

OCCUPATIONAL DISEASES IN POLAND DURING THE YEARS 1984–1992

ZYGMUNT STARZYŃSKI and JANUSZ IŻYCKI

Department of Epidemiology, The Nofer Institute of Occupational Medicine, Lodz, Poland

Key words: Occupational diseases, Incidence, Epidemiology, Consequences of occupational diseases

Abstract. The authors present the results of analysis of data on occupational diseases in Poland during the years 1984–1992. The statistical material covers 86 871 cases of various diseases. Among them hearing lesions, vocal organ diseases, contagious and invasive diseases, pneumoconioses, dermatoses, vibration syndrome, poisonings and chronic bronchitis proved to be most common. In Poland, among the etiological factors, noise, industrial dusts, hepatitis virus, chromium and its compounds, lead and its inorganic compounds, carbon disulphide and carbon monoxide pose the highest risk. Apart from the statistics concerning the number of cases of occupational diseases according to sex, age, exposure duration, national economy branches and regions (voivodeships), the article presents, for the first time, some consequences of occupational diseases, such as granting disability pensions and/or indemnity depending on the per cent of health impairment.

INTRODUCTION

Collection and analysis of the reliable data on occupational diseases are essential for identifying health effects caused by an occupational environment as well as for planning and assessing of preventive projects.

The state, attaching great importance to that issue, has imposed an obligation to notify and register all occupational diseases, besides some other diseases posing a serious social problem.

For many years the Nofer Institute of Occupational Medicine in Lodz has been involved in collecting and analysing the data on occupational diseases. Its register comprises all cases that have been diagnosed in Poland since 1970 and it is the only source of information.

The article is an attempt to evaluate the current epidemiological situation in this respect and it is a continuation of a number of articles published earlier (1–10).

MATERIALS AND METHODS

The authors used the data from the register for the years 1984–1992, i.e. the period when the amended regulations on occupational diseases, their notification, diagnosis and registration became effective*.

Individual notifications of diagnosed occupational diseases sent to the register by the sanitary-epidemiological stations (altogether 86 871 cases) were analysed. Notices of consequences of occupational diseases, provided by the industrial plants since 1990 (altogether 10 278 notices), became an additional source of information.

The incidence rate was measured with the number of new cases of occupational diseases per 100 thousand workers employed in various branches of the national economy. The data on employment were derived from publications of the Chief Statistical Office. The data were processed by means of computer programmes of our own special design.

RESULTS

The incidence rate of occupational diseases during a period under study shows generally an increasing tendency, except for some yearly fluctuations (Fig. 1).

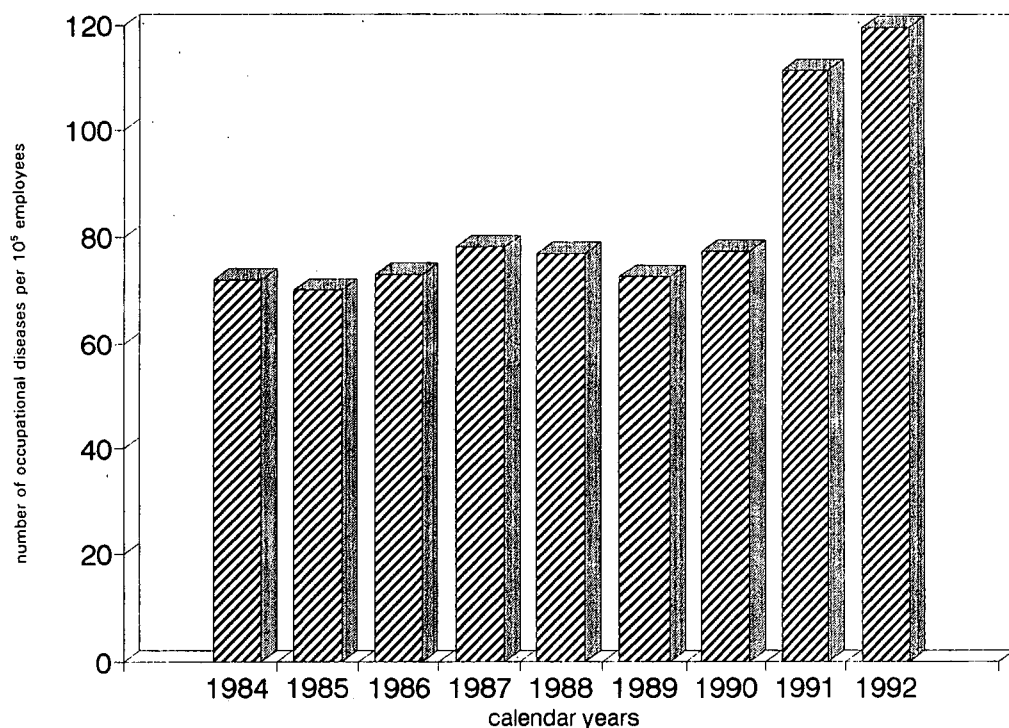


Fig. 1. Incidence of occupational diseases in Poland during the years 1984–1992.

* The Cabinet's Decree Concerning Occupational Diseases (Law Gazette of 1983, No 65, Item 294 and of 1989, No 61, Item 364).

Table 1. Occupational diseases in Poland during the years 1984–1992, according to nosologic units

No	Occupational diseases	Number of occupational diseases					Number of occupational diseases per 100 thousand employees				
		1984	1986	1988	1990	1992	1984	1986	1988	1990	1992
	Total	8747	9105	9604	9326	10639	72.7	73.2	77.0	77.4	119.5
1.	Acute and chronic poisonings with chemical substances and their sequelae	632	472	524	378	383	5.1	3.8	4.2	3.1	4.3
2.	Pneumoconioses	1274	1174	1018	785	1349	10.5	9.4	8.2	6.5	15.2
3.	Chronic diseases of bronchi induced by substances causing paroxysmal bronchospasms and pneumopathies with inflammatory proliferative reactions	124	157	161	152	154	1.0	1.3	1.3	1.3	1.7
4.	Chronic bronchitis induced by toxic substances, irritant aerosols – in case of insufficiency of respiratory system	286	370	443	409	425	2.4	3.0	3.6	3.4	4.8
5.	Pulmonary emphysema in glassblowers and musicians of brass bands – in case of pulmonary insufficiency	5	3	4	3	6	0.0	0.0	0.0	0.0	0.1
6.	Chronic atrophic, hypertrophic and allergic inflammation of mucous membranes of nose, pharynx, larynx and trachea	221	155	165	211	279	1.8	1.2	1.3	1.8	3.1
7.	Chronic diseases of vocal organ related to excessive voice effort	576	1067	1191	1585	2009	4.8	8.6	9.5	13.2	22.6
8.	Diseases induced by ionizing radiation including malignant neoplasms	18	11	16	10	23	0.1	0.1	0.1	0.1	0.3
9.	Malignant neoplasms induced by carcinogens present in working environment, except for those mentioned under point 8	20	42	58	76	63	0.2	0.3	0.5	0.6	0.7
10.	Dermatoses	1103	837	803	893	780	9.1	6.7	6.4	7.4	8.8
11.	Contagious and invasive diseases	1743	1726	1828	1675	1399	14.4	13.9	14.7	13.9	15.7
12.	Chronic diseases of locomotor system related to the way the job is performed	152	219	229	253	230	1.3	1.8	1.8	2.1	2.6
13.	Chronic diseases of peripheral nervous system caused by pressure on the nerves trunks	19	54	73	71	124	0.2	0.4	0.6	0.6	1.4



14.	Eye diseases induced by occupational chemical or physical factors	40	35	32	21	22	0.3	0.3	0.3	0.2	0.2
15.	Noise induced hearing loss	1918	2229	2254	2237	2904	15.8	17.9	20.5	19.4	32.6
16.	Vibration syndrome	616	550	495	464	488	5.1	4.4	4.0	3.8	5.5
17.	Diseases induced by work at increased or decreased atmospheric pressure	1	0	1	2	1	0.0	—	0.0	0.0	0.0
18.	Diseases induced by gravity load (accelerations)	0	0	0	0	0	—	—	—	—	—
19.	EM induced diseases of central nervous system, heart stimulating and conducting systems and gonads	6	4	9	1	0	0.0	0.0	0.1	0.0	—
20.	Heat hyperpyrexia syndrome and its sequelae	2	0	0	0	0	0.0	—	—	—	—

The highest incidence rates were noted in occupational hearing lesions, contagious and invasive diseases, chronic vocal organ diseases, pneumoconioses, dermatoses, vibration syndrome, poisonings and chronic bronchitis (Table 1). They make 92% of all cases of occupational diseases in Poland and for this reason they pose the main problem of occupational pathology in our country.

Noise-induced occupational hearing lesions (25% of all cases) are most prevalent with an increasing tendency.

In the group of contagious and invasive diseases (17.9% of all occupational diseases), virus hepatitis constitutes over 80% of cases, whereas brucellosis, tuberculosis and some rare cases of tropical diseases are the remaining disease in this group.

Chronic vocal organ lesions due to excessive voice effort (13.7% of all occupational diseases) show the highest dynamics of incidence. During the last 9 years their number increased four times (Table 1). In this group, vocal cord paresis and hypertrophic changes are most prevalent among teachers.

Pneumoconioses constitute 11.9% of all occupational diseases. The highest number of pneumoconioses are induced by mixed dust (pneumoconioses in coal workers and arc welders). Silicosis and asbestosis are less prevalent, whereas talc pneumoconiosis and aluminosis are rather rare.

Among dermatoses (9.3% of all occupational diseases), various forms of eczema, mostly allergic eczema, chiefly induced by chromium compounds, constitute 90%.

The vibration syndrome (5.4% of all occupational diseases) is developed chiefly due to topical vibration. These are mainly neurovascular disorders (over 50% of all cases). Disorders induced by the whole body vibration were found in 25 cases only.

Chronic and acute poisonings and their sequelae (4.7% of all occupational diseases) are mainly due to exposure to lead and its inorganic compounds, carbon disulphide and carbon monoxide. During the analysed period the number of poisonings and the incidence rate showed a decreasing tendency.

Finally, chronic bronchitis with insufficiency of the respiratory system (4.1% of all occupational diseases), induced by the irritating dusts and gases, shows high incidence rate. The number of cases constantly increases (from 286 cases in 1984 to 425 in 1992) as well as the incidence rate (from 2.4 to 4.8, respectively).



The differences in the incidence rate of particular occupational diseases among men and women result chiefly from the job specificity, determined as "male" or "female" occupations. In women vocal organ lesions, contagious and invasive

Table 2. Structure of occupational diseases in Poland during the years 1984–1992, according to exposure duration

Year	Number of occupational diseases ¹ (= 100%)	Exposure duration (%)					
		up to one shift	two days – one year	1–4 years	5–9 years	10–19 years	20 years and longer
1984	6274	2.2	1.3	2.7	6.7	23.8	63.3
1985	6308	1.9	1.1	3.2	8.0	23.1	62.7
1986	6996	2.0	1.1	2.5	6.0	21.4	67.0
1987	7390	1.8	0.7	2.4	5.8	19.5	69.8
1988	7286	2.2	1.0	2.8	5.3	19.2	69.5
1989	6549	1.4	1.0	1.9	5.2	19.8	70.7
1990	6932	1.4	1.2	2.2	5.4	19.2	70.6
1991	9207	0.6	0.9	1.3	3.6	17.9	75.7
1992	8324	0.7	0.5	1.8	4.3	18.2	74.5

¹Diseases for which the exposure duration was not important were excluded from the analysis.

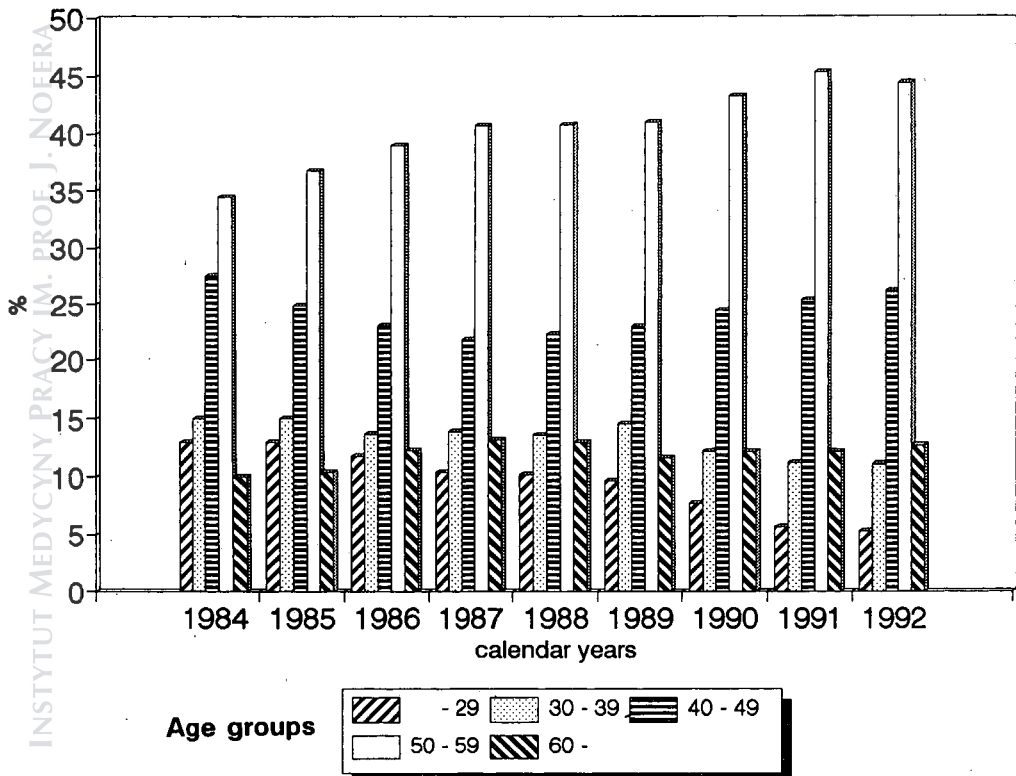


Fig. 2. Structure of occupational diseases in Poland according to age reported during the years 1984–1992.

diseases as well as chronic diseases of peripheral nervous system, caused by pressure on the nervous trunk, are predominant, whereas in men — pneumoconioses, poisonings and vibration syndrome.

Most occupational diseases diagnosed in Poland during the years 1984–1992 were developed by a long-term exposure to pathogenic factors occurring in an occupational environment (Table 2). The analysis, after excluding contagious and invasive diseases and allergies, which are not related to exposure duration, shows that over 89% of all cases generate after a minimum 10-year period of exposure. This is confirmed by the fact that most cases of occupational diseases occur in the elder workers, aged 40–49 years and 50–59 years (24.3% and 40.7%, respectively) (Fig. 2).

The incidence of occupational diseases in particular branches of the national economy is highly differentiated, because of various production profiles and working conditions (Table 3). The highest incidence rates occur in the following sectors: industry, forestry, education, health care and social welfare. In industry — noise induced hearing lesions, pneumoconioses, dermatoses and poisonings are predominant, in forestry — the vibration syndrome, in education — vocal organ diseases due to excessive voice effort and in health care and social welfare — virus hepatitis.

Table 3. Occupational diseases in Poland during the years 1984–1992, according to some national economy sectors and industry branches

National economy sector/industry branch	Number of occupational diseases					Number of occupational diseases per 100 thousand employees				
	1984	1986	1988	1990	1992	1984	1986	1988	1990	1992
Industry (total)	4956	4879	5040	4609	5591	106.6	104.4	111.1	102.6	177.2
– Mining	1160	1078	1213	1252	2048	258.3	235.6	250.1	259.4	539.4
– Iron and steel	308	366	431	325	472	187.1	229.2	277.8	228.4	398.4
– Non-ferrous metals	374	269	289	191	166	572.2	410.7	462.2	317.1	325.3
– Metallurgical	256	275	293	326	404	84.3	92.0	97.5	105.4	217.5
– Machine-building	500	468	550	449	454	107.0	101.5	122.0	107.4	149.5
– Transport equipment	717	732	682	638	631	189.3	197.3	191.7	191.3	268.3
Construction	445	414	479	295	525	39.8	35.8	41.8	28.1	81.3
Agriculture	324	257	279	271	237	38.7	31.5	34.8	36.3	52.2
Forestry	230	161	159	128	125	157.6	105.5	108.6	98.7	130.7
Transport and communication	156	176	188	156	246	14.8	16.7	18.5	17.0	34.8
Trade	90	91	120	129	78	5.0	7.7	9.2	10.8	11.4
Education, culture and art	663	1119	1218	1601	2033	79.7	98.6	103.6	133.2	176.5
Health care and social welfare	1690	1800	1938	1812	1539	224.4	226.6	321.3	211.8	186.1

Special investigation was carried out to identify the industrial plants in which 20 or more cases of occupational diseases occurred in each year during the analysed period. The results show that a relatively small number of enterprises (50–79) is responsible for generating 24.8% of all occupational diseases. This includes 62.1% of pneumoconioses, 46.5% of poisonings, 39% of chronic bronchitis, 37.0% of hearing lesions and 28.4% of vibration syndrome cases. They are chiefly coal mines, mining, development enterprises, metallurgical plants and shipyards.

An uneven industrialization of Poland contributes to different incidence rates of occupational diseases in particular regions (voivodeships) (Fig. 3). The highest



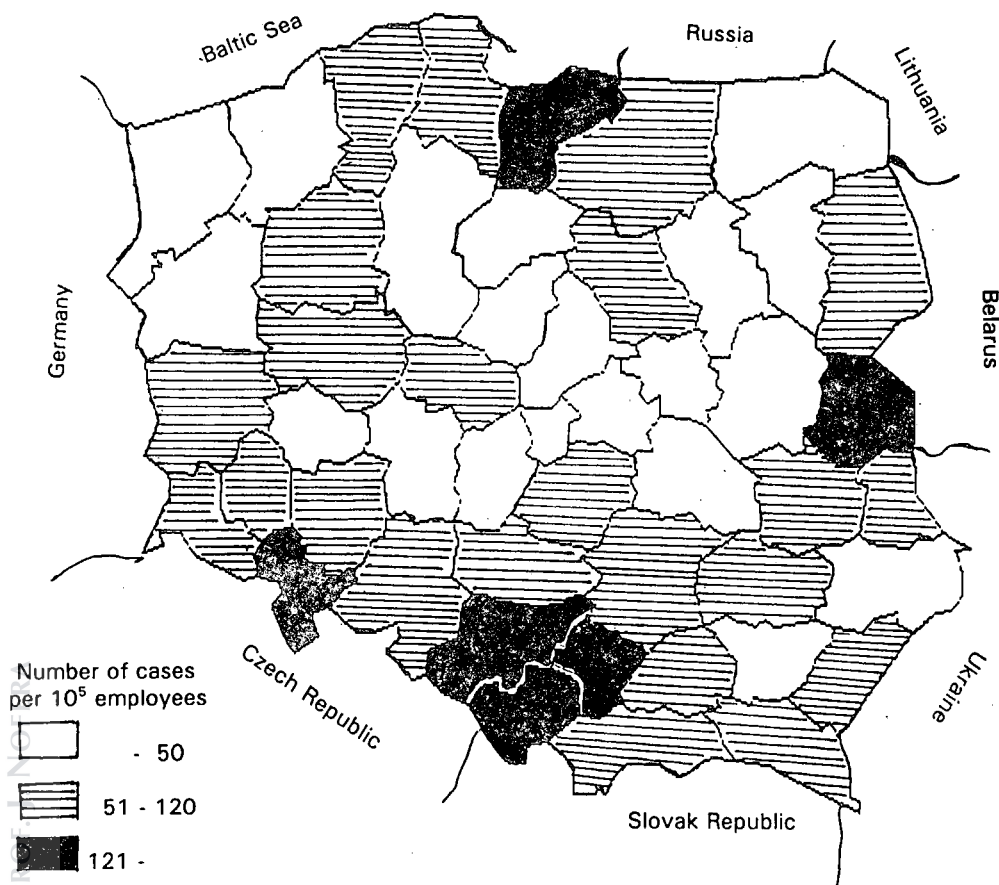


Fig. 3. Geographic distribution of occupational diseases in Poland during the years 1984–1992.

incidence rates are observed in highly industrialized regions like Cracow (mean annual rate — 152 cases per 100 thousand employees), Katowice (167/100 000), Wałbrzych (201/100 000), and the lowest in such voivodeships as Koszalin (25/100 000) and Włocławek (28/100 000).

The obligation to register and notify of some consequences of occupational diseases by the industrial plants have created a possibility of better recognition of the problem. The initial analysis of the notifications (10 276 cases) shows that every second person with diagnosed occupational disease (causing, about 30% of health impairment on average) has been granted a disability pension.

DISCUSSION

An attempt to evaluate the epidemiological situation in Poland within the purview of occupational diseases presented above requires an additional comment. Although the period covered by the analysis, i.e. the years 1984–1992 seems to be

Table 4. Some consequences of occupational diseases in Poland during the years 1990–1992.

Occupational diseases	Number of occupational diseases	Group of disability pension			Health impairment (in %)
		I	II	III	
Acute and chronic poisoning with chemical substances and their sequelae	349	5	77	90	27.8
Pneumoconioses	1092	8	77	477	39.9
Chronic disease of bronchi induced by substances causing paroxysmal bronchospasms and pneumopathies with inflammatory proliferative reactions	130	1	20	79	28.9
Chronic bronchitis induced by toxic substances, irritant aerosols — in the case of pulmonary insufficiency	586	4	52	408	36.7
Chronic atrophic, hypertrophic and allergic inflammation of mucous membranes of nose, pharynx, larynx and trachea	159	—	10	90	24.5
Chronic diseases of vocal organ related to excessive voice effort	1165	5	19	645	25.7
Malignant neoplasms	68	11	32	3	59.7
Dermatoses	799	—	20	487	21.3
Contagious and invasive diseases	1778	2	54	419	25.4
Chronic diseases of locomotor system related to the way the job is performed	268	—	2	123	18.8
Chronic diseases of peripheral nervous system caused by pressure on the nerves trunks	124	1	3	84	25.0
Noise-induced hearing loss	3228	4	48	1938	28.4
Vibration syndrome	532	1	10	322	25.0
Total	10278	42	424	5165	29.8

long enough to draw some conclusions, frequent late health effects caused by a long-term exposure resulting in developing occupational diseases should incline to a cautious approach to this problem. Hence, the current incidence rates do not fully reflect of the risk involved but it is rather a general overview of the present epidemiological situation.

The constant increase in the incidence rate of occupational diseases, which has been noted in Poland for many years, depends on various reasons. The unfavourable working conditions are undoubtedly the fundamental one. However, it is also significantly affected by the growing interest in indemnities due to occupational diseases which encourages workers to consult a physician more frequently. This, together with improvement of diagnostic methods, contributes to increasing the incidence rate even without any deterioration of the working conditions.



The information on the occurrence of occupational diseases in particular branches of the national economy is very helpful in detecting the main sources of hazard. It must be remembered however, that any undue generalizations of such data may confound the reality, e.g. the mean incidence rate in industry (total) is lower than that in health service and welfare. Only the minute analysis of particular industrial branches indicates those with the highest rates, namely: coal mining, iron and steel industries and non-ferrous metallurgy (Table 3).

The information on the industrial plants responsible for generating a significant number of occupational diseases is very useful for setting the priorities in actions taken to improve the working conditions. The bulletins published by the Nofer Institute of Occupational Medicine in Lodz comprise the lists of these plants.

It also is noteworthy that for the first time an initial analysis of direct consequences of occupational diseases has been made (Table 4) although its results are not representative. The planned future systematic collection of such data will facilitate better assessment of the impact of working conditions on workers' health.

It is hard to conclude how the epidemiological situation with regard to occupational diseases will develop in Poland in the next few years. There are too many various factors which may affect it in an unpredictable way. However, all earlier prognoses proved to be absolutely correct (4). Hence, it can be anticipated that such occupational diseases as: hearing lesions, contagious and invasive diseases, pneumoconioses, dermatoses and poisonings will remain predominant. The rapid increase in the number of vocal organ diseases should be reduced. It also seems that chronic character of most diseases with long period of exposure preceding their detection will remain a common phenomena.

To sum up, it must be stressed that due attention should be paid to the complexity of the problem discussed, and to its important role in setting the priority preventive tasks aimed at creating safer working conditions.

CONCLUSIONS

1. The incidence rate of occupational diseases registered in Poland provides an evidence of a constant risk of health impairment due to unsatisfactory hygienic conditions at the work-place. The most serious health hazards occur in coal mines, mining development enterprises, metallurgical plants and shipyards.

2. In the general structure of occupational diseases in Poland the most prevalent are: occupational hearing lesions, chronic vocal organ diseases, contagious and invasive diseases, pneumoconioses, dermatoses, vibration syndrome, poisonings and chronic bronchitis.

3. Most occupational diseases in Poland (over 89%) developed after a long-term exposure to a particular harmful factor.

4. The highest incidence of occupational diseases in Poland occurs in industry, forestry, education, health care and welfare.

5. The initial analysis of direct consequences of occupational diseases shows that every second person is granted a disability pension due to a given occupational disease which causes about 30% of health impairment on average.

ACKNOWLEDGEMENTS

The study was carried out under the agreement with the Ministry of Health and Welfare.

REFERENCES

1. Bogdanik T, Starzyński Z, Kaczmarek T. Das Berufskrankheitengeschehen in Polen. In: Arbeitsmedizin im Gesundheitsdienst, Vol. 6, ed. F Hofman, U Stossel, Gentner Verlag, Stuttgart, 23–28, 1992.
2. Indulski J et al. Occupational diseases in Poland during the years 1971–1977. Med Pr 29: 507–520, 1979 (in Polish).
3. Indulski J, Starzyński Z. Incidence of occupational diseases in Poland during the years 1976–1981. Pol Tyg Lek 38: 377–381, 1983 (in Polish).
4. Indulski J, Starzyński Z. Occupational diseases in Poland. Legal status and epidemiological situation. Pol J Occup Med 1: 184–191, 1988.
5. Kubasiewicz M et al. Analysis of the incidence of occupation-related infection and parasitic diseases in Poland during the years 1971–1977. Zdrowie Publ 90: 87–92 (in Polish).
6. Kubasiewicz M, Starzyński Z, Szeszenia-Dąbrowska N. Occupational skin diseases in Poland during the years 1971–1977. Przegl Derm 66: 361–366, 1979 (in Polish).
7. Starzyński Z. Occupational intoxications in Poland during the years 1971–1977. Pol Tyg Lek 34: 579–581, 1979 (in Polish).
8. Starzyński Z, Szeszenia-Dąbrowska N, Wilczyński U. Chronic occupational pulmonary diseases in Poland during the years 1971–1977. Pneum Pol 49: 825–830, 1981 (in Polish).
9. Sułkowski W et al. Epidemiology of occupational otolaryngological diseases in Poland during the years 1971–1977. Otolaryng Pol 34: 481–487, 1980 (in Polish).
10. Sułkowski W, Starzyński Z, Szeszenia-Dąbrowska N. Epidemiology of occupational noise, induced hearing loss in Poland throughout 1971–1979. Med Pr 32: 9–16, 1981.

Received for publication: June 23, 1993

Accepted for publication: June 30, 1993

