	12
Total	821	1360	518	965	588	555	4807

n.e.c. = not elsewhere classified

**Table 5** Diseases by occupation

Occupation	Hear- ing loss	Repeti- tive strain	Allergic respir- atory injuries	Skin dis- eases diseases	Asbestos- induced diseases	Others	Total
<i>Legislators, senior officials and managers</i>	22	37	9	14	16	4	102
Managers of small enterprises in construction	8	6	1	4	12	-	31
Managers of small enterprises in manufacturing	6	2	-	1	-	-	9
Managers of small enterprises in wholesale and retail trade	-	11	1	1	1	-	14
Others	8	18	7	8	3	4	48
<i>Professionals</i>	30	23	35	42	9	37	176
Architects, town and traffic planners	3	4	-	1	3	1	12
Dentists	-	1	3	9	-	2	15
Other secondary education teaching professionals	2	1	8	3	-	18	32
Vocational and professional education institution lecturers	5	1	3	3	2	2	16
Radio and television journalists	1	-	-	-	-	-	1
Others	19	16	21	26	4	14	100
<i>Technicians and associate professionals</i>	60	58	46	131	51	61	407
Building construction technicians	14	18	2	2	22	3	61
Mechanical engineering technicians	9	-	-	1	9	-	19
Mining and metallurgica l technicians	6	-	1	-	1	1	9
Other physical and engineering science technicians (not elsewhere classified)	6	2	1	1	5	3	18
Life science technicians	-	7	3	10	-	2	22
Physiotherapists	-	2	2	8	-	-	12
Nurses	-	5	4	61	-	12	82
Nursing and related associate professionals	-	7	7	27	-	16	57
Government tax and excise officials	-	-	-	1	-	9	10
Others	25	17	26	20	14	15	117
<i>Clerks</i>	12	59	32	12	3	28	146
Secretaries	-	8	2	-	-	2	12
Stock clerks	7	2	1	1	2	1	14

Occupation	Hear- ing loss	Repeti- tive strain injuries	Allergic respir- atory diseases	Skin dis- eases	Asbestos- induced diseases	Others	Total
Other office clerks	2	29	19	6	1	19	76
Tellers and other counter clerks	-	7	3	3	-	5	18
Others	3	13	7	2	-	1	26
<i>Service and care workers, and shop and market sales workers</i>	<i>10</i>	<i>101</i>	<i>66</i>	<i>173</i>	<i>4</i>	<i>47</i>	<i>401</i>
Cooks	2	14	16	24	-	3	59
Housekeeping and restaurant services supervisors	1	1	4	2	-	1	9
Waiters, waitresses and bartenders	1	8	3	10	-	2	24
Childminders and kindergarten assistants	-	5	9	11	-	5	30
Dental assistants	-	4	2	17	-	6	29
Home care assistants	-	3	1	13	-	2	19
Practical nurses	-	7	2	19	-	7	35
Hairdressers and barbers	-	14	11	24	-	9	58
Practical rehabilitation nurses and chiropodists	-	4	-	6	-	-	10
Salespersons and cashiers	-	24	7	20	-	5	56
Salespersons in specialised shops	-	7	4	7	1	-	19
Others	6	10	7	20	3	7	53
<i>Skilled agricultural and fishery workers</i>	<i>54</i>	<i>193</i>	<i>162</i>	<i>142</i>	<i>4</i>	<i>109</i>	<i>664</i>
Horticultural and nursery workers	3	20	7	10	1	7	48
Farmer's locums	2	9	26	32	-	7	76
Crop and animal producers and workers	29	147	123	94	2	86	481
Forestry and related workers	19	6	-	-	-	4	29
Others	1	11	6	6	1	5	30
<i>Craft and related trades workers</i>	<i>372</i>	<i>378</i>	<i>82</i>	<i>233</i>	<i>392</i>	<i>156</i>	<i>1613</i>
Miners and quarry workers	3	1	-	-	2	3	9
Bricklayers and stonemasons	3	12	1	5	16	-	37
Builders	32	20	2	10	45	4	113
Building frame and related trades workers (not elsewhere classified)	-	-	-	1	8	1	10
Carpenters and joiners	61	30	6	6	70	3	176
Floor layers and tile setters	2	4	-	4	1	3	14
Insulation workers	4	9	-	-	10	1	24
Plumbers and pipe fitters	14	17	2	12	71	9	125
Building painters	6	9	2	12	21	12	62
Vehicle and other painters	6	5	4	12	5	9	41
Metal moulders and coremakers	4	8	1	4	1	3	21
Sheet-metal workers	27	13	2	8	11	5	66
Structural-metal preparers and erectors	6	2	-	5	7	2	22

Occupation	Hear- ing loss	Repeti- tive strain injuries	Allergic respir- atory diseases	Skin dis- eases	Asbestos- induced diseases	Others	Total
Welders and flame cutters	34	17	8	6	11	12	88
Machine-tool setters and setter-operators	14	18	8	35	3	22	100
Metal wheel-grinders, polishers and tool sharpeners	6	3	-	2	-	-	11
Tool-makers and related workers	18	29	8	7	7	9	78
Agricultural- or industrial -machinery mechanics and fitters	33	12	1	7	18	6	77
Motor-vehicle mechanics and fitters	40	31	7	28	26	19	151
Electrical line installers, repairers and cable jointers	-	5	-	2	4	-	11
Electrical mechanics and servicers	15	14	5	8	37	4	83
Electronic installers and repairers	2	10	-	3	-	-	15
Precision-instrument makers and repairers	2	1	2	8	2	1	16
Silk-screen, block and textile printers	-	6	-	-	1	2	9
Bakers, pastry-cooks and confectionery makers	1	3	17	13	-	5	39
Butchers, fishmongers and related food preparers	1	28	-	3	-	-	32
Cabinetmakers and related workers	3	16	1	3	1	4	28
Wood treaters	6	3	-	-	-	1	10
Woodworking machine setters and setter-operators	7	14	2	8	-	5	36
Others	22	38	3	21	14	11	109
<i>Plant and machine operators and assemblers</i>	<i>141</i>	<i>296</i>	<i>51</i>	<i>111</i>	<i>55</i>	<i>49</i>	<i>703</i>
Ore and metal furnace operators	6	1	-	-	1	1	9
Papermaking-plant operators	23	10	3	1	10	1	48
Wood-processing-plant operators	15	19	8	16	1	-	59
Chemical-processing-plant operators	1	1	1	7	1	1	12
Power-production plant operators	5	1	3	-	6	1	16
Cement and other mineral products machine operators	1	7	1	7	2	2	20
Plastic-products machine operators	2	6	3	13	-	7	31
Printing-machine operators	7	6	-	8	1	4	26
Sewing-machine operators	-	8	1	1	1	-	11
Shoemaking- and related machine operators	-	15	3	-	-	1	19

Occupation	Hear- ing loss	Repeti- tive strain injuries	Allergic respir- atory diseases	Skin dis- eases	Asbestos- induced diseases	Others	Total
Baked-goods, cereal- and chocolate -products machine operators	4	13	8	8	-	6	39
Dairy-products machine operators	5	12	-	1	1	-	19
Meat- and fish-processing-machine operators	3	97	1	5	1	-	107
Electrical-equipment assemblers	-	4	4	4	1	-	13
Electronic-equipment assemblers	-	10	-	4	-	1	15
Mechanical-machinery assemblers	3	17	-	6	-	2	28
Wood and related products assemblers	2	2	4	4	-	5	17
Bus and tram drivers	5	1	-	1	5	1	13
Heavy truck and lorry drivers	14	17	2	6	7	-	46
Earth-moving and related plant operators	8	4	1	1	2	5	21
Lifting-truck operators	10	3	1	-	1	-	15
Others	27	42	7	18	14	11	119
<i>Elementary occupations</i>	<i>39</i>	<i>177</i>	<i>30</i>	<i>82</i>	<i>25</i>	<i>32</i>	<i>385</i>
Assistant nurses and hospital ward assistants	-	7	3	10	-	3	23
Cleaners	8	58	10	31	5	13	125
Kitchen helpers	3	10	3	24	-	3	43
Building caretakers	7	11	1	3	7	6	35
Construction and maintenance labourers: roads, dams and similar constructions	4	6	-	-	1	3	14
Manufacturing labourers	5	53	4	7	-	1	70
Transport labourers and freight handlers	11	27	9	6	6	2	61
Others	1	5	-	1	6	1	14
<i>Armed forces</i>	<i>47</i>	<i>4</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>51</i>
Military special personnel	5	-	-	-	-	-	5
Officers	22	-	-	-	-	-	22
Special officers	5	-	-	-	-	-	5
Warrant officers	15	4	-	-	-	-	19
<i>Occupation unknown</i>	<i>33</i>	<i>20</i>	<i>4</i>	<i>19</i>	<i>28</i>	<i>19</i>	<i>123</i>
<i>Economically inactive</i>	<i>1</i>	<i>14</i>	<i>1</i>	<i>6</i>	<i>1</i>	<i>13</i>	<i>36</i>
Total	821	1360	518	965	588	555	4807

**Table 6** Allergic respiratory diseases: cause and diagnosis

Cause	Allergic alveolitis	Asthma	Allergic rhinitis	ODTS	Total
Aromatic hydrocarbons	-	1	-	-	1
Phenols and phenolates (not chlorophenols)	-	1	-	-	1
Aliphatic aldehydes	-	3	-	-	3
Carboxylic acid anhydrides	-	2	4	-	6
Esters of aliphatic carboxylic acids (e.g. acrylates)	-	3	-	-	3
Hydroperoxides and peroxides	-	1	-	-	1
Amines	-	2	1	-	3
Amides (e.g. thiuram sulfides)	-	1	1	-	2
Isocyanates	-	6	-	-	6
Heterocyclic compounds (oxygen in ring)	-	2	-	-	2
Heterocyclic compounds (nitrogen in ring)	-	1	-	-	1
Polysaccharides	-	1	-	-	1
Inorganic bases	-	1	-	-	1
Chromium group metals and their compounds	-	3	-	-	3
Oils and lubricants	-	2	1	-	3
Synthetic resins and plastics	-	-	2	-	2
Natural rubber (latex)	-	1	-	-	1
Natural resins, balsams and their derivatives (except latex)	-	1	-	-	1
Resins, plastics and their derivatives (not specified)	-	1	-	-	1
Paints	-	1	-	-	1
Synthetic glues	-	1	1	-	2
Hair dyes	-	1	-	-	1
Pharmaceuticals	-	1	-	-	1
Detergents	-	1	-	-	1
Cosmetics	-	5	2	-	7
Cement, concrete	-	-	1	-	1
Flours, grains and fodders	-	42	40	-	82
Species of wood	1	10	5	-	16
Plants	-	3	11	-	14
Plant-derived dusts and substances	-	2	-	-	2
Animal epithelia, hairs or secretions/excretions	-	22	39	-	61
Other animal-derived dusts or substances	-	1	-	-	1
Organic materials, not listed elsewhere (not specified)	-	24	5	-	29
Sprays, fumes, dusts and smoke (mixtures)	-	15	-	-	15
Other chemical agents (not specified)	-	39	-	-	39
Yeasts	-	-	1	-	1
Molds	54	79	15	7	155
Mites	-	19	18	-	37
Toxins and toxoids	-	-	-	1	1
Other biological agents (not specified)	-	3	1	-	4
Unknown factors	-	2	3	-	5
<b>Total</b>	<b>55</b>	<b>304</b>	<b>151</b>	<b>8</b>	<b>518</b>

**Table 7** Skin diseases: cause and diagnosis

Cause	Allergic contact dermatitis	Irritant contact dermatitis	Skin infections	Protein contact dermatitis or contact urticaria	Others	Total
Temperature	-	2	-	-	1	3
Humidity	-	1	-	-	-	1
Warm moisture	-	4	-	-	-	4
Non-ionizing radiation	-	-	-	-	1	1
Aromatic hydrocarbons	-	1	-	-	-	1
Monohydric alcohols	2	1	-	-	-	3
Dihydric alcohols (glycols)	-	1	-	-	-	1
Phenols and phenolates (not chlorophenols)	1	-	-	-	-	1
Chlorophenols and chlorophenolates	1	-	-	-	-	1
Ethers of aromatic alcohols	1	-	-	-	-	1
Epoxides	8	-	-	-	-	8
Aliphatic aldehydes	17	1	-	-	1	19
Aldehydes (not specified)	-	1	-	-	-	1
Quinones	1	-	-	-	-	1
Aliphatic carboxylic acids	-	-	-	-	2	2
Percarboxylic acids and acyl peroxides	1	-	-	-	-	1
Carboxylic acid anhydrides	-	-	-	2	-	2
Esters of aliphatic carboxylic acids (e.g. acrylates)	22	1	-	-	1	24
Amines	6	-	-	-	-	6
Amides (e.g. thiuram sulfides)	16	-	-	1	-	17
Organic cyanides and nitriles (cyano compounds)	1	-	-	-	-	1
Isocyanates	1	-	-	-	2	3
Hydratzine, azo, diazo, and diazonium compounds	1	-	-	-	-	1
Heterocyclic compounds (sulfur in ring)	4	-	-	-	-	4
Organic zinc compounds	2	-	-	-	-	2
Inorganic gases containing sulfur	-	-	-	-	1	1
Inorganic acids	-	-	-	-	1	1
Inorganic bases	-	1	-	-	1	2
Boron and its compounds	1	-	-	-	1	2
Arsenic and its compounds	-	1	-	-	-	1

Cause	Allergic contact dermatitis	Irritant contact dermatitis	Skin infections	Protein contact dermatitis or contact urticaria	Others	Total
Sulfur, carbon disulfide and ammonium sulfate derivatives	3	1	-	-	-	4
Tin, lead and their compounds	-	-	-	-	1	1
Copper and platinum metals and their compounds	1	-	-	-	-	1
Zinc, cadmium, mercury and their compounds	1	-	-	-	1	2
Chromium group metals and their compounds	12	-	-	-	-	12
Cobalt, nickel and their compounds	39	-	-	-	3	42
Metals and metallic compounds (not specified)	4	-	-	-	-	4
Crude oil based organic solvent mixtures	-	2	-	-	-	2
Organic solvent mixtures, not specified	-	17	-	1	2	20
Crude oil based fuels	-	1	-	-	-	1
Oils and lubricants	3	41	-	-	3	47
Synthetic resins and plastics	30	2	-	-	3	35
Natural rubber (latex)	-	1	-	9	1	11
Natural resins, balsams and their derivatives (except latex)	24	-	-	-	-	24
Resins, plastics and their derivatives (not specified)	2	2	-	-	2	6
Paints	-	3	-	-	1	4
Varnishes	-	1	-	-	-	1
Synthetic glues	4	1	-	1	2	8
Natural glues	-	1	-	-	-	1
Glues (not specified)	1	1	-	-	1	3
Rubbers	-	-	-	-	1	1
Printing inks	1	-	-	-	1	2
Fur dyes	1	-	-	-	-	1
Hair dyes	9	-	-	-	-	9
Pharmaceuticals	3	-	-	1	-	4
Rubber chemicals	37	-	-	1	-	38
Detergents	1	58	-	-	-	59
Disinfectants	1	5	-	-	-	6
Cosmetics	1	8	-	1	-	10
Perfumes and aromatic substances	5	-	-	-	-	5

Cause	Allergic contact dermatitis	Irritant contact dermatitis	Skin infections	Protein contact dermatitis or contact urticaria	Others	Total
Preservatives and antimicrobial agents	8	1	-	-	1	10
Other known substances classified according to their use	3	1	-	-	-	4
Synthetic mineral fibers	-	3	-	-	-	3
Cement, concrete	-	9	-	-	6	15
Other known minerals and synthetic fibers	-	1	-	-	-	1
Textiles	-	2	-	-	-	2
Flours, grains and fodders	3	2	-	27	1	33
Species of wood	2	3	-	2	-	7
Plants	16	4	-	6	2	28
Animal epithelia, hairs or secretions/excretions	2	-	-	50	-	52
Other animal-derived dusts or substances	-	2	-	4	1	7
Enzymes	-	-	-	2	-	2
Organic materials, not listed elsewhere (not specified)	2	1	-	1	5	9
Sprays, fumes, dusts and smoke (mixtures)	-	4	-	-	-	4
Wet work	-	42	-	-	2	44
Dirty work	-	24	-	-	6	30
Handling of foodstuffs	1	14	-	4	2	21
Other chemical agents (not specified)	20	27	-	1	17	65
Molds	-	-	-	-	5	5
Dermatophytes	-	-	19	-	-	19
Eubacteria	-	-	1	-	2	3
Bacteria (not specified)	-	-	1	-	-	1
Poxviruses	-	-	1	-	-	1
Mites	-	-	90	-	-	90
Insects	-	-	-	-	1	1
Other biological agents (not specified)	-	1	-	-	-	1
Mechanical friction of the skin	-	9	-	-	2	11
Unknown factors	4	3	-	1	8	16
<b>Total</b>	<b>330</b>	<b>313</b>	<b>112</b>	<b>115</b>	<b>95</b>	<b>965</b>

**Table 8** Diseases by EU classification<sup>1</sup> and gender

Code	Disease	Men	Women	Total
<i>1</i>	<i>Diseases caused by the following chemical agents:</i>	<i>76</i>	<i>62</i>	<i>138</i>
100	Acrylonitrile	-	1	1
101	Arsenic or compounds thereof	2	-	2
102	Beryllium (glucinium) or compounds thereof	-	-	-
10301	Carbon monoxide	2	1	3
10302	Carbon oxychloride	-	-	-
10401	Hydrocyanic acid	-	-	-
10402	Cyanides or compounds thereof	-	2	2
10403	Isocyanates	8	3	11
105	Cadmium or compounds thereof	-	-	-
106	Chromium or compounds thereof	15	1	16
107	Mercury or compounds thereof	-	2	2
108	Manganese or compounds thereof	-	-	-
10901	Nitric acid	1	-	1
10902	Oxides of nitrogen	-	-	-
10903	Ammonia	-	1	1
110	Nickel or compounds thereof	12	26	38
111	Phosphorus or compounds thereof	-	-	-
112	Lead or compounds thereof	5	-	5
11301	Oxides of sulphur	1	-	1
11302	Sulphuric acid	1	-	1
11303	Carbon disulphide	1	-	1
114	Vanadium or compounds thereof	-	-	-
11501	Chlorine	3	-	3
11502	Bromine	-	-	-
11504	Iodine	-	-	-
11505	Fluorine or compounds thereof	-	-	-
116	Aliphatic or alicyclic hydrocarbons derived from petroleum spirit or petrol	4	-	4
117	Halogenated derivatives of aliphatic or alicyclic hydrocarbons	-	1	1
118	Butyl, methyl and isopropyl alcohol	1	-	1
119	Ethylene glycol, diethylene glycol, 1,4-butanediol and the nitrated derivatives of the glycols and of glycerol	1	-	1
120	Methyl ether, ethyl ether, isopropyl ether, vinyl ether, dichloroisopropyl ether, guaiacol, methyl and ethyl ether of ethylene glycol	-	-	-
121	Acetone, chloroacetone, bromoacetone, hexafluoroacetone, methyl ethyl ketone, methyl n-butyl ketone, methyl isobutyl ketone, diacetone alcohol, mesityl oxide, 2-methylcyclohexanone	1	-	1

Code	Disease	Men	Women	Total
122	Organophosphorus esters	-	-	-
123	Organic acids	4	-	4
124	Formaldehyde	7	11	18
125	Aliphatic nitrated derivatives	-	1	1
12601	Benzene or counterparts thereof (the counterparts of benzene are defined by the formula: $C_nH_{2n-6}$ )	1	1	2
12602	Naphthalene or naphthalene counterparts (the counterparts of naphthalene are defined by the formula: $C_nH_{2n-12}$ )	-	-	-
12603	Vinylbenzene and divinylbenzene	1	-	1
127	Halogenated derivatives of aromatic hydrocarbons	-	1	1
12801	Phenols or counterparts or halogenated derivatives thereof	-	2	2
12802	Naphthols or counterparts or halogenated derivatives thereof	-	-	-
12803	Halogenated derivatives of the alkylaryl oxides	-	-	-
12804	Halogenated derivatives of the alkylaryl sulfonates	-	-	-
12805	Benzoquinones	-	-	-
12901	Aromatic amines or aromatic hydrazines or halogenated, phenolic, nitrified, nitrated or sulfonated derivatives thereof	2	6	8
12902	Aliphatic amines and halogenated derivatives thereof	3	2	5
13001	Nitrated derivatives of aromatic hydrocarbons	-	-	-
13002	Nitrated derivatives of phenols or their counterparts	-	-	-
131	Antimony and derivatives thereof	-	-	-
<b>2</b>	<i>Skin diseases caused by substances and agents not included under other headings</i>	<b>328</b>	<b>414</b>	<b>742</b>
201	Skin diseases and skin cancers caused by:	-	-	-
20101	Soot	-	-	-
20102	Tar	-	-	-
20103	Bitumen	-	-	-
20104	Pitch	-	-	-
20105	Anthracene or compounds thereof	-	-	-
20106	Mineral and other oils	45	3	48
20107	Crude paraffin	-	-	-
20108	Carbazole or compounds thereof	-	-	-
20109	By-products of the distillation of coal	-	-	-
202	Occupational skin ailments caused by scientifically recognized allergy provoking or irritative substances not included under other headings	283	411	694
<b>3</b>	<i>Diseases caused by the inhalation of substances and agents not included under other headings</i>	<b>434</b>	<b>303</b>	<b>737</b>
301	Diseases of the respiratory system and cancers:	-	-	-
30111	Silicosis	6	-	6
30112	Silicosis combined with pulmonary tuberculosis	-	-	-
30121	Asbestosis	86	2	88
30122	Mesothelioma following the inhalation of asbestos dust	46	2	48

Code	Disease	Men	Women	Total
30131	Pneumoconioses caused by dusts of silicates	1	-	1
302	Complication of asbestos in the form of bronchial cancer	83	1	84
303	Broncho-pulmonary ailments caused by dusts from sintered metals	-	-	-
30401	Extrinsic allergic alveolites	23	32	55
30402	Lung diseases caused by the inhalation of dusts and fibres from cotton, flax, hemp, jute, sisal and bagasse	-	-	-
30403	Respiratory ailments of an allergic nature caused by the inhalation of substances consistently recognized as causing allergies and inherent to the type of work	189	266	455
30404	Respiratory ailments caused by the inhalation of dust from cobalt, tin, barium and graphite	-	-	-
30405	Siderosis	-	-	-
30501	Cancerous diseases of the upper respiratory tract caused by dust from wood	-	-	-
<b>4</b>	<b><i>Infectious and parasitic diseases:</i></b>	<b>83</b>	<b>30</b>	<b>113</b>
401	Infectious or parasitic diseases transmitted to man by animals or remains of animals	78	17	95
402	Tetanus	-	-	-
403	Brucellosis	-	-	-
404	Viral hepatitis	1	1	2
405	Tuberculosis	4	12	16
406	Amoebiasis	-	-	-
<b>5</b>	<b><i>Diseases caused by the following physical agents:</i></b>	<b>1475</b>	<b>588</b>	<b>2063</b>
50201	Cataracts caused by heat radiation	-	-	-
50202	Conjunctival ailments following exposure to ultraviolet radiation	62	1	63
503	Hypoacusis or deafness caused by noise	765	55	820
504	Diseases caused by atmospheric pressure or decompression	1	-	1
50501	Osteoarticular diseases of the hands and wrists caused by mechanical vibration	-	-	-
50502	Angioneurotic diseases caused by mechanical vibration	11	1	12
50610	Diseases of the periarticular sacs due to pressure	21	1	22
50621	Diseases due to overstraining of the tendon sheaths	315	235	550
50622	Diseases due to overstraining of the peritendineum	-	-	-
50623	Diseases due to overstraining of the muscular and tendonous insertions	278	261	539
50630	Meniscus lesions following extended periods of work in a kneeling or squatting position	-	-	-
50640	Paralysis of the nerves due to pressure	21	33	54
507	Miner's nystagmus	-	-	-
508	Diseases caused by ionizing radiation	1	1	2
	<b><i>Diseases not included to the European schedule</i></b>	<b>613</b>	<b>401</b>	<b>1014</b>
	<b>Total</b>	<b>3009</b>	<b>1798</b>	<b>4807</b>

\*Included in 50621





# Appendices

- 1 The Register of Occupational Diseases
- 2 Act on Occupational Diseases (1343/88)
- 3 Ordinance on Occupational Diseases (1347/88)
- 4 Statute on Certain Injuries Compensable as Occupational Accidents (852/48)

## Appendix 1 The Register of Occupational Diseases

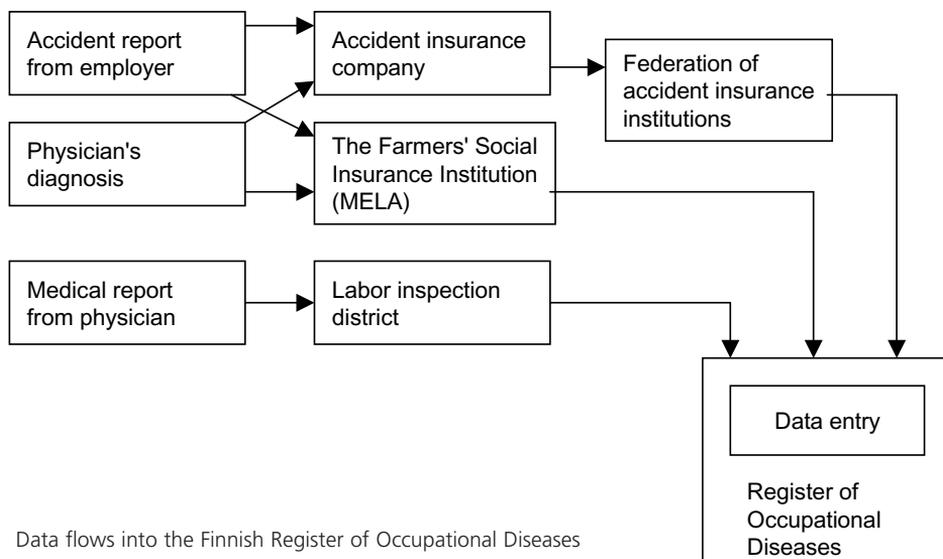
The Finnish Register of Occupational Diseases (FROD) was established at the Finnish Institute of Occupational Health (FIOH) in 1964. The objectives of the FROD are to serve as a source of statistics on occupational diseases, and to promote research on occupational health. The FROD is maintained by the Surveillance Section of the FIOH. Altogether 176,000 cases of occupational diseases, of which about 34,000 are skin diseases, have accumulated in the Register during 1964–2002.

### Unit of observation

A diagnosed case of occupational disease is the statistical unit of observation. The FROD obtains its information from two sources. Notification of every new case reported to the insurance companies as an occupational disease is sent to the Register. According to the Act on the Supervision of Labor Protection; physicians are obligated to report cases of occupational diseases and work-related illnesses to the provincial labour protection authority, which then forwards the reports to the FIOH. Information from these two sources is combined so that each new permanent occupational disease is registered only once.

### Information in the FROD

A recorded case of an occupational disease contains identification data on the person (personal ID -number, name, sex, age, occupational title), information on the employer (name, industry, location), description of the disease (diagnosis, date of diagnosis), information on causes (exposures and exposure times) and information on compensation and severity.



Data flows into the Finnish Register of Occupational Diseases

<b>Disease groups</b>	In the statistics, occupational diseases are classified according to diagnosis and cause in the following disease groups:
Hearing loss	Noise-induced hearing loss refers to the deterioration of hearing due to prolonged exposure to noise or sometimes also due to momentary impulse noise.
Repetitive strain injury	A repetitive strain injury is a musculoskeletal disease, caused by non- physiological stress in work (repetitive and monotonous work, unusual working postures). The group includes tenosynovitis, peridentinitis, epicondylitis, bursitis and mononeuropathy.
Allergic respiratory diseases	Allergic respiratory diseases include asthma, allergic rhinitis, allergic alveolitis and organic dust toxic syndrome (ODTS).
Skin diseases	Occupational skin diseases are caused by chemical agents or micro-organisms in the work environment; the most important diseases in this group are irritant contact dermatitis, allergic contact dermatitis and protein contact dermatitis/contact urticaria.
Asbestos-induced diseases	This group includes all occupational diseases caused by asbestos, pleural adhesions and calcifications being the most frequent. Cancer and asbestosis are the most severe diseases in this group.
Others	This group includes, e.g., infectious diseases, conjunctivitis, vibration syndrome, and various types of poisoning.
<b>Defects and sources of error</b>	The coverage of the FROD is not complete. Some physicians unfortunately neglect to report occupational diseases. Also, not all physicians have training in occupational medicine, and thus may fail to connect diseases with working conditions. Information is also lacking on cases which were reported to insurance companies but were finally not accepted as occupational disease. For these reasons, some occupational diseases are neither diagnosed nor recorded.
<b>Secrecy of information</b>	The information in the FROD is secret according to both the Act on the Supervision of Labor Protection and the Act on Insurance of Occupational Injuries. Information may be used only for scientific research, official plans or studies, and statistical purposes. The Register is also regulated by the Personal Data Act and by the Act on the Openness of Government Activities. Only the persons authorized by the controller are allowed process personal data. The authorized persons shall not disclose the secret data. The person responsible for the FROD is Dr. Timo Kauppinen, the chief of the Surveillance Section of the FIOH.

**Additional information**

A Finnish statistical review of occupational diseases is compiled every year. Statistical reports from the FROD are compiled on request. Requests for reports and other information may be addressed to Dr. Timo Kauppinen, Finnish Institute of Occupational Health, Topeliuksenkatu 41 a A, FIN-00250 Helsinki, Finland tel. + 358 9 47471 fax + 358 9 2414 634, email: timo.kauppinen@fioh.fi.

**Recent publications**

Riihimäki H, Kurppa K, Karjalainen A, Aalto L, Jolanki R, Keskinen H, Mäkinen I, Saalo A. Ammatitaudit 2002 [Occupational diseases in 2002]. Katsauksia 147. Työterveyslaitos 2003.

Karjalainen A, Aalto L, Jolanki R, Keskinen H, Mäkinen I, Savela A. Occupational diseases in Finland in 1999. Finnish Institute of Occupational Health 2001.

## **Appendix 2 Act on Occupational Diseases (1343/88)**

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### **(Unofficial translation)**

1 § An occupational disease that is entitled to compensation according to the Accident Insurance Act (608/48) or the Act on Agricultural Workers' Accident Insurance (102/81) or the Act entitling persons employed in public service or holding public office to compensation in the event of an accident (154/35), is a disease caused by any physical factor, chemical substance or biological agent encountered in the course of work done under contract of employment, in the public service or in public office or as an agricultural entrepreneur, as prescribed in those acts.

What is stated in the first subsection on occupational diseases, shall also be applied to notable worsening of another disease or injury than occupational during the period of this deterioration.

2 § The ordinance states that the causal connection between the disease mentioned in the first subsection of Paragraph 1 and a physical, chemical or biological factor in work is regarded as existing when such a factor has been present in the work to such an extent that it principally can cause the disease designated by the Act.

3 § Liability for compensation, the amount of compensation payable, and the procedure to be followed for that purpose shall be governed by the Accident Insurance Act, the Act on Agricultural Workers' Accident Insurance, and the Act entitling persons employed in public service or holding public office to compensation in the event of accident.

For this purpose the date on which the disease manifests shall be equated with the date of occurrence of the accident. If other specific reasons do not require it, the date of manifestation of the disease shall be determined as the date when a person has sought medical advice, for the first time, from a doctor concerning a later diagnosed occupational disease. The time limit within which compensation must be claimed shall invariably be reckoned as beginning on the date on which the disease is diagnosed or the incapacity of the person begins.

When a worker, agricultural entrepreneur or person employed in public service or holding public office is not, on the appearance of an occupational disease, engaged in a process that could have been the cause of the disease, liability for compensation shall be determined on the basis of the employment, agricultural entrepreneurship, public service or public office in which he was last engaged in a process that could have been the cause of the disease.

- 4 § The Ordinance states more precisely:
- 1) the determination of the disease and the factors exposing to it;
  - 2) the liability for compensation in the case of tendovaginitis and humeral epicondylitis;
  - 3) the other measures of execution of this Act.
- 5 § A copy of this Act and the Ordinance made thereunder shall be posted and kept available by the employer at the workplace.
- 6 § This Act will be in force as of 11 January 1989 and repeal the Act on Occupational Diseases (638/67) and its later modifications.

## Appendix 3 Ordinance on Occupational Diseases (1347/88) (Unofficial translation)

- 1 § Diagnosis of a disease as an occupational disease requires such medical examination where there is sufficient knowledge about exposure in the work and where in the case of occupational diseases designated by the Act on Occupational Diseases in Paragraph 2 a specialist in the field is in charge.
- 2 § A disease shall be deemed as occupational according to 2 § and the first subsection of 4 § and later in 3 §, when the physical, chemical or biological factor mentioned in the paragraph is present in a person's work, and is covered by subsection 1 of 1 § in the Act on Occupational Diseases, to such an extent that its exposure effect is sufficient to cause the disease in question, unless it is stated that the disease has been clearly caused by exposure outside work.
- 3 § The following are the diseases and the physical, chemical and biological factors referred to in Paragraph 2:

### Physical factors

	Typical forms of disease
1. Vibration	White finger syndrome; polyneuropathy of the upper limb.
2. Noise	Cochlear type of deterioration of hearing.
3. Overpressure	Direct effects of changes in pressure, such as maxillary haemorrhages and tympanic ruptures, indirect effects of pressure such as nitrous inebriation and diver's disease; as a long-term effect an aseptic bone necrosis of the big joints.
4. Ionizing radiation	Bone marrow injuries, lens opacities, skin changes (dermatitis, wounds, scars, skin cancer).
5. Infrared radiation	Lens opacities, e.g. glassblower's cataract; skin changes (connective tissue changes, teleangiectasis).
6. Ultraviolet radiation	Conjunctivitis and keratitis of the eye; skin changes (photodermatitis, photocontact dermatitis).

## Chemical factors

	Typical forms of disease
1. Arsenic and its compounds	Acute arsenic intoxication (gastro-intestinal, respiratory, and nervous symptoms); long-term respiratory, mucous membrane symptoms; conjunctival irritation of the eye; skin changes like chronic dermatitis, skin pigmentation, hyperkeratosis, skin cancer; pulmonary cancer; peripheral neuropathies.
2. Beryllium and its compounds	Irritation of mucous membranes; chemical pneumonitis in high exposure; chronic berylliosis; skin changes (contact dermatitis, foreign body reaction, e.g. granuloma); pulmonary cancer.
3. Mercury and its compounds	Irritation of mucous membranes and gastro-intestinal tract in acute intoxication, sometimes chemical pneumonitis. In subchronic or chronic intoxication the symptoms vary according to individual factors and form of exposure: symptoms of the mouth (gingivitis); peripheral and central nervous injuries (e.g. shakes, psychic changes); renal injuries (albuminuria); and in connection with the injuries, elevated mercury levels in urine and blood; skin changes (contact dermatitis or other widespread rash).
4. Phosphorus and its compounds	Injuries of bone and liver; respiratory irritation; central nervous symptoms; caustic injuries of the skin; depression of cholinesterase activity of the tissues in organic phosphorus compound intoxications.
5. Cadmium and its compounds	Acute intoxication with strong respiratory symptoms (chemical pneumonitis); chronic intoxication (renal injuries, emphysema); skin changes (contact dermatitis); pulmonary cancer.
6. Cobalt and its compounds	Skin changes (contact dermatitis); rhinitis and asthma due to cobalt allergy; hard metal lung.
7. Chromium and its compounds	Local dermatic or mucosal irritation or corrosion caused by chromium (chrome wounds); skin changes (contact dermatitis); rhinitis and asthma due to chromium compound allergy; pulmonary cancer; cancer of the nasal accessory sinuses.

## Typical forms of disease

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<b>8. Lead and its compounds</b>	The first sign of subchronic or chronic inorganic lead intoxication is disturbed haemoglobin synthesis, later anaemia, reticulocytosis, peripheral nerve injuries, gastrointestinal symptoms, liver and kidney injuries, and central nervous symptoms. Organic lead intoxication is characterized by central nervous symptoms. In inorganic lead intoxication symptoms are associated with elevated blood lead level and elevated erythrocyte protoporphyrin values, and in organic lead intoxication with elevated lead levels in blood and urine.
<b>9. Manganese and its compounds</b>	Acute chemical pneumonitis; chronic manganese intoxication (manganism), dominated by nervous symptoms.
<b>10. Nickel and its compounds</b>	Skin changes (contact dermatitis); rhinitis and asthma due to nickel allergy; chemical pneumonitis caused by nickel carbonyl; sinus and pulmonary cancer.
<b>11. Zinc and its compounds</b>	Zinc fever; skin changes caused by zinc chloride (contact dermatitis, corrosion).
<b>12. Vanadium and its compounds</b>	Irritation of respiratory tract (chemical pneumonitis, bronchial constriction).
<b>13. Halogens and their inorganic compounds (chlorine, bromine, fluorine)</b>	Irritation and corrosion of mucous membranes and conjunctiva; chemical pneumonitis; bone changes caused by fluorine compounds (fluorosis); fever caused by fluorine polymer dispersion products (polymer fever); skin changes (contact dermatitis, corrosion caused by fluorides)
<b>14. Cyano compounds</b>	Acute cyanide intoxication, chronic intoxication (respiratory symptoms, nervous symptoms); respiratory diseases caused by isocyanates (asthma).
<b>15. Carbon disulfide</b>	Acute intoxication with mainly central nervous symptoms; chronic intoxication by carbon disulfide with central and peripheral nervous symptoms, possibly associated with coronary heart disease.
<b>16. Hydrogen sulfide</b>	Acute intoxication with symptoms of mainly the respiratory and central nervous system and pulmonary oedema.
<b>17. Sulfur dioxide and sulfuric acid</b>	Irritative and inflammatory symptoms of mucous membranes and respiratory organs; corrosion of teeth and eyes; skin changes (contact dermatitis, corrosion).

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### Typical forms of disease

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<b>18. Nitrogen oxides, nitric acid and ammonia</b>	Acute respiratory irritation symptoms; pulmonary oedema; local irritation or corrosion of mucous membranes; skin changes (contact dermatitis, corrosion).
<b>19. Carbon monoxide</b>	Acute intoxication caused by carbon monoxide with mainly central nervous symptoms. The clinical picture is associated with elevation of carbon monoxide haemoglobinemia.
<b>20. Phosgene</b>	Acute irritative symptoms of respiratory tract and conjunctival tissues; pulmonary oedema.
<b>21. Inorganic bases and their anhydrides</b>	Skin changes (contact dermatitis, corrosion); acute irritation or corrosion symptoms of conjunctiva, mucous membranes, respiratory or gastro-intestinal tract.
<b>22. Aliphatic, aromatic and alicyclic hydrocarbons</b>	Mainly acute and chronic intoxications of the central and peripheral nervous system; skin changes (contact dermatitis); leukaemias caused by benzene; hemangiosarcoma of the liver caused by vinyl chloride.
<b>23. Halogenated derivatives of hydrocarbons</b>	Acute and chronic mainly nervous system intoxications; skin changes (contact dermatitis); cardiac arrhythmias and irritative respiratory symptoms caused by freons.
<b>24. Nitro and amino derivatives of hydrocarbons, amines</b>	Acute intoxications associated with methaemoglobinemia; haemolytic anaemia, liver and eye changes caused by trinitrotoluene; skin changes (contact dermatitis); asthma caused by amines; cancer of the urinary bladder caused by aromatic amines.
<b>25. Nitroglycerol and nitroglycol</b>	Symptoms of the central nervous and circulatory systems (i.e. hypotension, vasodilation) caused either by acute or by chronic intoxication; skin changes (contact dermatitis).
<b>26. Aldehydes, ketones, alcohols ethers and esters</b>	Skin changes (contact dermatitis); asthma and rhinitis caused by formaldehyde; acute mainly central nervous system intoxications caused by alcohols, ketones, ethers and esters; leukaemias caused by ethylene oxide.
<b>27. Organic acids and acid anhydrides</b>	Irritation and corrosion of skin and mucous membranes; asthma and rhinitis caused by acid anhydrides (i.e. phthalic acid, maleic acid and trimellitic acid anhydride).

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## Typical forms of disease

<b>28. Phenol and its homologs and their halogen and nitro derivatives</b>	Acute intoxications with respiratory, hepatic, renal and central nervous system symptoms; chronic intoxication with central nervous and gastro-intestinal symptoms; skin changes (contact dermatitis, changes in pigmentation); haemolytic anaemia; methaemoglobinemia; hepatic cancer caused by polychlorinated biphenyls.
<b>29. Antibiotics</b>	Skin changes (contact dermatitis); respiratory allergies.
<b>30. Cancer drugs</b> Alkylating substances (cyclophosphamide, chlorambusil, melphalan, semustine, kermustine, lomustine) and antimetabolites (azathioprine).	Leukaemias, lymphohaematopoietic cancers and bladder cancer.
<b>31. Plastics and synthetic resins and the substances and intermediates involved in their production</b>	Respiratory diseases (asthma, rhinitis); skin changes (contact dermatitis).
<b>32. Organic dusts and exposures</b> I.e. flours, grain, wood dusts and materials, animal epithelia, excretions and other exposures of animal origin, dusts of natural fibers and enzymes, natural resins, india rubber.	Skin changes (contact dermatitis, contact urticaria, protein contact dermatitis); allergic rhinitis, conjunctivitis or pulmonary asthma caused by organic dust, Monday fever (byssinosis) caused by raw cotton.
<b>33. Mineral dusts</b>	Pulmonary diseases caused by quartz and asbestos dust (pneumoconiosis); pulmonary cancer and mesothelioma caused by asbestos; consequences of pneumoconiosis in respiratory and circulatory organs.
<b>34. Thiurams, carbamates, derivatives of paraphenylene diamines</b>	Skin changes (contact dermatitis).
<b>35. Reactive and dispersion dyes</b>	Skin changes (contact dermatitis); asthma and rhinitis caused by reactive dyes.
<b>36. Aflatoxins</b>	Cancer of liver. Biological factors

## Biological factors

### Typical forms of disease

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1. Spores released by bacteria and molds and bacteria and molds and other biologically active substances

Allergic alveolitis; asthma and rhinitis caused by molds; humidifier fever.

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2. Tuberculosis bacilli

Different forms of tuberculosis.

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3. Viruses, bacteria, fungi, protozoa and schistosomes

Hepatitis B, paravaccinia, erysipeloid, brucellosis, anthrax, listeriosis, skin mycosis, toxoplasmosis, malaria, bilharziosis.

4 § Tendovaginitis and humeral epicondylitis in subsection two of 4 § in the Act on Occupational Diseases are compensated as occupational diseases caused by a physical factor when caused by performing repetitive, monotonous or strained movements as designated in subsection one of 1 § of the Act on Occupational Diseases.

5 § This ordinance will come into effect as of January 1989.

The ordinance (850/48) of 3 December 1948 passed under the Accident Insurance Act and the Act on Occupational Diseases shall remain in force in so far as it relates to occupational diseases.

## **Appendix 4 Statute on Certain Injuries Compensable as Occupational Accidents (852/48)**

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(Unofficial translation)

- 1 § According to the Statute on Certain Injuries Compensable as Occupational Accidents (852/48), passed in 1948, the following conditions are to be compensated in the same manner as occupational diseases or accidents, i.e., if they are caused by work factors:
- 1) sores and galls
  - 2) lesion caused by a corrosive substance
  - 3) lesion due to inhalation of a dangerous gas
  - 4) inflammation of the patella or elbow due to repeated or unusual pressure
  - 5) tendinitis crepitans due to repeated or monotonous work movements if it is not a complication of some defect, injury or illness that is not compensable under the Occupational Accident Insurance Act
  - 7) lesion attributable to extreme temperatures, for example, frostbite or sunstroke
  - 8) lesion due to considerable fluctuation in air pressure.
- 2 § This ordinance will come into effect on 1 January 1949.

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