Occupational diseases in Finland in 1999

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

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Preface

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 1999, 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 1999.

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 diagnosed case 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. Antti Karjalainen (Finnish Institute of Occupational Health, Topeliuksenkatu 41 a A, FIN-00250 Helsinki, Finland, fax int.+ 358-9-2414 634)

Helsinki, December 2000

The authors

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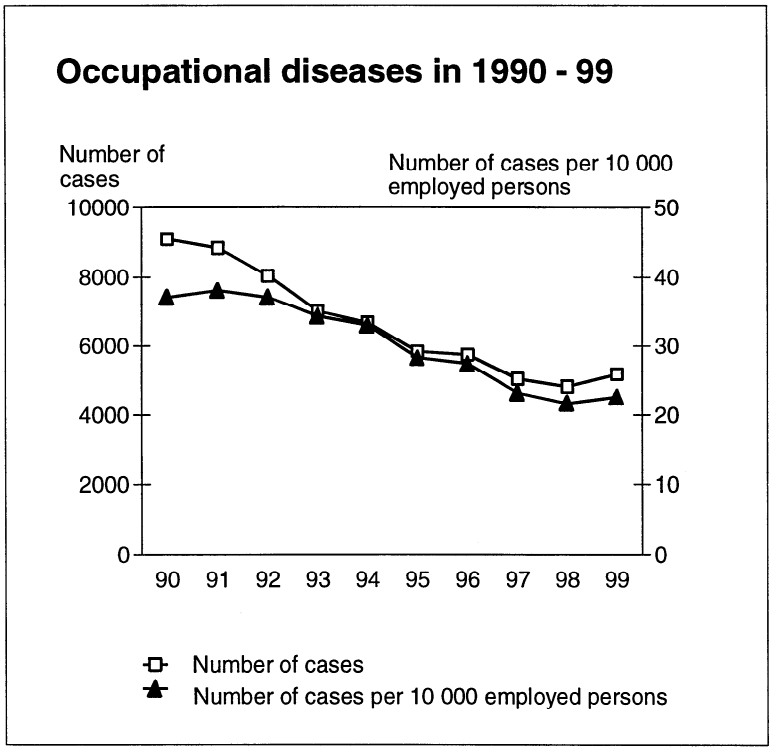
I Review of occupational diseases in 1999

1 Occupational diseases

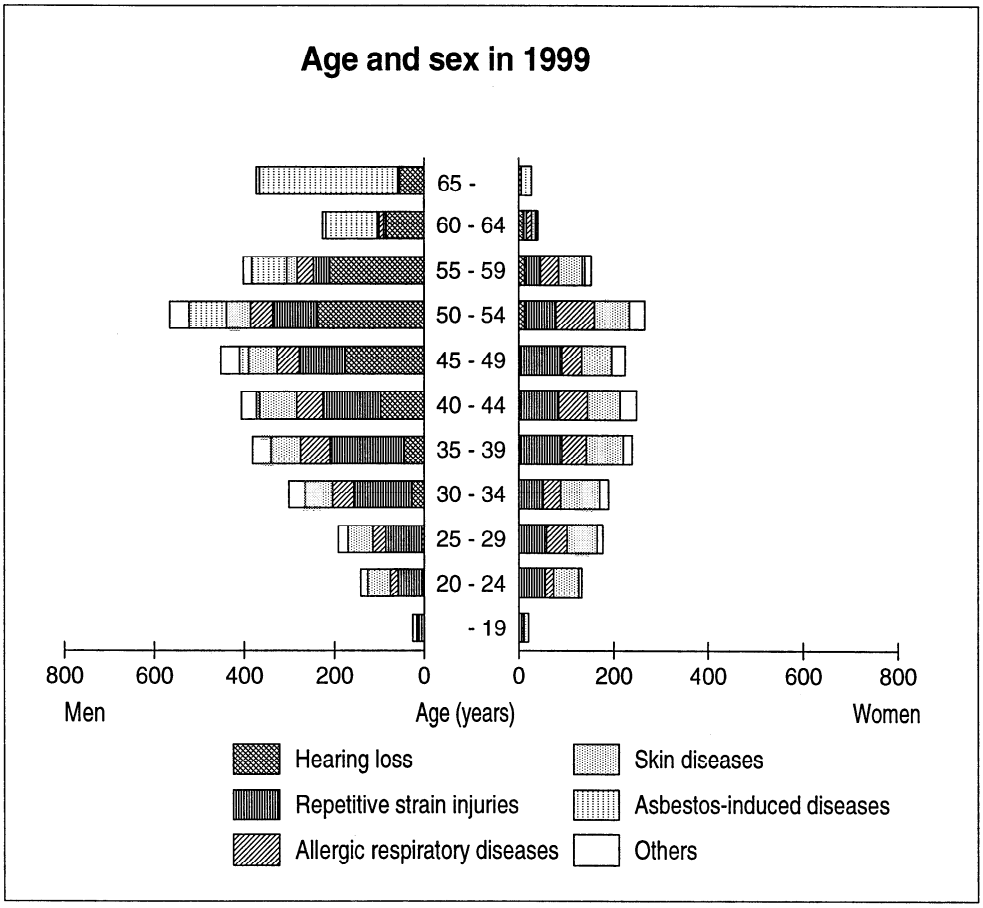


In 1999 a total of 5182 occupational diseases were reported by physicians or insurance companies to the Finnish Register of Occupational Diseases maintained by the Finnish Institute of Occupational Health (FIOH). This is 366 cases (8%) more than in 1998. Of the main occupational disease categories, the number of allergic respiratory diseases increased by 22%, the number of asbestos-induced diseases by 9% and the number of cases of hearing loss by 6%.

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 insurance technical date of occurrence 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 1999, for every 10 000 employed workers, 23 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 1999 thus reflect the working conditions of the 1990s. 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 in the 1990s.



In 1999, 3466 cases of occupational diseases were reported in men and 1716 in women. The proportion of cases among women (33%) was slightly less than in 1998 (35%) or 1997 (37%). 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 41 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 sex distribution of occupational diseases.

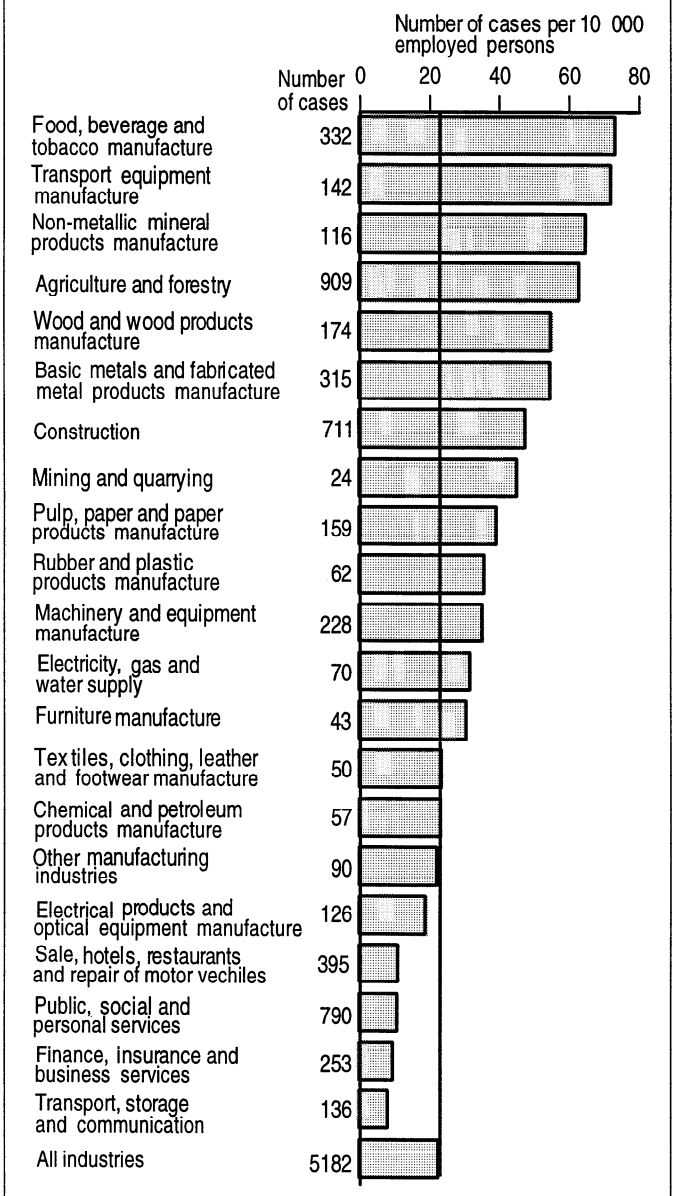
The highest absolute numbers of occupational diseases occurred in agriculture and forestry, in public, social and personal services, and in the construction industry. The highest incidence rate of occupational diseases, however, occurred in the food, beverage and tobacco industry, and the manufacture of transport equipment, followed by the manufacture of non-metallic mineral products, agriculture and forestry, and the manufacture of metals and metal products. The most important occupational disease group in the food, beverage and tobacco industry was repetitive strain injuries (64% of all cases). In the manufacture of transport equipment 33% of the reported cases suffered from asbestos-induced diseases, and in the manufacture of metal products 29% suffered from noise-induced hearing loss.

In agriculture and forestry, allergic respiratory diseases accounted for 44%, repetitive strain injuries for 23% and skin diseases for 18% of the reported occupational diseases. Animal epithelia (24%) and repetitive monotonous work (20%) were the most important causes of occupational disease in agriculture and forestry.

In construction, asbestos-induced diseases accounted for 42% 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 .

Industries in 1999



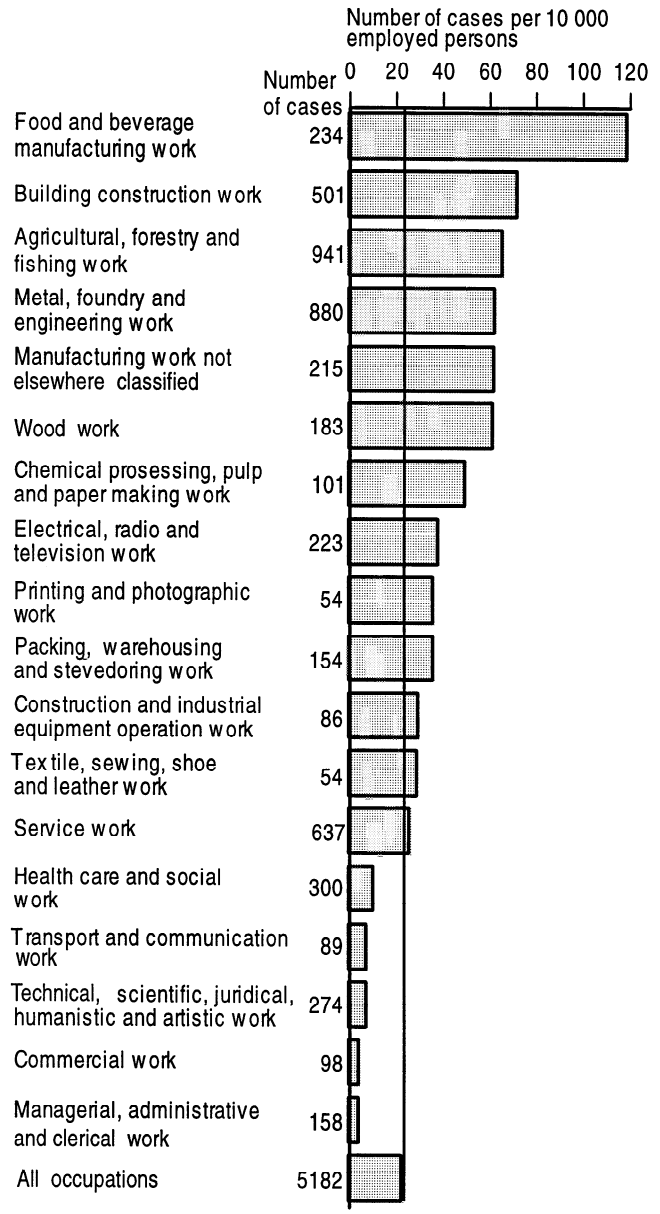
As a general rule, a more accurate estimate of an individual's risk of occupational disease can be given according to his/her occupation, rather than according to the industry where he/she works. This is due to the fact that the industry-specific rates include also the white-collar workers from the same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

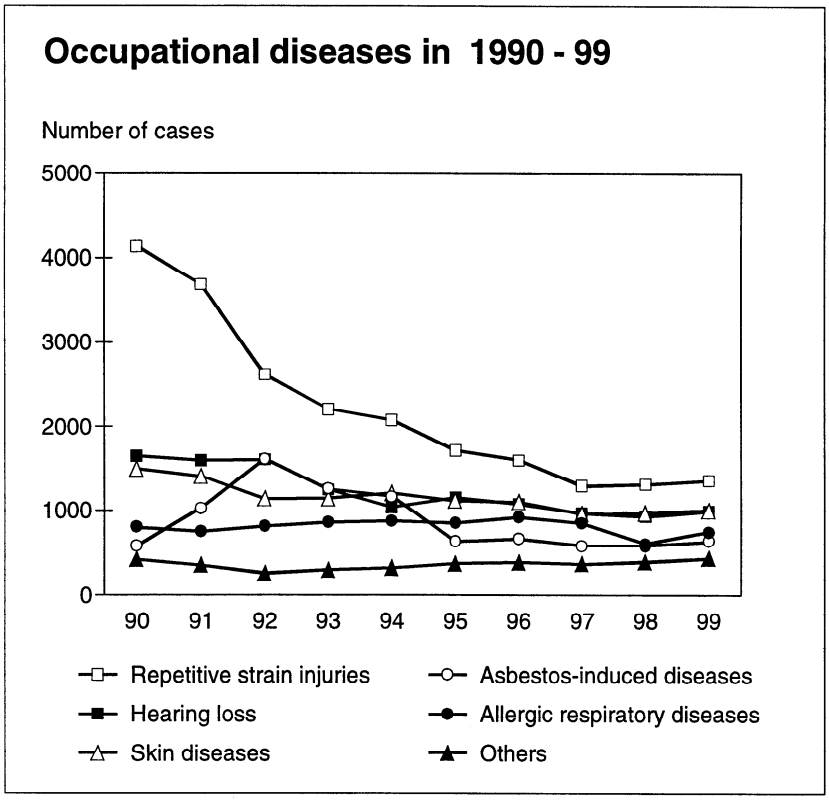
As in previous years, the highest incidence rate of occupational diseases was observed for work in the food and beverage industry. In this occupational category, there was a slight decrease both in the absolute number (6%) and the incidence rate (9%) of occupational diseases.

Also in agriculture, forestry and fishing, and metal work, both the number of cases and the incidence rate of occupational diseases were high. In both of these industries, about 900 cases were reported in 1999. In metal work, the number of cases and the incidence rate increased by 10%. In agriculture, forestry and fishing there was an increase of about 15% in both the number of cases and the incidence rate. The number of cases of allergic alveolitis increased by 200% in agriculture. This was due to the non-favourable weather conditions of the previous summer and the consequent exposure to mouldy hay during the indoor feeding period.

Table 5 contains more detailed information on the occupational distribution of occupational diseases.

Occupations in 1999





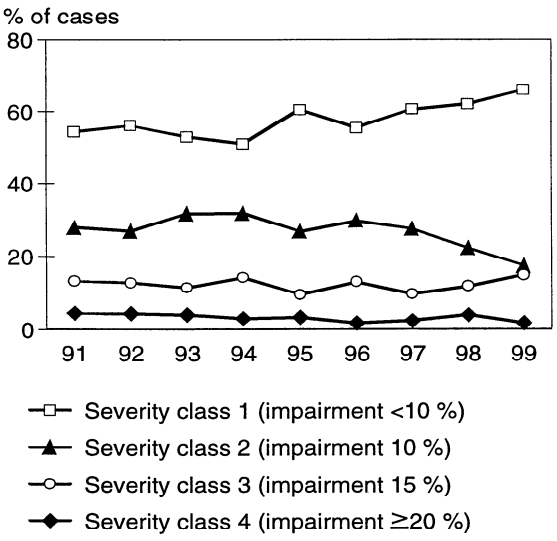
In this review, the reported occupational diseases are discussed in terms of six disease groups: 1) noise-induced hearing loss, 2) repetitive strain injuries, 3) allergic respiratory diseases, 4) skin diseases, 5) asbestos-induced diseases, and 6) other occupational diseases. In addition, information 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.

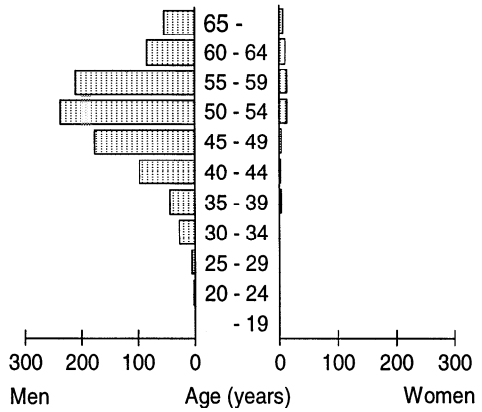
The number of cases of epidemic nephritis increased two-fold in agriculture. The changes in the number of cases of this occupational disease usually follow the overall trends of epidemic nephritis in Finland. The annual numbers of cases of silicosis, tuberculosis and vibration syndrome are relatively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

2 Hearing loss

Severity in 1991 - 99



Distribution of age and sex in 1999

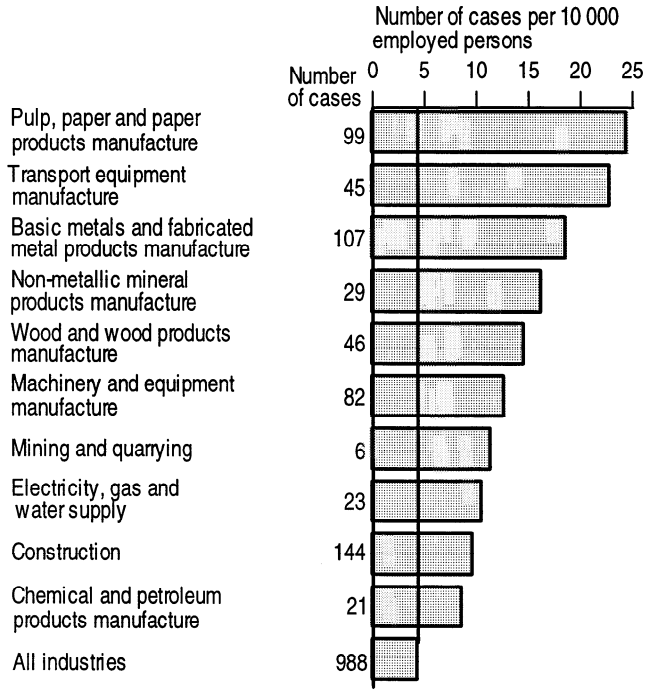


Noise-induced hearing loss will typically develop within one or two decades from the beginning of exposure, but the time required is influenced by the level of noise, the daily duration of exposure, the frequency of the noise and the number of intense noise peaks. The cases of noise-induced hearing loss in the late 1990s are thus usually related to exposure in the late 1970s or 1980s. The number of reported cases has decreased in 1987–99 from about 2000 annual cases to a little less than 1000 annual cases. Altogether 988 cases were reported in 1999, i.e. 6% more than in 1998. About 95% of the cases in 1999 were reported among men, and the incidence of reported cases was highest in those aged 50 to 54 years.

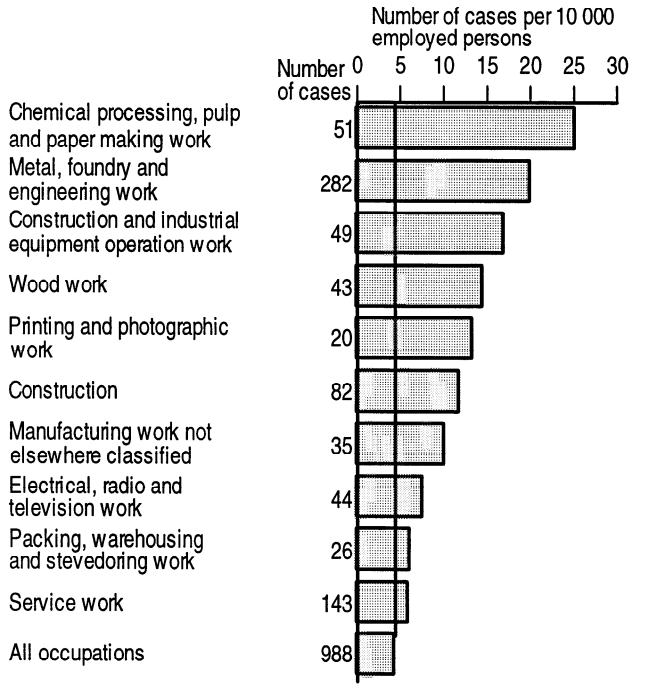
Information on severity was provided in 55% of the reported cases of noise-induced hearing loss. In nearly 70% of these, the severity was below 10%, i.e. below the cut-off level of financial reimbursement. It must be noted, however, that at the moment our register does not collect data on the subsequent evolution of the level of impairment after the first notification of the case.

Because hearing loss develops over a long period of time, variations in employment levels have little impact on industry-specific and occupation-specific incidences. In 1999, the industry-specific incidence per current number of employed workers was highest in the manufacture of pulp, paper and paper products and in the manufacture of transport equipment. The highest occupation-specific incidences were observed in chemical processing and pulp and paper making work, and in metal, foundry and engineering work.

Most common industries in1999

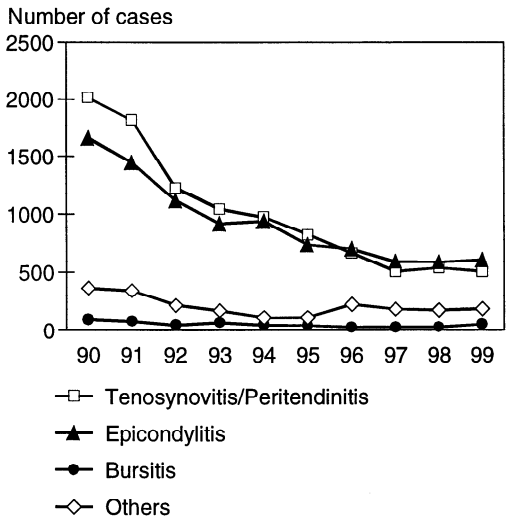


Most common occupations in1999



3 Repetitive strain injuries

Diagnoses in 1990 - 99



Distribution of age and sex in 1999

Repetitive strain injuries peaked in 1990 at 4131 cases. Thereafter these diseases have more than halved to 1356 in 1999. In 1990 repetitive strain injuries comprised 45% of all new occupational diseases, and had dropped to 26% in 1999. Nevertheless, repetitive strain injuries still remained the largest occupational disease group in 1999.

In 1999 tenosynovitis and peritendinitis accounted for 37% of this disease group, while epicondylitis accounted for 45%, bursitis 4%, and other diseases 14%. Many of the diseases in the category of "other diseases" are not compensated as occupational diseases.

Of all repetitive strain injuries, 60% occurred in men and 40% 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 35–39 years for men, and in the age groups of 35–39 and 45–49 years for women. The proportion of cases reported among men was proportionately highest in the age group of 25 to 39 years.

The incidence of repetitive strain injuries was 5.9 cases per 10 000 employed workers. In the food, beverage and tobacco industry the incidence was nearly eight times the average: 47 cases/10 000 employed workers. The highest absolute numbers of new cases in this disease group were reported in agriculture and forestry, in the food, beverage and tobacco industry, and in construction. Compared to 1999, the average incidence rate remained the same.

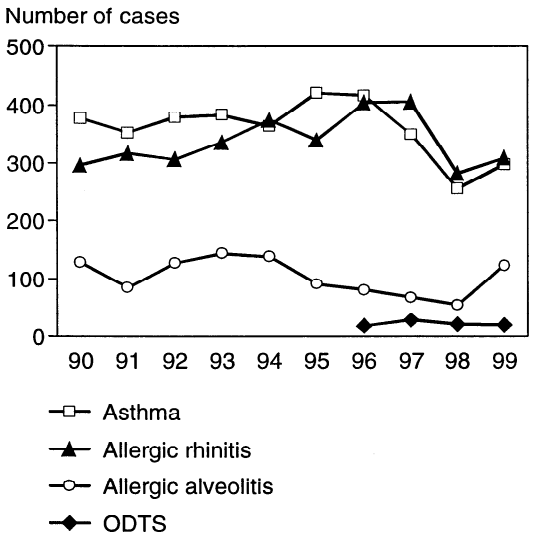
Of the occupational categories, work in the food and beverage industry had by far the highest incidence rate (68 cases/10 000 employed). The incidence rate was 12 times the average. A high incidence rate was also reported in packing, warehousing and stevedoring (24 cases/10 000 employed), in wood work (22 cases/10 000 employed) and in construction work (22 cases/10 000 employed). The highest absolute numbers of new cases were reported in agriculture, forestry, and fishing (216 cases; 15/10 000 employed), in metal, foundry, and machine-shop work (164 cases, 12/10 000 employed) and in construction work (153 cases, 22 cases/10 000 employed).

Most common industries in1999

Most common occupations in 1999

4 Allergic respiratory diseases

Diagnoses in 1990 - 99



Distribution of age and sex in 1999

In 1999 a total of 749 cases of allergic respiratory disease were reported; this is 136 (22%) more than in the previous year. There were 381 reported cases among women and 368 among men. These were 298 cases of occupational asthma (256 in 1998), 309 cases of occupational allergic rhinitis (283 in 1998) and 123 cases of occupational allergic alveolitis (54 in 1998). In addition, 19 cases of organic dust toxic syndrome (ODTS) were reported. The number of cases of occupational asthma decreased clearly in 1998, but increased again in 1999. One of the explanations may be the renovation work of the clinic of FIOH in 1998 and the consequent delay in the medical examination of suspected cases of occupational asthma.

The incidence rate of occupational allergic respiratory diseases was 3.3/10 000 employed workers (2.8 in 1998). The most risk-prone occupations are found in the food and beverage industry, where 29 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 28 cases/10 000 employed (20 in 1998). The number of cases of occupational asthma in agriculture and forestry rose to 129 (119 in 1999), but 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 increased from 108 in 1998 to 148 in 1999 but was also lower than in the early 1990s. Occupations in the food and beverage industry and agriculture and forestry accounted for 61% of all reported cases of occupational respiratory diseases.

The most common causative agents for occupational asthma were animal epithelia (about 25% of all cases) and flours, grains and animal feed (about 20%). There were 34 cases of asthma caused by exposure to moulds or mould spores and 26 cases caused by exposure to storage mites. Allergic rhinitis was most often caused by flours (86 cases), animal epithelia (74 cases), moulds (47 cases) and storage mites (35 cases). The causative agents of allergic respiratory diseases are listed in Table 6 .

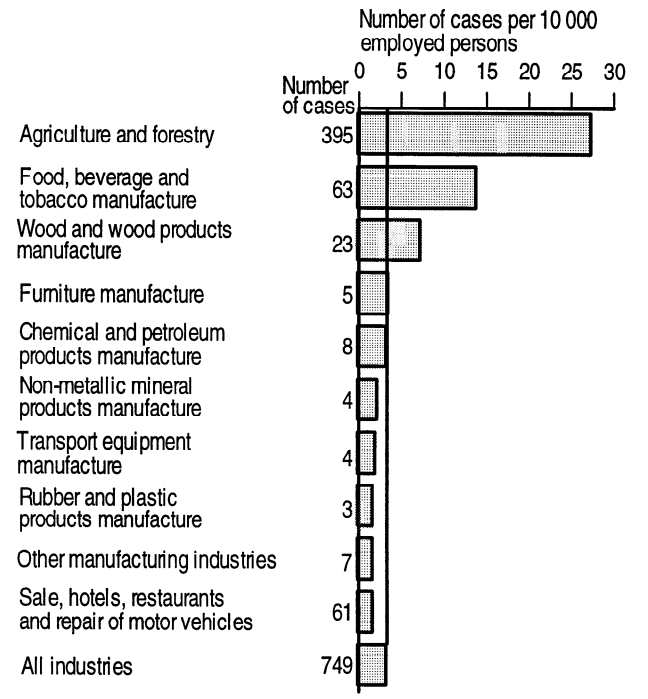
Isocyanates caused 7 new cases of occupational asthma (6 in 1998). Chemicals used in hairdressing, mainly persulfates caused 8 cases of occupational asthma or rhinitis (8 in 1998). There were altogether 18 cases of allergic rhinitis caused by chemicals, of these six were caused by organic acid anhydrides and two by isocyanates.

In health care and nursing occupations, the natural rubber in protective gloves caused 6 cases of respiratory allergy.

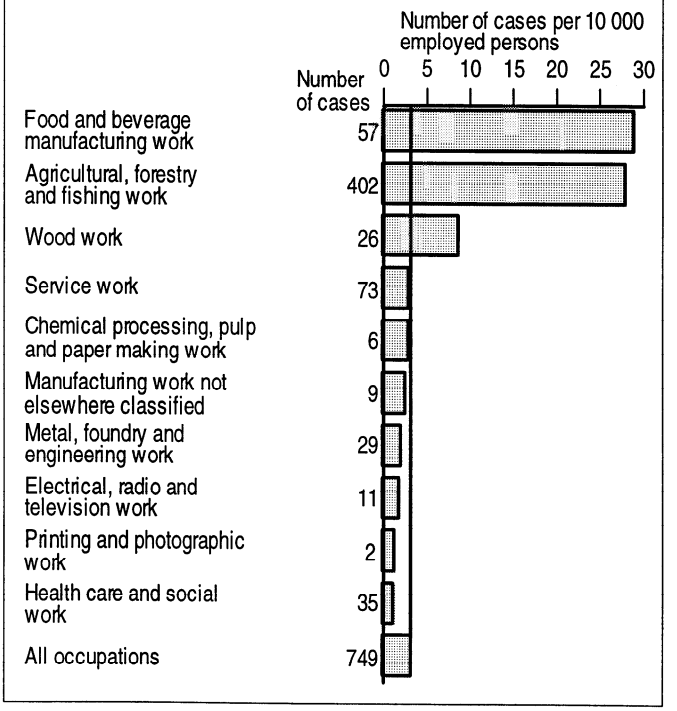
There were 123 cases of allergic alveolitis, of which 116 were farmer's lung (46 cases in 1998). The increase was due to the non-favourable weather conditions during summer 1998 and consequent exposure to mouldy hay during the next winter.

There were 19 cases of ODTS, more than half of which were reported from work sites with water-damaged building materials.

Most common industries in 1999

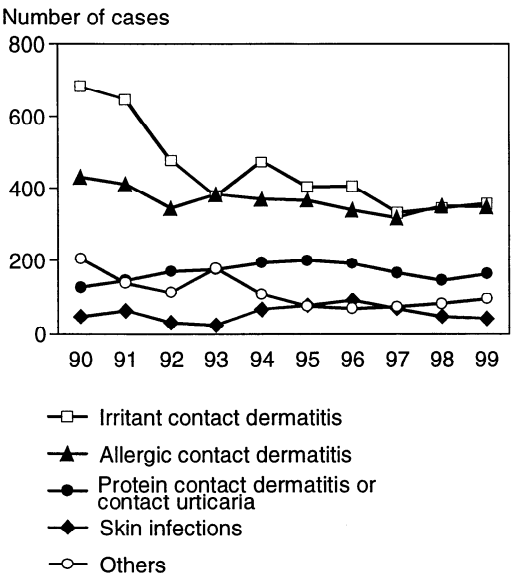


Most common occupations in1999



5 Skin diseases

Diagnoses in 1990 - 99



Distribution of age and sex in 1999

Of all occupational diseases reported in 1999, 19% (1006) were skin diseases. Of these, 349 were allergic contact dermatitis, 356 irritant contact dermatitis, 164 protein contact dermatitis or contact urticaria, 42 skin infections, and 95 other skin diseases. Other skin diseases included 41 unspecified cases of contact dermatitis, 4 paronychias, 27 other skin diseases including chemical burns, and 23 occupational skin diseases for which exact diagnoses were not reported.

There were 34 more cases of occupational skin diseases than in 1998. There were only minor changes in the relative importance of individual classes of dermatoses. The number of allergic contact dermatitis remained nearly the same as in 1998 (a reduction of 2 cases), the number of irritant contact dermatitis increased by 3% (11 cases) and the number of protein contact dermatitis or contact urticaria by 12% (18 cases). The number of skin infections decreased by 13% (6 cases). The total number of allergic skin diseases, i.e. allergic contact dermatitis, protein contact dermatitis and contact urticaria, remained stable, accounting for 51% of all skin diseases.

Women accounted for 54% of the reported cases. The average age of a new skin disease case was 39 years among both men and women. The mean age was considerably lower for cases with skin disease than for all cases of occupational disease (45 years). In their work, women are more often exposed to the common causes of occupational skin disease: cleansing agents, animal-derived substances, rubber allergens, i.e. rubber chemicals and the natural rubber latex proteins (NRL), and "wet" work.

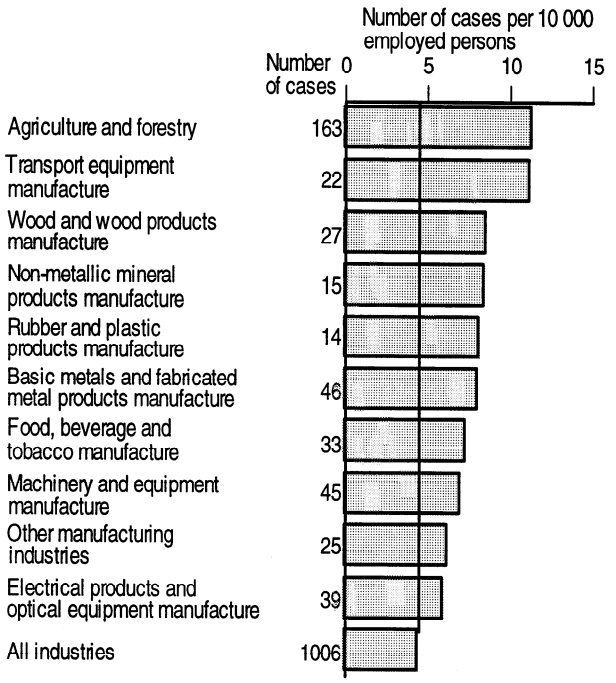
The highest incidence rate was found in agriculture and forestry, where skin diseases were caused by exposure to animal-derived substances (cow epithelium), flour dust, cleansing agents, dermatophytes, rubber gloves and wet working conditions. High incidence rates were also found in the manufacture of transport equipment, of basic metals and metal products, and of wood products.

The highest occupation-specific risk occurred in work in the food and beverage industry, where 16 cases were reported/10 000 employed, in other industrial work (14 cases/ 10 000), and in agriculture, forestry and fishing (12 cases/10 000).

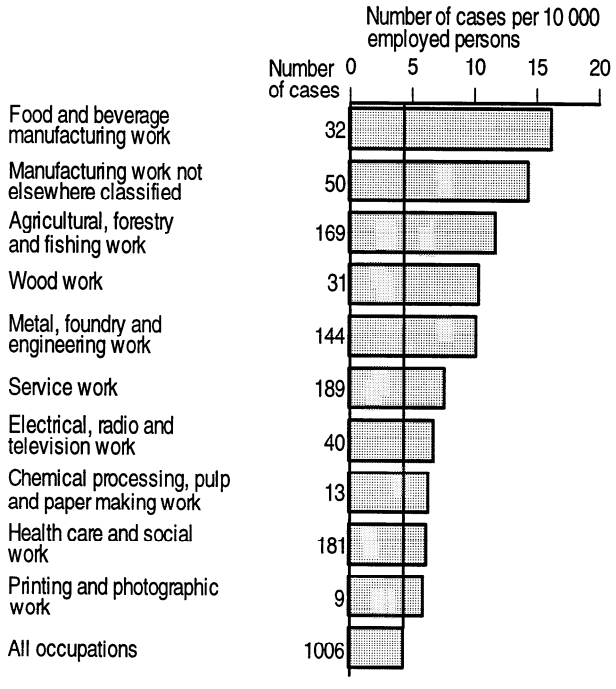
Cleansing agents were still the most common cause of occupational skin disease, and they accounted for 8% (82 cases) of all skin diseases. These were nearly all cases of irritant contact dermatitis. Of the skin diseases caused by exposure to rubber, the majority were allergic contact dermatitis due to rubber gloves. The most common plastic chemicals causing occupational skin diseases were bisfenol A-derived epoxy resins (43 cases) and acrylates and metacrylates (14 cases).

Animal-related skin diseases were mostly caused by cow epithelium. Both cow-induced dermatoses (67 cases) and NRL-induced dermatoses (29 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.

Most common industries in1999

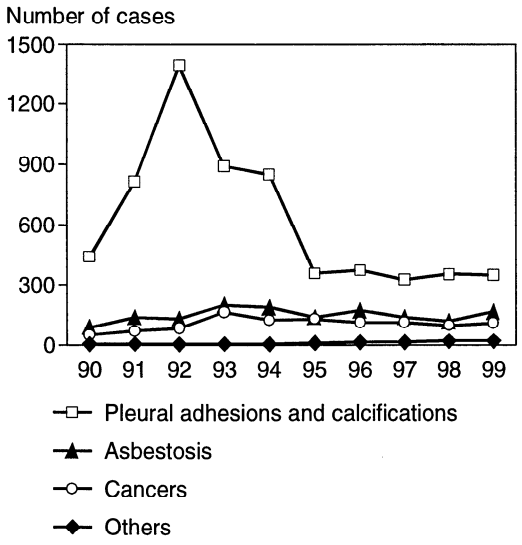


Most common occupations in 1999

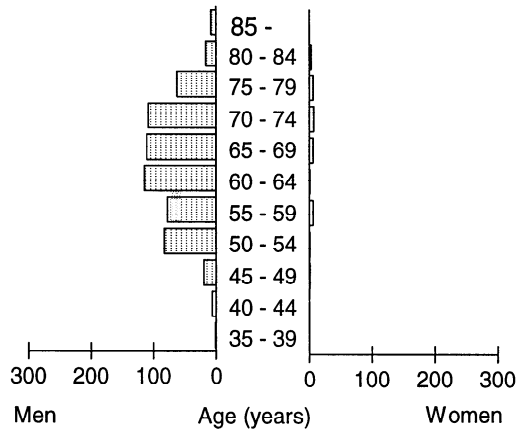


6 Asbestos-induced diseases

Diagnoses in 1990 - 99



Distribution of age and sex in 1999

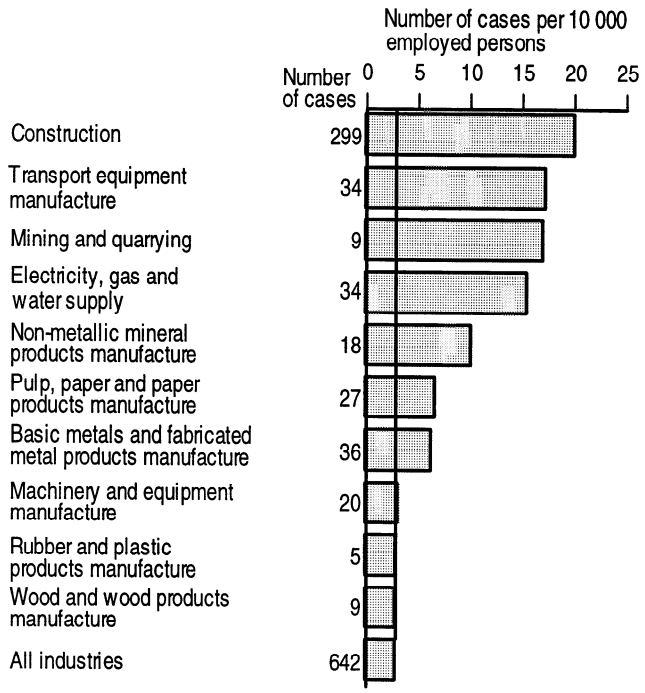


The number of asbestos-induced diseases increased by 9% from 1998 (642 cases, 589 cases in 1998). There were 350 cases of benign pleural disease, mainly cases of bilateral pleural plaques, 164 cases of asbestosis, 109 cases of asbestos-related malignancies and 19 other asbestos-induced diseases. The 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 1995–98 (see the figure above).

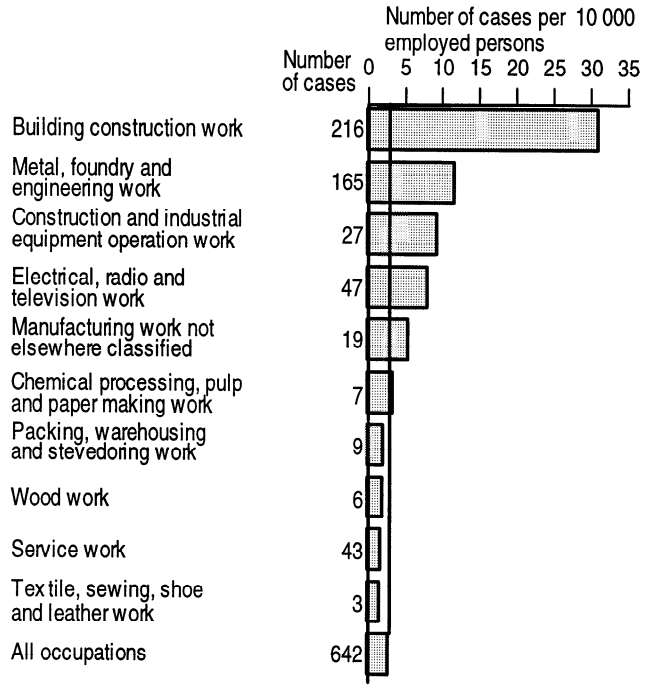
The highest number of asbestos-induced diseases was reported in construction, but numerous cases were also reported in relation to the manufacture of transport vehicles (including ship-building), the manufacture of non-metallic mineral products, and some industries where exposure to asbestos used to 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. For example, the mean age of notified cases of asbestosis was 65 years in 1999 compared to 50 years in the 1960s and 1970s.

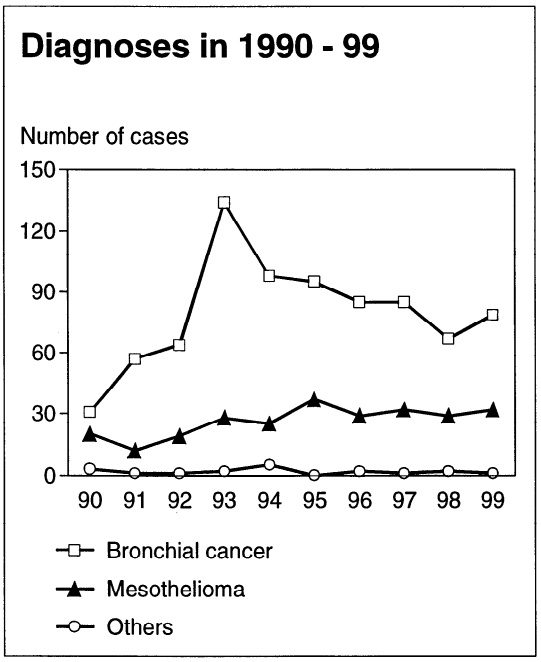
Most common industries in 1999



Most common occupations in 1999



7 Cancers

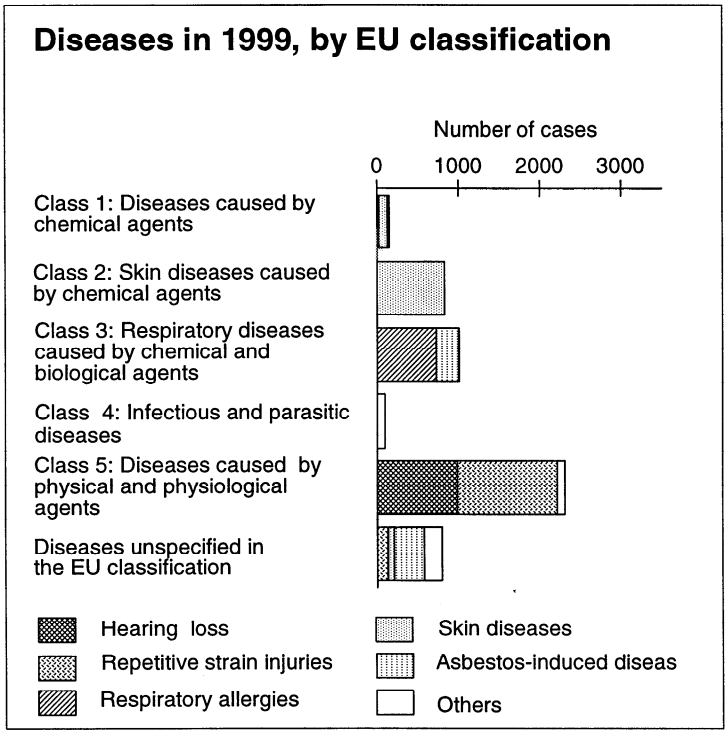


Altogether 112 cases of occupational cancer were reported in 1999, i.e. the same number as in 1996 or 1997 but 14% more than in 1998. More than 80% of the patients were men above 60 years of age, but the youngest patients with an occupational mesothelioma were less than 50 -years of age. Altogether 11 cases of occupational cancer were reported in women.

There were 32 reported cases of mesothelioma in 1999, of which 31 were pleural and one peritoneal mesothelioma. In all of the mesothelioma cases, asbestos was reported as the causative agent. There were 7 cases of mesothelioma in women. Altogether 79 cases of occupational lung cancer were reported in 1999; 77 of these were reported to be asbestos-related and two were caused by exposure to silica. 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 decreased slightly. Very few cases of cancer other than lung cancer or mesothelioma are reported as occupational cancers in Finland. In 1999, one case of sinonasal cancer was reported in relation to past exposure to chromium compounds.

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 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 1999, 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, 4388 (85%) could be classified according to the above-mentioned European recommendation. Asbestos-induced benign pleural diseases account for the largest number of incompatible diagnoses (46%), 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 1999 for over half of the occupational diseases mentioned on the European list. The European Commission has started a process of updating the above-mentioned recommendation and the annexed lists.

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 1999 a total of 5 182 cases were reported. This figure is 8% more than in 1998. The annual incidence rate of the reported occupational diseases was 23 cases per 10 000 employed workers in 1999. The numbers of cases are given by diagnosis in Table 2 (p. 27) and according to the European list in Table 8 (p. 44).

The most common occupational diseases are still repetitive strain injuries, although their annual incidence has fallen since 1990. A total of 1 356 cases were reported in 1999. This is 4% more than in 1998. The incidence rate was 5.9 cases per 10 000 employed workers. The highest incidence rate occurred in food-processing work, where 68 cases per 10 000 employed workers were reported.

There were 749 cases of allergic respiratory diseases, an increase of 22% from 1998. The numbers of reported cases of asthma (n = 298) and rhinitis (n = 309) increased slightly, while there was a dramatic increase in the number of cases of allergic alveolitis (123 cases in 1999, and only 54 cases in 1998). This increase is due to the non-favourable weather conditions of the previous summer, and the consequent exposure to mouldy hay during the indoor feeding period. The incidence rate of reported allergic respiratory diseases was clearly the highest in agriculture and food-processing work. About 30 cases per 10 000 employed workers were reported in both of these occupations, and they accounted for 61% of all cases. Animal epithelia, flour dust and storage mites caused 58% of the cases of asthma and allergic rhinitis.

Occupational skin diseases totalled 1006 cases in 1999, i.e. 3% more than the year before. The incidence rate was highest in food-processing work (16 cases per 10 000 employed workers) and in agriculture (12 cases per 10 000 employed workers). Irritant contact dermatitis was most often caused by wet work and detergents (35%), allergic contact dermatitis by epoxides (12%) and protein contact dermatitis or contact urticaria by animal epithelia, flours and natural rubber latex (44%, 18% and 18%, respectively).

The cases of noise-induced hearing loss numbered 988, which is 6% more than in 1998. The incidence rate was highest in pulp and paper work.

In 1999 there were 642 new cases of asbestos-related diseases, 32 cases of mesothelioma, 79 cases of lung cancer, 164 cases of asbestosis, and 350 cases of pleural plaques.

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II Tables on occupational diseases in 1999

Table 1 **Diseases by age and sex**

Age	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	All
10 – 19	-	21	6	11	-	9	47
20 – 24	1	113	34	104	-	22	274
25 – 29	5	139	73	118	-	34	369
30 –34	27	182	84	142	-	55	490
35 – 39	47	254	116	143	1	60	621
40 – 44	99	211	119	150	7	68	654
45 – 49	180	189	91	125	21	70	676
50 – 54	251	164	130	127	84	75	831
55 – 59	224	69	73	73	84	30	553
60 – 64	94	13	20	13	116	10	266
65 –	60	1	3	-	329	8	401
Total	988	1356	749	1006	642	441	5182
Men							
15 – 19	-	12	3	2	-	9	26
20 – 24	1	57	17	51	-	16	142
25 – 29	5	80	30	55	-	22	192
30 – 34	27	130	48	60	-	36	301
35 – 39	44	166	65	65	1	41	382
40 – 44	97	129	58	81	7	34	406
45 – 49	176	102	49	63	20	42	452
50 – 54	238	98	50	53	83	43	565
55 – 59	211	36	35	23	78	18	401
60 – 64	84	6	10	5	115	6	226
65 –	54	1	3	-	307	8	373
Total	937	817	368	458	611	275	3466
Women							
10 – 19	-	9	3	9	-	-	21
20 – 24	-	56	17	53	-	6	132
25 – 29	-	59	43	63	-	12	177
30 – 34	-	52	36	82	-	19	189
35 – 39	3	88	51	78	-	19	239
40 – 44	2	82	61	69	-	34	248
45 – 49	4	87	42	62	1	28	224
50 – 54	13	66	80	74	1	32	266
55 – 59	13	33	38	50	6	12	152
60 – 64	10	7	10	8	1	4	40
65 –	6	-	-	-	22	-	28
Total	51	539	381	548	31	166	1716

Table 2 **Diagnoses by sex**[1]

Disease	Men	Women	Total
Infectious and parasitic diseases	*63*	*81*	*144*
Epidemic nephritis	56	23	79
Mycosis	1	2	3
Scabies	1	34	35
Tuberculosis	1	9	10
Others	4	13	17
Neoplasms	*103*	*11*	*114*
Bronchial cancer	75	4	79
Mesothelioma	25	7	32
Others	3	-	3
Mental and behavioural disorders	*2*	-	*2*
Diseases of the nervous system	*25*	*20*	*45*
Mononeuropathy, upper extremity	6	9	15
Mononeuropathy, lower extremity	4	8	12
Toxic encephalopathy	13	1	14
Others	2	2	4
Diseases of the eye	*82*	*9*	*91*
Conjunctivitis	9	7	16
Keratoconjunctivitis caused by UV-light	73	1	74
Others	-	1	1
Diseases of the ear	*938*	*53*	*991*
Noise-induced hearing loss	937	51	988
Diseases of the circulatory system	*20*	-	*20*
Hand and arm vibration syndrome	20	-	20
Diseases of the respiratory system	*931*	*488*	*1419*
Asthma	159	141	300
Allergic rhinitis	136	173	309
Allergic alveolitis	68	55	123
Organic dust toxic syndrome	6	13	19
Asbestosis	159	5	164
Pleural plaques and adhesions	336	15	351
Silicosis	8	-	8
Other irritant and hypersensitivity symptoms of the upper respiratory tract	21	69	90
Others	38	17	55

[1]According to ICD-10

Disease	Men	Women	Total
*Diseases of the skin and subcutaneous tissue**	*450*	*507*	*957*
Diseases of the musculoskeletal system	*801*	*519*	*1320*
Epicondylitis	350	258	608
Tenosynovitis, peritendinitis	314	194	508
Bursitis	51	2	53
Others	86	65	151
Injury and poisoning	*32*	*10*	*42*
Poisoning	13	2	15
Others	19	8	27
Others	*19*	*18*	*37*
Total	3466	1716	5182

*Skin infections and skin injuries are included under other headings

Table 3 **Causes by sex**

Cause	Men	Women	Total
Physical factors	*1038*	*63*	*1101*
Noise	937	51	988
Vibration	22	-	22
Overpressure	3	-	3
Temperature	-	1	1
Humidity	1	-	1
Warm moisture	-	10	10
Non-ionizing radiation	75	1	76
Chemical agents	*1362*	*772*	*2134*
Aliphatic hydrocarbons	1	1	2
Aromatic hydrocarbons	2	-	2
Aliphatic halogenated hydrocarbons	1	-	1
Monohydric alchohols	1	-	1
Phenols and phenolates (not chlorophenols)	1	1	2
Epoxides	28	15	43
Aliphatic aldehydes	13	20	33
Aromatic aldehydes	-	1	1
Aldehydes (not specified)	2	-	2
Aliphatic ketones	1	-	1
Aromatic ketones	-	1	1
Quinones	1	-	1
Aliphatic carboxylic acids	1	-	1
Carboxylic acid anhydrides	9	3	12
Esters of aliphatic carboxylic acids (e.g. acrylates)	5	13	18
Esters of aromatic carboxylic acids	1	1	2
Esters of inorganic acids	1	-	1
Sultones and thioglycolates	-	2	2
Amines	10	12	22
Amides (e.g. thiuram sulfides)	7	20	27
Organic cyanides and nitriles (cyano compounds)	-	3	3
Isocyanates	13	2	15
Hydrazine, azo, diazo, and diazonium compounds	1	-	1
Thioureas and organic ammonium compounds	1	-	1
Heterocyclic compounds (nitrogen in ring)	2	-	2
Heterocyclic compounds (sulfur in ring)	1	-	1
Polysaccharides	1	-	1
Carbon monoxide and carbon dioxide	1	-	1
Inorganic gases containing sulfur	-	1	1
Inorganic gases (not specified)	1	-	1
Inorganic acids	4	1	5
Inorganic bases	4	2	6
Inorganic acids and bases (not specified)	1	-	1

Cause	Men	Women	Total
Silicon and carbon	-	1	0
Sulfur, carbon disulfide and ammonium sulfate derivatives	1	1	2
Bromine, iodine and halides	-	1	1
Alkali metals, alkali earth metals, aluminum and their compounds	2	2	4
Tin, lead and their compounds	10	-	10
Copper and platinum metals and their compounds	1	4	5
Zinc, cadmium, mercury and their compounds	3	1	4
Chromium group metals and their compounds	21	6	27
Cobalt, nickel and their compounds	13	19	32
Metals and metallic compounds (not specified)	2	-	2
Crude oil based organic solvent mixtures	-	2	2
Organic solvent mixtures, not specified	26	2	28
Crude oil based fuels	1	-	1
Oils and lubricants	45	4	49
Synthetic resins and plastics	12	14	26
Natural rubber (latex)	5	31	36
Natural resins, balsams and their derivatives (except latex)	9	14	23
Resins, plastics and their derivatives (not specified)	2	2	4
Paints	4	1	5
Varnishes	-	1	1
Paints, varnishes and stains (not specified)	2	-	2
Synthetic glues	3	5	8
Glues (not specified)	4	3	7
Rubbers	-	2	2
Rubbers and elastomers (not specified)	-	1	1
Textile dyes	1	1	2
Printing inks	1	1	2
Leather dyes	-	1	1
Fur dyes	1	1	2
Hair dyes	-	3	3
Pharmaceuticals	2	1	3
Rubber chemicals	16	22	38
Detergents	22	61	83
Disinfectants	2	1	3
Cosmetics	1	13	14
Perfumes and aromatic substances	2	8	10
Photographic chemicals	-	1	1
Preservatives and antimicrobial agents	8	5	13
Other known substances classifed according to their use	6	5	11
Other substances classified according to their use (not specified)	1	-	1
Silicon dioxides	12	-	12
Types of asbestos	611	31	642
Synthetic mineral fibers	6	1	7
Cement, concrete	10	1	11

Cause	Men	Women	Total
Textiles	-	5	5
Flours, grains and fodders	92	98	190
Species of wood	33	8	41
Plants	9	57	66
Plant-derived dusts and substances	5	1	6
Animal ephithelia, hairs or secretions/excretions	102	122	224
Other animal-derived dusts or substances	6	4	10
Enzymes	2	3	5
Organic materials, not listed elsewhere (not specified)	16	15	31
Gas mixtures	1	-	1
Sprays, fumes, dusts and smoke (mixtures)	29	3	32
Gas, liquid or dust mixtures (not specified)	1	-	1
Wet work	13	33	46
Dirty work	29	13	42
Handling of foodstuffs	4	10	14
Other chemical agents (not specified)	37	27	64
Biological agents	*202*	*309*	*511*
Other known protozoans	1	-	1
Yeasts	-	1	1
Molds	97	191	288
Dermatophytes	1	2	3
Pseudomonas	-	1	1
Eubacteria	3	3	6
Actinomycetes	1	9	10
Other known bacteria	1	-	1
Bacteria (not specified)	-	2	2
Herpes viruses	-	1	1
Pox viruses	-	2	2
Hepatitis viruses	-	1	1
Other known viruses	56	25	81
Viruses (not specified)	-	3	3
Mites	41	58	99
Insects	1	2	3
Intestinal parasites	-	4	4
Toxins and toxoids	-	1	1
Other biological agents (not specified)	-	3	3
Physical and psychophysical loading factors	*825*	*545*	*1370*
Static muscular load due to work postures	1	1	2
Repetitive work	761	518	1279
Nonphysiological compression or stretching	50	12	62
Mechanical friction of the skin	9	5	14
Other known physical and mechanical loading factors	4	6	10
Physical and mechanical loading factors (not specified)	-	3	3
Unknown factors	*39*	*27*	*66*
Total	3466	1716	5182

Table 4 **Diseases by industry**

Industry	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	Total
Agriculture, hunting and forestry	*44*	*210*	*395*	*163*	*1*	*92*	*905*
Agriculture, hunting and related service activities	35	201	395	162	1	90	884
Forestry, logging and related service activities	9	9	-	1	-	2	21
Fishing	-	*4*	-	-	-	-	*4*
Fishing, operation of fish hatcheries and fish farms; service activities	-	4	-	-	-	-	4
Mining and quarrying	*6*	*2*	-	*1*	*9*	*6*	*24*
Mining of coal and lignite; extraction of peat	1	-	-	1	-	1	3
Mining of metal ores	4	-	-	-	1	1	6
Other mining and quarrying	1	2	-	-	8	4	15
Manufacturing	*518*	*604*	*150*	*304*	*171*	*148*	*1895*
Manufacture of food products and beverages	17	211	63	33	4	4	332
Manufacture of tobacco products	-	-	-	-	1	-	1
Manufacture of textiles	8	2	-	3	2	-	15
Manufacture of wearing apparel; dressing and dyeing of fur	2	12	1	6	-	2	23
Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	3	4	2	2	1	-	12
Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	46	56	23	27	9	13	174
Manufacture of pulp, paper and paper products	99	14	5	10	27	4	159
Publishing, printing and reproduction of recorded media	19	14	2	12	-	9	56
Manufacture of coke, refined petroleum products and nuclear fuel	11	-	-	-	-	1	12

Industry	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	Total
Manufacture of chemicals and chemical products	10	6	8	10	4	7	45
Manufacture of rubber and plastic products	11	22	3	14	5	7	62
Manufacture of other non-metallic mineral products	29	41	4	15	18	9	116
Manufacture of basic metals	39	11	4	7	13	3	77
Manufacture of fabricated metal products, except machinery and equipment	68	68	5	39	23	35	238
Manufacture of machinery and equipment n.e.c.	82	45	7	45	20	29	228
Manufacture of electrical machinery and apparatus n.e.c.	14	24	4	10	7	4	63
Manufacture of radio, television and communication equipment and apparatus	-	22	5	23	-	6	56
Manufacture of medical, precision and optical instruments, watches and clocks	1	-	-	6	-	-	7
Manufacture of motor vehicles, trailers and semi-trailers	9	14	2	11	-	4	40
Manufacture of other transport equipment	36	9	2	11	34	10	102
Manufacture of furniture; manufacturing n.e.c.	13	28	10	20	1	1	73
Recycling	1	1	-	-	2	-	4
Electricity, gas and water supply	*23*	*9*	*1*	*2*	*34*	*1*	*70*
Electricity, gas, steam and hot water supply	15	8	1	1	28	1	54
Collection, purification and distribution of water	8	1	-	1	6	-	16
Construction	*144*	*193*	*2*	*53*	*300*	*20*	*712*
Construction	144	193	2	53	300	20	712
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	*30*	*93*	*38*	*71*	*28*	*26*	*286*
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	20	27	4	32	15	12	110

Industry	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	Total
Wholesale trade and commission trade, except of motor vehicles and motorcycles	8	16	4	12	8	7	55
Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	2	50	30	27	5	7	121
Hotels and restaurants	*8*	*17*	*24*	*57*	-	*3*	*109*
Hotels and restaurants	8	17	24	57	-	3	109
Transport, storage and communication	*39*	*38*	*6*	*22*	*24*	*7*	*136*
Land transport; transport via pipelines	11	21	4	8	12	4	60
Water transport	1	-	-	4	1	-	6
Air transport	2	-	1	-	-	1	4
Supporting and auxiliary transport activities; activities of travel agencies	14	8	-	1	7	-	30
Post and telecommunications	11	9	1	9	4	2	36
Financial intermediation	*2*	*7*	*3*	*1*	-	*5*	*18*
Financial intermediation, except insurance and pension funding	1	6	3	1	-	5	16
Insurance and pension funding, except compulsory social security	1	-	-	-	-	-	1
Activities auxiliary to financial intermediation	-	1	-	-	-	-	1
Real estate, renting and business activities	*51*	*62*	*11*	*46*	*44*	*20*	*234*
Real estate activities	11	14	3	15	30	2	75
Renting of machinery and equipment without operator and of personal and household goods	4	3	-	-	-	-	7
Computer and related activities	-	-	-	1	-	-	1
Research and development	4	-	2	2	1	4	13
Other business activities	32	45	6	28	13	14	138
Public administration and defence; compulsory social security	*85*	*34*	*16*	*37*	*9*	*21*	*202*
Public administration and defence; compulsory social security	85	34	16	37	9	21	202

Industry	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	Total
Education	*13*	*19*	*38*	*25*	*5*	*25*	*125*
Education	13	19	38	25	5	25	125
Health and social work	*10*	*34*	*51*	*182*	*11*	*58*	*346*
Health and social work	10	34	51	182	11	58	346
Other community, social and personal service activities	*13*	*29*	*14*	*41*	*5*	*8*	*110*
Sewage and refuse disposal, sanitation and similar activities	1	7	-	-	-	2	10
Activities of membership organizations n.e.c.	3	5	-	4	1	2	15
Recreational, cultural and sporting activities	9	5	3	2	3	3	25
Other service activities	-	12	11	35	1	1	60
Industry unknown	*2*	*1*	*1*	*1*	*1*	-	*6*
Industry unknown	2	1	1	1	1	-	6
Total	988	1356	750	1006	642	440	5182

n.e.c. = not elsewhere classified

Table 5 **Diseases by occupation**

Occupation	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	Total
Technical, scientific, juridical, humanistic and artistic work	*91*	*29*	*35*	*28*	*56*	*35*	*274*
Construction technicians and foremen	13	3	-	2	22	-	40
Mechanical technicians and foremen	17	1	-	1	10	1	30
Chemical technicians and foremen	15	2	1	2	2	2	24
Technicians and foremen working in other branches of engineering	5	-	3	2	2	-	12
Laboratory assistants	2	3	4	9	-	5	23
Comprehensive school and upper secondary school teachers	2	2	2	2	1	4	13
Subject teachers at vocational education institutions	6	2	6	1	4	1	20
Others	31	16	19	9	15	22	112
Health care and social work	*5*	*25*	*35*	*181*	*3*	*51*	*300*
Physicians	1	-	-	11	-	3	15
Nurses (general)	-	-	7	29	-	8	44
Laboratory technicians	-	1	2	10	-	3	16
Assistant nurses, practical nurses	1	1	2	6	-	4	14
Hospital aids	-	1	3	6	2	4	16
Masseurs	-	4	-	6	-	-	10
Dentists	-	2	1	9	-	2	14
Dental assistants	-	1	1	32	-	2	36
Nurses at social welfare institutions	-	3	-	14	-	1	18
Other social welfare workers	-	1	2	11	-	1	15
Others	3	11	17	47	1	23	102
Managerial, administrative and clerical work	*20*	*52*	*25*	*22*	*19*	*19*	*157*
General managers (enterprise)	10	17	4	10	4	5	50
Technical managers (enterprise)	4	2	-	2	2	-	10
Office clerks (general)	1	13	7	4	1	4	30
Other bank employees	-	4	3	1	-	4	12
Storeroom supervisors, etc.	1	2	-	1	6	-	10
Others	4	14	11	4	6	6	45
Commercial work	*2*	*42*	*23*	*24*	*3*	*4*	*98*
Shop managers, etc.	-	9	-	1	1	-	11
Shop assistants	-	24	17	15	-	-	56
Others	2	9	6	8	2	4	31

Occupation	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	Total
Agricultural, forestry and fishing work	*51*	*216*	*403*	*169*	*5*	*97*	*941*
Farmers, silviculturists	31	163	337	116	2	83	732
Domestic animal attendants	3	10	44	37	-	9	103
Horticultural workers	2	22	5	10	-	-	39
Lumberjacks, etc.	11	9	-	2	2	3	27
Others	4	12	17	4	1	2	40
Transport and communication work	*22*	*27*	*5*	*17*	*14*	*4*	*89*
Lorry and articulated vehicle drivers	12	14	3	4	6	3	42
Others	10	13	2	13	8	1	47
Manufacturing, machine operation, mining and quarrying and construction work	*656*	*823*	*151*	*376*	*500*	*183*	*2689*
Miners, chargers, etc.	3	2	-	-	2	11	18
Carpenters	47	53	4	6	81	5	196
Bricklayers	2	11	1	4	30	-	48
Reinforcement concreters, etc.	3	5	-	2	10	-	20
Building workers	19	31	-	9	53	1	113
Floor layers	1	13	-	7	3	1	25
Insulation workers	1	7	-	2	14	1	25
Other occupations in construction work	-	10	-	-	3	-	13
Crane operators	6	1	-	1	2	-	10
Earth moving and related machinery operators	13	3	-	-	2	1	19
Forklift operators, material handling equipment operators, etc.	10	1	1	1	3	-	16
Upholsterers	-	8	-	3	-	-	11
Industrial sewers, etc.	3	7	-	2	-	1	13
Footwear workers	2	6	-	2	1	-	11
Metal smelting furnaceman, etc.	7	2	2	1	4	-	16
Foundry workers	8	5	1	3	4	2	23
Precision instrument mechanics	6	2	-	2	-	2	12
Turners, machinists and toolmakers	28	23	3	39	4	6	103
Machine fitters, etc.	37	13	2	13	11	10	86
Machine and engine mechanics	34	24	1	27	21	8	115
Servicing workers, greasers (engines, motors)	3	6	1	6	-	-	16
Plant maintenance mechanics (except textile industry)	24	2	4	4	13	3	50

Occupation	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	Total
Platers	43	24	8	13	11	16	115
Plumbers	33	7	2	6	75	3	126
Welders, flame cutters, etc.	32	23	2	8	14	33	112
Machine and metal product assemblers	1	8	-	7	-	2	18
Metal plating and coating workers	7	2	1	6	-	1	17
Other machine and metalware occupations	22	21	1	10	5	8	67
Electrical fitters	29	25	2	12	43	1	112
Electronic and telecommunications fitters	4	4	2	1	-	-	11
Telephone installers and linemen	6	7	-	-	3	-	16
Electrical and teletechnical equipment assemblers	2	35	7	25	-	4	73
Sawyers	11	17	3	4	1	1	37
Plywood and fiberboard workers	2	11	4	9	-	6	32
Boatbuilders, coach-body builders	1	1	2	2	3	1	10
Cabinetmakers and joiners	5	3	5	2	2	1	18
Woodworking machine operators	19	32	10	12	-	1	74
Building painters	6	16	-	4	23	1	50
Other painters and lacquerers	2	7	2	5	3	7	26
Typesetters, compositors, typographers	2	4	-	-	-	5	11
Printers	9	2	-	6	-	2	19
Bookbinders	4	3	2	1	-	3	13
Glass moulders etc.	2	8	-	-	2	1	13
Bakers	1	9	51	14	-	1	76
Chocolate and confectionery workers	1	7	-	3	-	-	11
Butchers and sausage makers	4	96	-	7	-	-	107
Processed food preparers	-	9	2	-	-	-	11
Other occupations in the food industry	3	6	-	2	-	-	11
Process operators (chemical process)	2	2	1	2	1	2	10
Other occupations in the chemical industry	2	4	2	3	1	3	15
Pulpmill workers	7	-	-	2	3	1	13
Papermill workers	38	8	2	5	2	-	55
Rubber product workers	1	5	1	3	1	1	12

Occupation	Hearing loss	Repetitive strain injuries	Allergic respiratory diseases	Skin diseases	Asbestos-induced diseases	Others	Total
Plastic product workers	2	11	2	24	2	7	48
Cast concrete product workers	10	13	1	8	3	2	37
Other occupations in manufacturing	1	7	-	2	2	-	12
Stationary engine and machine operators	14	-	-	1	17	-	32
Electrical machine operators	7	-	-	-	3	-	10
Packers	6	83	1	5	3	-	98
Warehousemen	17	20	3	4	5	1	50
Others	41	48	12	24	11	16	152
Service work, etc.	*88*	*96*	*60*	*163*	*25*	*18*	*450*
Housekeeping managers	1	2	6	6	-	-	15
Chefs, cooks, cold buffet managers	3	9	25	28	-	2	67
Kitchen assistants, restaurant workers, etc.	3	9	4	29	2	1	48
Waiters in cafés and snack bars, etc.	-	2	1	10	-	-	13
Building caretakers, etc.	14	12	3	12	8	1	50
Cleaners	5	39	6	38	9	8	105
Barbers, hairdressers	-	7	11	27	-	1	46
Officers	38	-	-	-	-	-	38
Warrant officers	11	-	-	-	-	-	11
Others	13	16	4	13	6	5	57
Occupation unknown	*53*	*33*	*2*	*13*	*17*	*16*	*134*
Occupation unknown	53	33	2	13	17	16	134
Economically inactive	-	*13*	*11*	*13*	-	*13*	*50*
Economically inactive	-	13	11	13	-	13	50
Total	988	1356	750	1006	642	440	5182

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

Cause	Allergic alveolitis	Asthma	Allergic rhinitis	ODTS	Total
Aliphatic aldehydes	-	6	1	-	7
Aromatic aldehydes	-	1	-	-	1
Aliphatic ketones	-	1	-	-	1
Carboxylic acid anhydrides	-	1	6	-	7
Esters of aliphatic carboxylic acids (e.g. acrylates)	-	1	1	-	2
Sultones and thioglycolates	-	1	-	-	1
Amines	-	3	-	-	3
Amides (e.g. thiuram sulfides)	-	2	-	-	2
Organic cyanides and nitriles (cyano compounds)	-	1	-	-	1
Isocyanates	-	7	2	-	9
Heterocyclic compounds (nitrogen in ring)	-	2	-	-	2
Inorganic bases	-	1	-	-	1
Chromium group metals and their compounds	-	1	-	-	1
Cobalt, nickel and their compounds	-	6	1	-	7
Crude oil based fuels	-	1	-	-	1
Synthetic resins and plastics	-	2	-	-	2
Natural rubber (latex)	-	4	2	-	6
Natural resins, balsams and their derivatives (except latex)	-	1	-	-	1
Paints	-	2	-	-	2
Glues (not specified)	-	1	-	-	1
Cosmetics	-	3	5	-	8
Preservatives and antimicrobial agents	-	1	-	-	1
Other known substances classifed according to their use	-	-	1	-	1
Textiles	-	2	1	-	3
Flours, grains and fodders	-	62	88	1	151
Species of wood	-	12	13	-	25
Plants	-	10	18	-	28
Plant-derived dusts and substances	-	1	1	-	2
Animal ephithelia, hairs or secretions/excretions	-	71	74	-	145
Other animal-derived dusts or substances	-	-	1	-	1
Enzymes	-	1	3	-	4
Organic materials, not listed elsewhere (not specified)	-	9	4	2	15
Sprays, fumes, dusts and smoke (mixtures)	-	7	2	-	9
Other chemical agents (not specified)	-	7	1	-	8
Moulds	123	34	47	14	218
Mites	-	26	34	-	60
Toxins and toxoids	-	1	-	-	1
Unknown factors	-	6	5	1	12
Total	123	298	310	19	750

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

Cause	Allergic contact dermatitis	Irritant contact dermatitis	Skin infec-tions	Protein contact dermatitis or contact urticaria	Others	Total
Temperature	-	1	-	-	-	1
Humidity	-	1	-	-	-	1
Warm moisture	-	10	-	-	-	10
Non-ionizing radiation	-	-	-	-	2	2
Monohydric alchohols	1	-	-	-	-	1
Phenols and phenolates (not chlorophenols)	2	-	-	-	-	2
Epoxides	43	-	-	-	-	43
Aliphatic aldehydes	24	-	-	-	-	24
Aromatic ketones	1	-	-	-	-	1
Quinones	1	-	-	-	-	1
Carboxylic acid anhydrides	-	-	-	3	-	3
Esters of aliphatic carboxylic acids (e.g. acrylates)	13	1	-	-	2	16
Esters of aromatic carboxylic acids	2	-	-	-	-	2
Esters of inorganic acids	1	-	-	-	-	1
Sultones and thioglycolates	1	-	-	-	-	1
Amines	19	-	-	-	-	19
Amides (e.g. thiuram sulfides)	25	-	-	-	-	25
Organic cyanides and nitriles (cyano compounds)	-	1	-	-	-	1
Isocyanates	3	-	-	1	-	4
Hydratzine, azo, diazo, and diazonium compounds	1	-	-	-	-	1
Thioureas and organic ammonium compounds	1	-	-	-	-	1
Heterocyclic compounds (sulfur in ring)	1	-	-	-	-	1
Polysaccharides	-	1	-	-	-	1
Inorganic acids	-	3	-	-	1	4
Inorganic bases	-	3	-	-	1	4
Inorganic acids and bases (not specified)	-	-	-	-	1	1
Silicon and carbon	-	1	-	-	-	1
Sulfur, carbon disulfide and ammonium sulfate derivatives	-	1	-	-	-	1

Cause	Allergic contact dermatitis	Irritant contact dermatitis	Skin infections	Protein contact dermatitis or contact urticaria	Others	Total
Alkali metals, alkali earth metals, aluminum and their compounds	-	2	-	-	-	2
Copper and platinum metals and their compounds	3	-	-	-	-	3
Zinc, cadmium, mercury and their compounds	1	-	-	-	-	1
Chromium group metals and their compounds	25	-	-	-	-	25
Cobalt, nickel and their compounds	24	-	-	-	1	25
Metals and metallic compounds (not specified)	2	-	-	-	-	2
Crude oil based organic solvent mixtures	-	1	-	-	-	1
Organic solvent mixtures, not specified	-	12	-	-	-	12
Oils and lubricants	7	37	-	-	5	49
Synthetic resins and plastics	14	5	-	-	2	21
Natural rubber (latex)	-	-	-	29	-	29
Natural resins, balsams and their derivatives (except latex)	18	1	-	-	-	19
Resins, plastics and their derivatives (not specified)	-	3	-	-	-	3
Paints	1	1	-	1	-	3
Varnishes	-	-	-	-	1	1
Paints, varnishes and stains (not specified)	2	-	-	-	-	2
Synthetic glues	8	-	-	-	-	8
Glues (not specified)	2	1	-	-	1	4
Rubbers	-	-	-	-	2	2
Textile dyes	1	1	-	-	-	2
Printing inks	1	1	-	-	-	2
Fur dyes	2	-	-	-	-	2
Hair dyes	3	-	-	-	-	3
Pharmaceuticals	2	-	-	1	-	3
Rubber chemicals	35	1	-	1	1	38
Detergents	1	80	-	-	1	82
Disinfectants	-	2	-	-	1	3
Cosmetics	1	4	-	-	-	5
Perfumes and aromatic substances	8	-	-	-	1	9
Photographic chemicals	-	1	-	-	-	1

Cause	Allergic contact dermatitis	Irritant contact dermatitis	Skin infections	Protein contact dermatitis or contact urticaria	Others	Total
Preservatives and antimicrobial agents	12	-	-	-	-	12
Other known substances classifed according to their use	2	4	-	-	2	8
Other substances classified according to their use (not specified)	-	1	-	-	-	1
Silicon dioxides	-	1	-	-	-	1
Synthetic mineral fibers	-	6	-	-	-	6
Cement, concrete	-	5	-	-	4	9
Textiles	-	-	-	-	1	1
Flours, grains and fodders	-	2	-	30	1	33
Species of wood	4	2	-	-	5	11
Plants	18	5	-	14	1	38
Animal ephithelia, hairs or secretions/excretions	1	-	-	72	1	74
Other animal-derived dusts or substances	-	5	-	4	-	9
Organic materials, not listed elsewhere (not specified)	-	5	-	1	2	8
Sprays, fumes, dusts and smoke (mixtures)	-	7	-	-	-	7
Wet work	-	43	-	-	3	46
Dirty work	-	39	-	-	3	42
Handling of foodstuffs	-	13	-	1	-	14
Other chemical agents (not specified)	10	24	-	1	17	52
Molds	-	-	-	-	1	1
Dermatophytes	-	-	3	-	-	3
Pseudomonas	-	-	-	-	1	1
Eubacteria	-	-	1	-	-	1
Pox viruses	-	-	2	-	-	2
Mites	-	-	35	3	-	38
Insects	-	-	1	1	-	2
Other biological agents (not specified)	-	2	-	1	-	3
Nonphysiological compression or stretching	-	-	-	-	1	1
Mechanical friction of the skin	-	11	-	-	3	14
Unknown factors	2	5	-	-	26	33
Total	349	356	42	164	95	1006

Table 8 **Diseases by EU classification[1] and sex**

Code	Disease	Men	Women	Total
1	*Diseases caused by the following chemical agents:*	*85*	*65*	*150*
100	Acrylonitrile	-	-	-
101	Arsenic or compounds thereof	-	-	-
102	Beryllium (glucinium) or compounds thereof	-	-	-
103.01	Carbon monoxide	1	-	1
103.02	Carbon oxychloride	-	-	-
104.01	Hydrocyanic acid	-	-	-
104.02	Cyanides or compounds thereof	-	3	3
104.03	Isocyanates	13	2	15
105	Cadmium or compounds thereof	-	-	-
106	Chromium or compounds thereof	22	6	28
107	Mercury or compounds thereof	1	1	2
108	Manganese or compounds thereof	-	-	-
109.01	Nitric acid	-	1	1
109.02	Oxides of nitrogen	-	-	-
109.03	Ammonia	-	-	-
110	Nickel or compounds thereof	6	17	23
111	Phosphorus or compounds thereof	-	-	-
112	Lead or compounds thereof	10	-	10
113.01	Oxides of sulphur	-	1	1
113.02	Sulphuric acid	-	-	-
113.03	Carbon disulphide	1	-	1
114	Vanadium or compounds thereof	-	-	-
115.01	Chlorine	-	-	-
115.02	Bromine	-	-	-
115.04	Iodine	-	-	-
115.05	Fluorine or compounds thereof	-	1	1
116	Aliphatic or alicyclic hydrocarbons derived from petroleum spirit or petrol	1	2	3
117	Halogenated derivates of aliphatic or alicyclic hydrocarbons	1	-	1
118	Butyl, methyl and isopropyl alcohol	-	-	-
119	Ethylene glycol, diethylene glycol, 1,4-butanediol and the nitrated derivates of the glycols and of glycerol	-	-	-
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
122	Organophosphorus esters	-	-	-

[1] Comission Recommendation 90/320/EEC Annex I (European schedule of occupational diseases)

Code	Disease	Men	Women	Total
123	Organic acids	1	-	1
124	Formaldehyde	13	16	29
125	Aliphatic nitrated derivates	-	-	-
126.01	Benzene or counterparts thereof (the counterparts of benzene are defined by the formula: C_nH_{2n-6})	1	-	1
126.02	Naphthalene or naphthalene counterparts (the counterparts of naphthalene are defined by the formula: C_nH_{2n-12})	-	-	-
126.03	Vinylbenzene and divinylbenzene	1	-	1
127	Halogenated derivates of aromatic hydrocarbons	-	-	-
128.01	Phenols or counterparts or halogenated derivates thereof	1	1	2
128.02	Naphthols or counterparts or halogenated derivates thereof	-	-	-
128.03	Halogenated derivatives of the alkylaryl oxides	-	-	-
128.04	Halogenated derivatives of the alkylaryl sulfonates	-	-	-
128.05	Benzoquinones	-	-	-
129.01	Aromatic amines or aromatic hydrazines or halogenated, phenolic, nitrified, nitrated or sulfonated derivatives thereof	7	8	15
129.02	Aliphatic amines and halogenated derivatives thereof	4	6	10
130.01	Nitrated derivates of aromatic hydrocarbons	-	-	-
130.02	Nitrated derivates of phenols or their counterparts	-	-	-
131	Antimony and derivates thereof	-	-	-
2	*Skin diseases caused by substances and agents not included under other headings*	*395*	*436*	*831*
201	Skin diseases and skin cancers caused by:			
201.01	Soot	-	-	-
201.02	Tar	-	-	-
201.03	Bitumen	-	-	-
201.04	Pitch	-	-	-
201.05	Anthracene or compounds thereof	-	-	-
201.06	Mineral and other oils	45	4	49
201.07	Crude paraffin	-	-	-
201.08	Carbazole or compounds thereof	-	-	-
201.09	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	350	432	782
3	*Diseases caused by the inhalation of substances and agents not included under other headings*	*618*	*387*	*1005*
301	Diseases of the respiratory system and cancers:			
301.11	Silicosis	8	-	8
301.12	Silicosis combined with pulmonary tuberculosis	-	-	-
301.21	Asbestosis	159	5	164
301.22	Mesothelioma following the inhalation of asbestos dust	25	7	32
301.31	Pneumoconioses caused by dusts of silicates	-	-	-

Code	Disease	Men	Women	Total
302	Complication of asbestos in the form of bronchial cancer	73	4	77
303	Broncho-pulmonary ailments caused by dusts from sintered metals	1	-	1
304.01	Extrinsic allergic alveolites	68	55	123
304.02	Lung diseases caused by the inhalation of dusts and fibres from cotton, flax, hemp, jute, sisal and bagasse	-	1	1
304.03	Respiratory ailments of an allergic nature caused by the inhalation of substances consistently recognized as causing allergies and inherent to the type of work	281	314	595
304.04	Respiratory ailments caused by the inhalation of dust from cobalt, tin, barium and graphite	3	1	4
304.05	Siderosis	-	-	-
305.01	Cancerous diseases of the upper respiratory tract caused by dust from wood	-	-	-
4	*Infectious and parasitic diseases:*	*58*	*33*	*91*
401	Infectious or parasitic diseases transmitted to man by animals or remains of animals	57	23	80
402	Tetanus	-	-	-
403	Brucellosis	-	-	-
404	Viral hepatitis	-	1	1
405	Tuberculosis	1	9	10
406	Amoebiasis	-	-	-
5	*Diseases caused by the following physical agents:*	*1778*	*533*	*2311*
502.01	Cataracts caused by heat radiation	-	-	-
502.02	Conjunctival ailments following exposure to ultraviolet radiation	73	1	74
503	Hypoacousis or deafness caused by noise	937	51	988
504	Diseases caused by atmospheric pressure or decompression	2	-	2
505.01	Osteoarticular diseases of the hands and wrists caused by mechanical vibration	-	-	-
505.02	Angioneurotic diseases caused by mechanical vibration	20	-	20
506.10	Diseases of the periarticular sacs due to pressure	51	2	53
506.21	Diseases due to overstraining of the tendon sheaths	334	204	538
506.22	Diseases due to overstraining of the peritendineum*	-	-	-
506.23	Diseases due to overstraining of the muscular and tendonous insertions	351	258	609
506.30	Meniscus lesions following extended periods of work in a kneeling or squatting position	-	-	-
506.40	Paralysis of the nerves due to pressure	10	17	27
507	Miner's nystagmus	-	-	-
508	Diseases caused by ionizing radiation	-	-	-
	Diseases not included in the European schedule	*532*	*262*	*794*
	Total	3466	2716	5182

*Included in 506.21

III 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

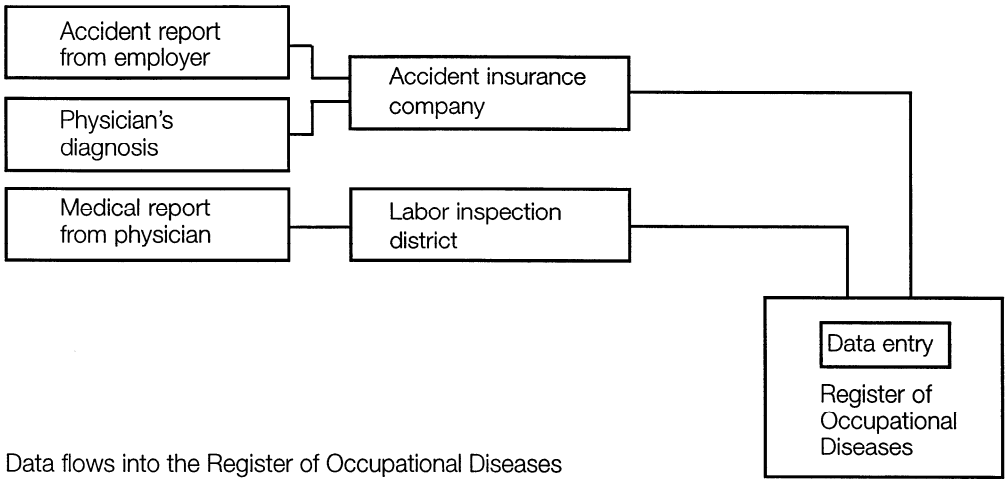
The Finnish Register of Occupational Diseases (FROD) was established at the Finnish Institute of Occupational Health (FIOH) in 1964. The objectives of the FROD are to serve as a source of statistics on occupational diseases, and to promote research on occupational health. The FROD is maintained by the Surveillance Section of the FIOH. Altogether 161 000 cases of occupational diseases, of which about 31 000 are skin diseases, have accumulated in the Register during 1964–1999.

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 Register of Occupational Diseases

Disease groups

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.

Defects and sources of error

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.

Secrecy of information

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. A statistical database on CD-ROM (TurvaCD) is also available in Finnish.
Statistical reports from the FROD are compiled on request.
Requests for reports and other information may be addressed to Dr. Antti Karjalainen, Finnish Institute of Occupational Health, Topeliuksenkatu 41 a A, FIN-00250 Helsinki, Finland tel. + 358 9 47471 fax + 358 9 2414 634, email: antti.karjalainen@occuphealth.fi.

Recent publications

Karjalainen A, Aalto L, Jolanki, R, Keskinen H, Mäkinen I, Savela A. Ammattitaudit 1999 [Occupational diseases in 1996]. Katsauksia 141. Työterveyslaitos 2000.

Karjalainen A, Aalto L, Jolanki R, Keskinen H, Savela A. Occupational diseases in Finland in 1996. Finnish Institute of Occupational Health 1998.

Appendix 2

Act on Occupational Diseases (1343/88)

(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 Paragaph 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

1. Vibration

Typical forms of disease: White finger syndrome; polyneuropathy of the upper limb.

2. Noise

Typical forms of disease: Cochlear type of deterioration of hearing.

3. Overpressure

Typical forms of disease: 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

Typical forms of disease: Bone marrow injuries, lens opacities, skin changes (dermatitis, wounds, scars, skin cancer).

5. Infrared radiation

Typical forms of disease: Lens opacities, e.g. glassblower´s cataract; skin changes (connective tissue changes, teleangiectasis).

6. Ultraviolet radiation

Typical forms of disease: Conjunctivitis and keratitis of the eye; skin changes (photodermatitis, photocontact dermatitis).

1. Arsenic and its compounds

Typical forms of disease: 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

Typical forms of disease: 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

Typical forms of disease: 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

Typical forms of disease: 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

Typical forms of disease: Acute intoxication with strong respiratory symptoms (chemical pneumonitis); chronic intoxication (renal injuries, emphysema); skin changes (contact dermatitis); pulmonary cancer.

6. Cobalt and its compounds

Typical forms of disease: Skin changes (contact dermatitis); rhinitis and asthma due to cobalt allergy; hard metal lung.

7. Chromium and its compounds

Typical forms of disease: 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.

8. Lead and its compounds

Typical forms of disease: 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.

9. Manganese and its compounds

Typical forms of disease: Acute chemical pneumonitis; chronic manganese intoxication (manganism), dominated by nervous symptoms.

10. Nickel and its compounds

Typical forms of disease: Skin changes (contact dermatitis); rhinitis and asthma due to nickel allergy; chemical pneumonitis caused by nickel carbonyl; sinusal and pulmonary cancer.

11. Zinc and its compounds

Typical forms of disease: Zinc fever; skin changes caused by zinc chloride (contact dermatitis, corrosion).

12. Vanadium and its compounds

Typical forms of disease: Irritation of respiratory tract (chemical pneumonitis, bronchial constriction).

13. Halogens and their inorganic compounds (chlorine, bromine, fluorine)

Typical forms of disease: 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).

14. Cyano compounds

Typical forms of diseases: Acute cyanide intoxication, chronic intoxication (respiratory symptoms, nervous symptoms); respiratory diseases caused by isocyanates (asthma).

15. Carbon disulfide

Typical forms of disease: Acute intoxication with mainly central nervous symptoms; chronic intoxication by carbon disulfide with central and peripheral nervous symptoms, possibly associated with coronary heart disease.

16. Hydrogen sulfide

Typical forms of disease: Acute intoxication with symptoms of mainly the respiratory and central nervous system and pulmonary oedema.

17. Sulfur dioxide and sulfuric acid

Typical forms of diseases: Irritative and inflammatory symptoms of mucous membranes and respiratory organs; corrosion of teeth and eyes; skin changes (contact dermatitis, corrosion).

18. Nitrogen oxides, nitric acid and ammonia

Typical forms of disease: Acute respiratory irritation symptoms; pulmonary oedema; local irritation or corrosion of mucous membranes; skin changes (contact dermatitis, corrosion).

19. Carbon monoxide

Typical forms of disease: Acute intoxication caused by carbon monoxide with mainly central nervou symptoms. The clinical picture is associated with elevation of carbon monoxide haemoglobinemia.

20. Phosgene

Typical forms of disease: Acute irritative symptoms of respiratory tract and conjunctival tissues; pulmonary oedema.

21. Inorganic bases and their anhydrides

Typical forms of disease: Skin changes (contact dermatitis, corrosion); acute irritation or corrosion symptoms of conjunctiva, mucous membranes, respiratory or gastro-intestinal tract.

22. Aliphatic, aromatic and alicyclic hydrocarbons

Typical forms of disease: 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.

23. Halogenated derivatives of hydrocarbons

Typical forms of disease: Acute and chronic mainly nervous system intoxications; skin changes (contact dermatitis); cardiac arrhythmias and irritative respiratory symptoms caused by freons.

24. Nitro and amino derivatives of hydrocarbons, amines

Typical forms of disease: 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.

25. Nitroglycerol and nitroglycol

Typical forms of disease: Symptoms of the central nervous and circulatory systems (i.e. hypotension vasodilation) caused either by acute or by chronic intoxication; skin changes (contact dermatitis).

26. Aldehydes, ketones, alcohols ethers and esters

Typical forms of disease: Skin changes (contact dermatitis); asthma and rhinitis caused by formaldehyde; acute mainly central nervous system intoxications caused b alcohols, ketones, ethers and esters; leukaemias caused by ethylene oxide.

27. Organic acids and acid anhydrides

Typical forms of disease: Irritation and corrosion of skin and mucous membranes; asthma and rhiniti caused by acid anhydrides (i.e. phthalic acid, maleic acid and trimellitinic acid anhydride).

28. Phenol and its homologs and their halogen and nitro derivatives

Typical forms of disease: 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.

29. Antibiotics

Typical forms of disease: Skin changes (contact dermatitis); respiratory allergies.

30. Cancer drugs

Alkylating substances (cyclophosphamide, chlorambusil, melphalan, semustine, kermustine, lomustine) and antimetabolites (azathioprine).

Typical forms of discase: Leukaemias, lymphohaematopoietic cancers and bladder cancer.

31. Plastics and synthetic resins and the substances and intermediates involved in their production

Typical forms of disease: Respiratory diseases (asthma, rhinitis); skin changes (contact dermatitis).

32. Organic dusts and exposures

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.

Typical forms of disease: 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.

33. Mineral dusts

Typical forms of disease: Pulmonary diseases caused by quartz and asbestos dust (pneumoconiosis); pulmonary cancer and mesothelioma caused by asbestos; consequences of pneumoconiosis in respiratory and circulatory organs.

34.Thiurams, carbamates, derivatives of paraphenylene diamines

Typical forms of disease: Skin changes (contact dermatitis).

35. Reactive and dispersion dyes

Typical forms of disease: Skin changes (contact dermatitis); asthma and rhinitis caused by reactive dyes.

36. Aflatoxins

Typical forms of disease: Cancer of liver.

Biological factors

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

Typical forms of disease: Allergic alveolitis; asthma and rhinitis caused by molds; humidifier fever.

2. Tuberculosis bacilli

Typical forms of disease: Different forms of tuberculosis.

3. Viruses, bacteria, fungi, protozoa and schistosomes

Typical forms of disease: 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)

(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.