

OCCUPATIONAL DISEASES IN BELGIUM, THE CZECH REPUBLIC AND HUNGARY – A COMPARISON

FERENC KUDÁSZ, KÁROLY NAGY, IMRE NAGY

*National Public Health Institute – Occupational Health Directorate

ABSTRACT

Occupational diseases are underreported in most European countries. Hungarian data have not been compared to figures from other Member States in details. The authors wanted to put Hungarian datasets on registered occupational diseases into an international perspective. Reports from the countries were compiled from the years 2000-2015. Data on registered occupational diseases were extracted following a grouping of disease that is in line with the ILO list. Annual rates were calculated with Eurostat figures on employees. In the early 2000-s, in all three countries there was a decreasing trend of occupational diseases. The Belgian figures rose in the last years, while the Czech ones stabilized. The plunge of Hungarian data continued until 2012. Each year the highest number and rates of occupational diseases were registered in Belgium, followed by the Czech Republic. The Hungarian data were far below the others. Several classical diseases (respiratory diseases, vibration syndromes) showed decreasing trends while musculoskeletal disorders were rising. Countries featured specific distribution of disease types, which were also evolving in the observed period. The patterns of registered occupational diseases were highly different and multiple factors are supposed to be in the background. The extremely low Hungarian figures are not reassuring but an alarming sign.

KEY WORDS: occupational disease, register, reporting, Belgium, Czech, Hungary

Corresponding author: Ferenc Kudász M.D
2 Nagyvárad tér
Budapest, Hungary, H-1096
e-mail: kudasz@omfi.hu
Phone: +36-14593086

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INTRODUCTION

Occupational diseases represent a significant burden for the society. However, reliable statistical information thereof is scarce. Most agree that the figures reported in official systems are only the tip of the iceberg and work has more share in health impairments related to both occupational and work-related diseases, as well. Work-related mortality was estimated to be 166,265 annually in the formerly socialist economies, mainly due to circulatory diseases, malignancies, accidents and violence and respiratory diseases (Hämäläinen et al., 2007).

In 2004 the World Health Organization (WHO) listed the Czech Republic and Hungary among the upper middle income countries of Europe, while Belgium was in the high income group (WHO, 2008).

WHO estimated 34 and 177 thousand deaths and 276 and 1897 thousand DALYs (Disability Adjusted Life Years) from occupational carcinogens in high income and low to middle income countries, respectively, around the World in 2004. The figures for airborne particulates were 43 and 457 thousand deaths and 710 and 6751 thousand DALYs, respectively. Noise could be the source of 392 and 4510 thousand DALYs (WHO, 2009).

According to the study by WHO on selected occupational risk factors worldwide in 2000, 37% of back pain, 16% of hearing loss, 13% of chronic obstructive pulmonary disease, 11% of asthma, 9% of lung cancer and 2% of leukaemia were estimated to be of occupational origin. Deaths and loss of healthy life years affected males five times more than females (Concha-Barrientos et al., 2004).

The ILO estimated 2888, 4233 and 3456 deaths due to work-related diseases in 2001 for Belgium, the Czech Republic and Hungary, respectively. Malignancies due to hazardous substances were the most important factors of mortalities; lung cancer plus mesothelioma, liver and bladder cancers and leukaemia were in the top four (Takala, 2005).

Despite the rather uniform occupational safety and health legislative basis (set by the Directive 89/391/EEC “Framework Directive”) the system of occupational health and the cases of occupational diseases are rather different in the European Union member states. This is well represented by the history of the data collection initiatives of Eurostat. A pilot project on a harmonized occupational disease data collection was launched in 1999 (EODS) culminating in a Commission Recommendation (EC, 2003). Data on national level were not published due to their incomparability and finally public dissemination of aggregate data was suspended in 2009. The Commission published a guide on the diagnostics of occupational diseases (EC, 2009). A more solid legislative basis appeared in the form of Regulation that will enable more binding statistical data collection measures in the future (EP-CoEU, 2008). The European Commission has published a status quo report (EC, 2013a) and convoked a conference on the subject with the aim of a reconsideration (EC, 2013b). Eurostat has relaunched its activity with the OCCUSTAT group.

The MODERNET collaboration investigates promising alternative methods like trend analysis (MODERNET). The European Agency for Safety and Health at Work is focusing on sentinel and alert systems (EU-OSHA, 2015).

Eurogip has published several valuable in-depth reports on occupational diseases; however, the easternmost country analysed was the Czech Republic. In this article we compare the published occupational disease data from Belgium, the Czech Republic and Hungary in order

to highlight the huge underreporting in Hungary. The countries were chosen because they have workforces of similar magnitude, economies not thoroughly different and enable comparisons to systems in old and new European Union member states.

METHODS

We collated occupational disease data registered only in the official systems. No juridical decisions or health care provisions were included.

In the Czech Republic the National Institute of Public Health (*Státní zdravotní ústav – SZÚ*) publishes annual reports on occupational diseases and "endangerments of occupational disease", which are available on their website as from year 1996 (SZÚ, 2000-2015). The national register was launched in 1991 and has a legislative background. The list of occupational diseases and the process were updated regularly. However, diseases added recently to the list account for only a few percent of registered cases. The report provides detailed data on occupational disease groupings (chemical, physical, respiratory, skin, biological, other) and on subgroups. Furthermore, figures by International Classification of Diseases (ICD) codes are available as well, where malignancies equal "C" codes. From 2008 the dataset is extended by an overview analysis. In our analysis we used the second part of the report that deals only with manifest occupational diseases (*nemoci z povolání*) without the endangerments (*ohrožení*), which include excessive exposures (elevated biological monitoring findings) and subclinical health impairments. The latter group is similar to excessive exposures but in a clinical way: e.g. a slower nerve conduction velocity in the median nerve that otherwise does not fulfil the medical criteria to be classified as disease.

In Belgium, recently, the Federal Agency of Occupational Risks (Fedris) has taken up all the tasks of the former Occupational Disease Fund (*Fonds des maladies professionnelles – FMP-FBZ*). The latter published annual reports on occupational diseases reported by occupational physicians (*déclaration*) and compensation claims (*demande de réparation*) due to occupational health impairments and care provided in relation thereof. The reports were available from years 2000-2015 on the old FMP-FBZ website, which is not accessible by the submission of our article (FMP-FBZ, 2000-2015). Compensation of occupational diseases is governed by royal decrees and uses a mixed system. The list system (*système de liste*) is a closed set of diseases that can be accepted automatically if the worker fulfils the occupational and morbidity requirements. The lists were updated several times, which is reflected in the number of accepted cases. In the open system (*système ouvert*) any diagnosed disease can be accepted if the claimant can clearly prove that it is directly related to exposures at work. Among others, the reports give figures on demands, rejected and accepted cases of occupational diseases by groupings (chemical, skin, respiratory, biological, physical, other) and on the subgroups in the list system. Cases in the open system are summed up on the basis of affected organs. Further information is available in the report on Belgian accident insurance (Eurogip, 2009). In our analysis we used the accepted cases of temporary and permanent incapacities (*incapacité temporaire, permanente*) plus unfit-to-work decisions (*écartement du travail*) for the private and the public sectors in both systems. Eurogip used this methodology in their analysis, although they could remove duplicate cases,

for which we did not have the data (Eurogip, 2014). In every report there is an introduction to the legal background and functioning of the system but there is no written analysis of the data.

Hungarian data were extracted from the annual reports of the state body responsible for national occupational health issues (initially the Hungarian Institute of Occupational Health – OMFI, later its successors). Summaries of the reports are published in the Hungarian quarterly journal *”Foglalkozás-egészségügy”*, and once it became available in English as well (Nagy et al., 2010). The process of reporting, investigation and registration is legally defined. The Hungarian list is open, which practically enables any disease to be reported, and has been made compatible with the ILO and the EU lists as well. However, up to 2007 only a special set of diseases was entitled for compensation. The restriction was abolished by the Constitutional Court but this did not have effect on the reported figures. Currently, any registered case entitles for compensation, but it must be applied for separately. Acceptance of diseases is not guided by sets of criteria but is on the basis of legal provisions (occupational exposure limit values) and available state-of-the-art scientific evidence. The Hungarian report provides figures accompanied by brief explanation of the cases under the following headings: noise, biological, skin, respiratory, vibration, chemical, ionising radiation, malignancies, other (including ergonomics and psychosocial factors). Cases of excessive exposures are dealt with separately and were not included in our analysis.

All three reports contain information on geographical and sectorial distributions but these data were not used. It is the period of 2000-2015 from which reports are available from all the three countries. The first author identified groups that can be compared. For our analysis the following (sometimes overlapping) headings and subheadings were agreed: Diseases caused by chemical agents, Diseases caused by physical agents, Noise-induced hearing loss, Musculoskeletal disorders (MSDs of non-vibration origin), Vibration induced diseases (vascular, neurological and osteoarticular together), Respiratory diseases (including malignancies), Silicoses and coal-workers` pneumoconioses, Skin diseases (including chemically induced dermatitis), Diseases caused by biological agents (including tuberculosis), Zoonoses (non-tropical), Malignancies.

In some cases special calculations had to be made and restrictions may apply. For Hungary, diseases caused by physical agents were calculated as the sum of cases due to noise, vibration, radiation, climate and biomechanical overload (MSDs). For Belgium, only respiratory malignancies could be identified as malignancies, and were used in our comparison, because the reports did not specify cancers under other headings (e.g. within skin diseases).

Crude figures are usually projected to some reference population data to get more comparable indicators. The Czech reports provide rates for 100,000 employees without specifying the denominator, while the Hungarian reports also give rates but on the basis of those employed in companies with 5 or more employees. The Belgium reports did not provide rates. To get a common denominator we decided to use the Eurostat dataset from the European Union Labour Force Survey (EU-LFS) “Employees, 15-64 years, all educational levels” for all three countries (Eurostat, 2017). To avoid decimals, figures are given in “per million employees” (pme).

RESULTS

We could observe different trends in the figures, and that applies to the reference population data, too. In the observed period the number of employees increased in Belgium (+ 11%) but it was due solely to the growth among females. The slight increase (+ 4%) among Czech employees was practically due to males only. There were substantially more employees in Hungary by 2015 (+ 16%) due to increase among both female and male employees (*Table I*). Our calculated rates are always 5-15% higher than that of the officially published Czech rates, for which the source metadata is not provided. On the other hand, due to the higher denominator, our calculated rates are always 16-20% lower than the published Hungarian data. The published rates for Belgium, which are available for the years 2000-2006, (Eurogip, 2009b) are 20-50% more, than our calculations. On a lesser extent, this may be due to the difference in case numbers (see below). The substantially (around plus one million persons) higher denominator we used is the main reason for our lower rates.

The figures of the three possible Belgian datasets for occupational diseases are not equal. From year 2004, the reports by occupational physicians (declarations) are getting close to, and move together with our calculation estimates and the Eurogip figures, and diverge again in 2015. The differences between our calculations and the Eurogip figures range between 417 and -356 cases, or -14.5% and +15.8% (average +75 cases, 5% plus, based on Eurogip figures). When Belgian occupational disease data are mentioned in the text below, we refer to our calculations.

TABLE I.

Number of registered occupational diseases in BE, CZ, HU,
incidence rates and employee metadata

Year	Occupational diseases			Incidence rate (pme)			Employees (millions)		
	BE	CZ	HU	BE	CZ	HU	BE	CZ	HU
2000	2499	1691	567	724	430	177	3.45	3.93	3.21
2001	2703	1627	481	791	415	146	3.42	3.92	3.28
2002	3106	1531	488	908	389	147	3.42	3.94	3.32
2003	2957	1486	541	861	386	160	3.43	3.85	3.38
2004	1814	1329	675	514	345	204	3.53	3.85	3.32
2005	1759	1340	473	491	338	141	3.58	3.96	3.35
2006	1504	1150	339	416	287	99	3.61	4.01	3.41
2007	1429	1228	187	384	301	55	3.72	4.08	3.40
2008	1545	1327	280	406	320	83	3.80	4.15	3.36
2009	1475	1245	254	392	307	78	3.76	4.06	3.26
2010	1525	1236	274	398	311	84	3.83	3.97	3.25
2011	2038	1210	245	529	307	75	3.85	3.95	3.28
2012	2645	1042	120	685	264	36	3.86	3.94	3.36
2013	2948	983	168	769	246	49	3.83	4.00	3.44
2014	2907	1214	191	752	302	53	3.87	4.02	3.62
2015	3175	1035	277	826	252	74	3.85	4.10	3.73

In the observed period the number of Belgian cases oscillated between 1429 and 3175 (the incidence rates between 384 and 908 pme). The rates fell in the early 2000-s (with the minimum of 384 pme in 2007) but the trend reversed in the last five years, with the registered cases returning to the starting levels. The number of the Czech occupational disease cases decreased from 1691 (in 2000) to the range of 1000-1200 from 2006 onwards, with the all-time lowest 983 registered in 2013. Thus the incidence rate for 1,000,000 employees fell from 430 in 2000 to the range of 250-300. Hungarian figures were in the range of 500-600 until 2004 and then dipped to 120 in 2012 and have recovered only to 277 in 2015. In parallel, incidence rates have plummeted from 177 pme to 36 pme, climbing back to 74 pme by 2015.

Differences between male and female occupational disease figures are remarkable. In Belgium the two rates got closer during the period, but the apparent male predominance is still obvious. (*Fig. 1*) The disparity in the incidence rates of the Czech occupational diseases between males and females has equalled by 2008 and only a minor male preponderance is visible since then (*Fig. 2*). The difference between Hungarian female and male incidence rates has gradually disappeared by 2011. (*Fig. 3*)

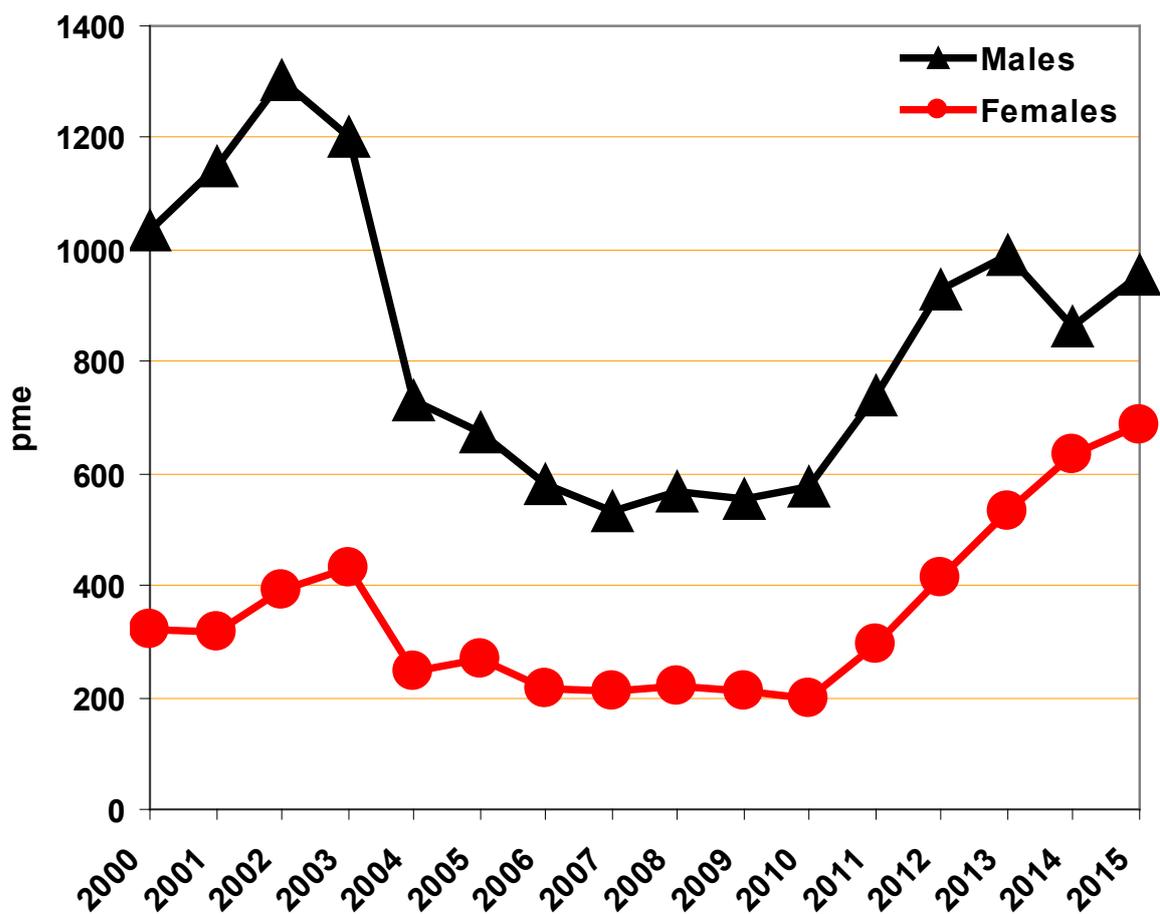


Figure 1. Evolution of registered cases by gender per million employees in Belgium in 2000-2015 (rate)

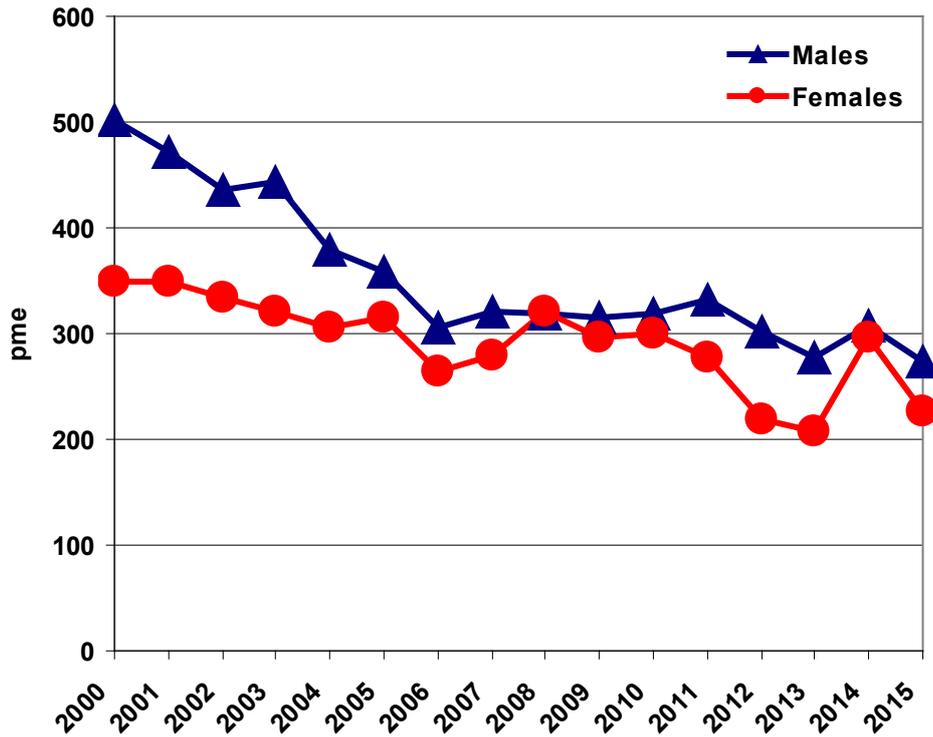


Figure 2. Evolution of registered cases by gender per million employees in the Czech Republic in 2000-2015 (rate)

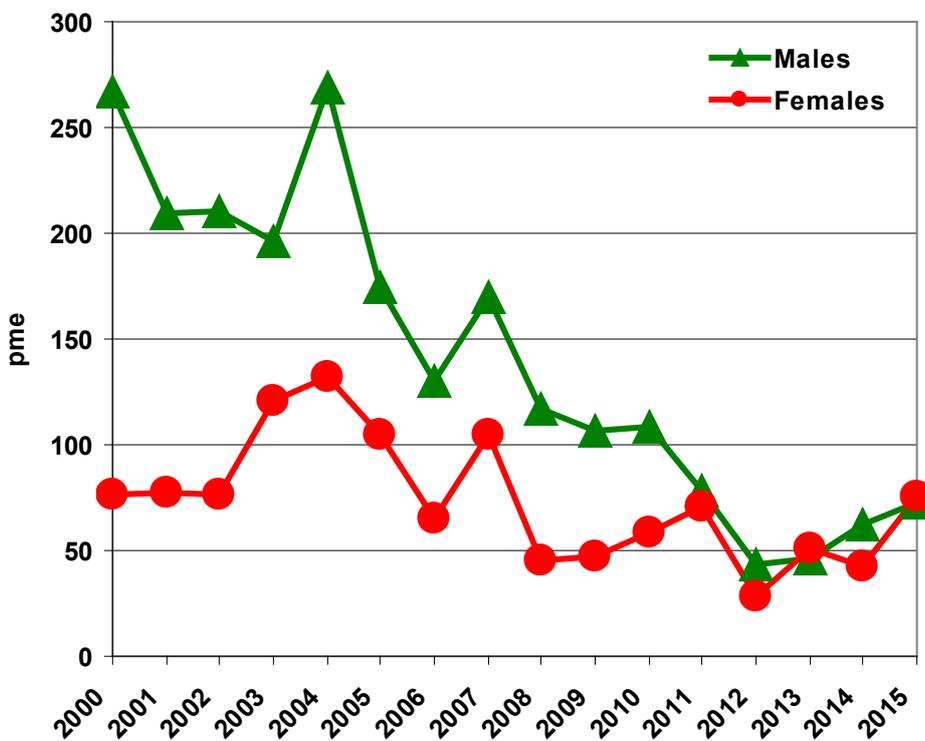


Figure 3. Evolution of registered cases by gender per million employees in Hungary in 2000-2015 (rate)

Trends in major disease categories

The distribution of different disease categories varied among the countries, as shown in *Figures 4-6*. The abbreviation nec. stands for “not elsewhere categorized”.

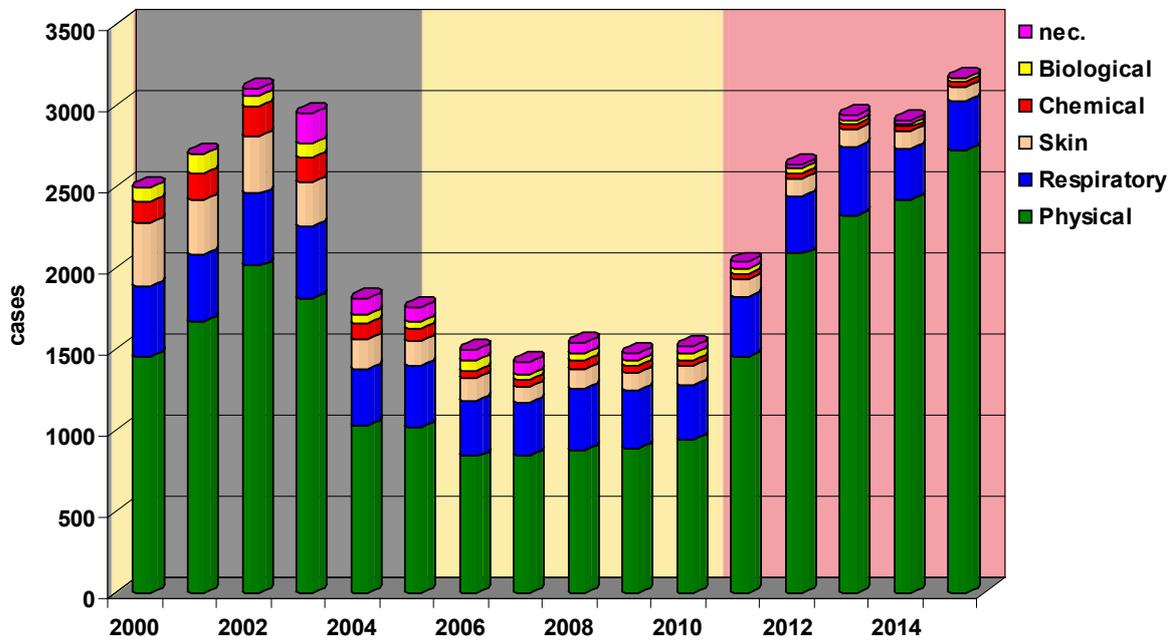


Figure 4. Evolution of registered occupational diseases in Belgium in 2000-2015 (cases)

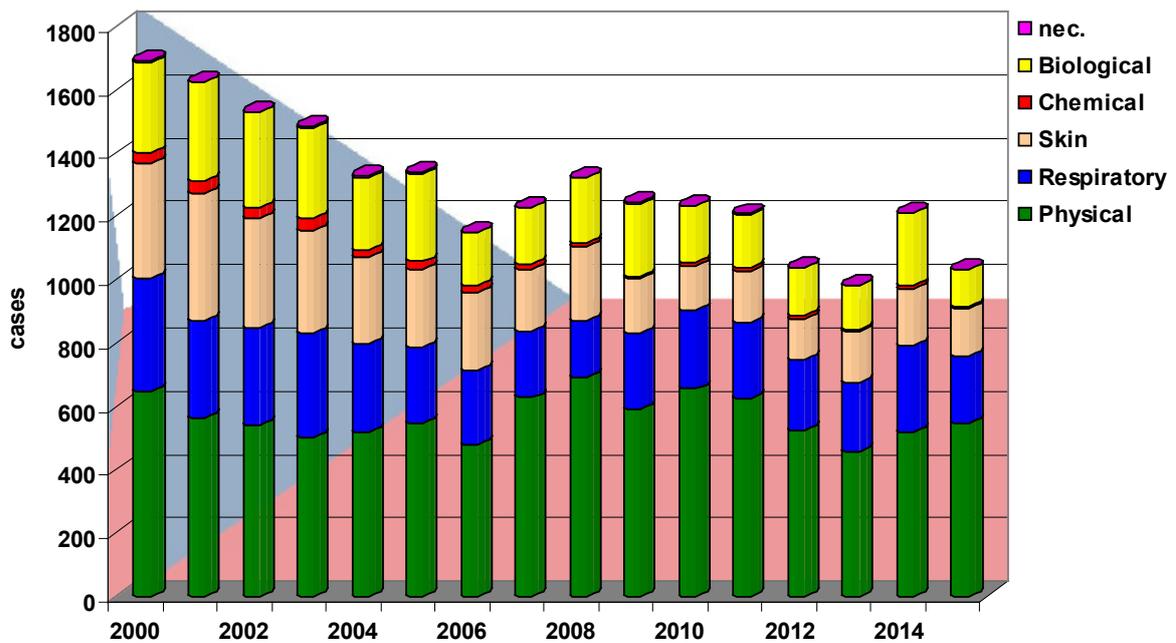


Figure 5. Evolution of registered occupational diseases in the Czech Republic in 2000-2015 (cases)

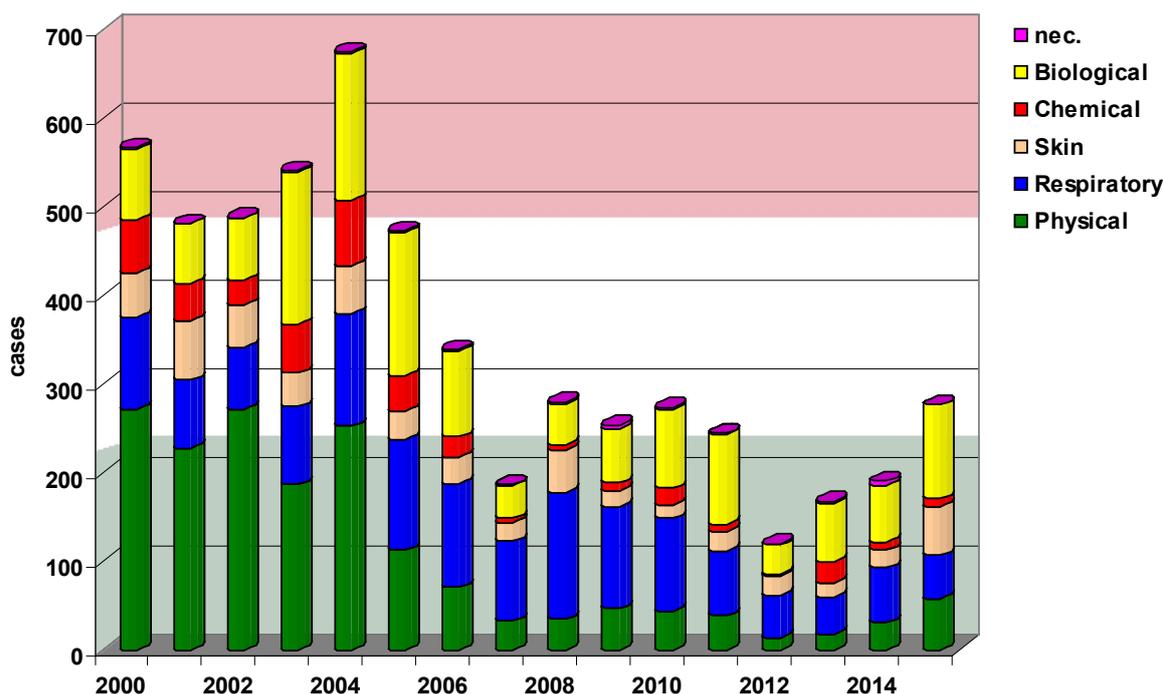


Figure 6. Evolution of registered occupational diseases in Hungary in 2000-2015 (cases)

In Belgium the vast majority of cases (60-80%) were caused by physical agents. Respiratory diseases decreased from 20% to around 10%, likewise skin diseases from 15% to 5%. Biological and chemical agents were both below 5%.

Physical agents caused the majority (40-50%) of Czech cases, too. Likewise, respiratory diseases accounted for 20% and chemical agents were well below 5%. Skin diseases amounted 15-20% and biological agents 10-15%.

In Hungary diseases due to physical factors have gradually shrunk from 50% in 2000 to around 20% in 2015. Respiratory diseases inflated from 20% to 50% and back to 20% during the studied period. Skin disorders ranged between 10% and 20%. Registered occupational infectious diseases have not declined too much and thus their relative importance augmented, starting at 15% and ending at 40%. Chemical agents were usually below 10%.

Trends in disease subgroups

Diseases in the chemical agents category have decreased to their third-fifth in all three countries (BE: from >150 to <35; CZ: from 30-40 to <10; HU: from 30-70 to 10-20 cases) during the observation period. However, these cases did not include skin disorders due to exposure of chemical agents (e.g. contact dermatitis) because they were categorized under the heading of “Skin”.

The subgroups under the heading of “Physical” showed high variation. During the period of 2000-2015 the incidence of noise-induced hearing loss fell sharply in the Czech Republic (from 10 to 2.7 pme) and Hungary (from 52 to below 3.5 pme). Meanwhile in Belgium the rate was rather constant in the 50-95 pme range. The incidence rate of MSDs of not vibration

origin in Belgium has substantially increased, from around 70 up to almost 600 pme, gaining strong impetus from 2010. In the Czech Republic the rate was rather stable with 69-104 cases pme. The Hungarian rate was far lower, oscillating from 2.8 to 15 pme. Vibration syndromes decreased in all the three countries. The Belgian rate dropped sharply between 2002 (391 pme) and 2006 (51 pme), and stuck in the range of 30-50 pme. During 2000-2015 there was a slight declining trend of vibration syndromes in the Czech Republic, from 69 to 38 pme. In Hungary the incidence of vibration syndromes plummeted between 2000 (30 pme) and 2005 (4.5 pme). In 2012 not a single case was registered.

Respiratory diseases decreased in all the three countries. Cases were registered most frequently in Belgium, starting with 127 pme in 2000 and ending with around 80 pme in 2015. In the Czech Republic the rate was 91 pme in 2000 that slipped below 60 pme. Hungarian annual rates oscillated between 20-40 pme in the first ten years but fell to the level of 15 pme for the last four years. In Belgium silicosis and coal-workers' pneumoconioses amounted one-fourth/one-sixth of respiratory diseases (118 cases in 2000 and 36 in 2015). There were far more such cases registered in the Czech Republic (208 in 2000) that slowly decreased below 100 by 2010, and elevated to 166 and 111 in the last two years. In Hungary there was a rise from the range of 20-40 cases up to 116 in 2010, which was followed by a decline below 40 cases in the last third of the observed period.

Incidence rates of skin diseases started with around 100 pme in Belgium and in the Czech Republic but it was followed by a steady decline in the following eight years. Finally, the Belgian rate has settled at around 30 pme, the Czech rate at around 40 pme. There were far less Hungarian cases: rates were in the range of 10 to 20 pme initially. Between 2009 and 2014 the rate plunged to around 5 pme.

The Czech Republic stood out in diseases caused by biological agents, although the incidence rate of such cases decreased from 73 pme in 2000 to 29 pme by 2015. Initially the rates were almost the same in Belgium and in Hungary: 24-25 pme. The Belgian rate steadily declined to the range of 5-7 pme by the end of the observation period. The Hungarian rate showed several peaks (2003-2005, 2009-2011) and ended up with around the Czech rate (28 pme). Non-tropical zoonoses amounted one-fourth/one-seventh of the Czech cases. There were only some (0-6) zoonosis cases registered annually in Belgium, while in Hungary the share of zoonoses among biological agents varied hugely (5-50%).

The registration rate of occupational malignancies of the respiratory system was on the rise in Belgium, starting with 32 pme in 2000 and peaking at 63 in 2013. The Czech rates started from 13 pme and the Hungarian rates from 5.9 pme in 2000, however, both ended up at around 5 in 2015 (*Fig. 7*).

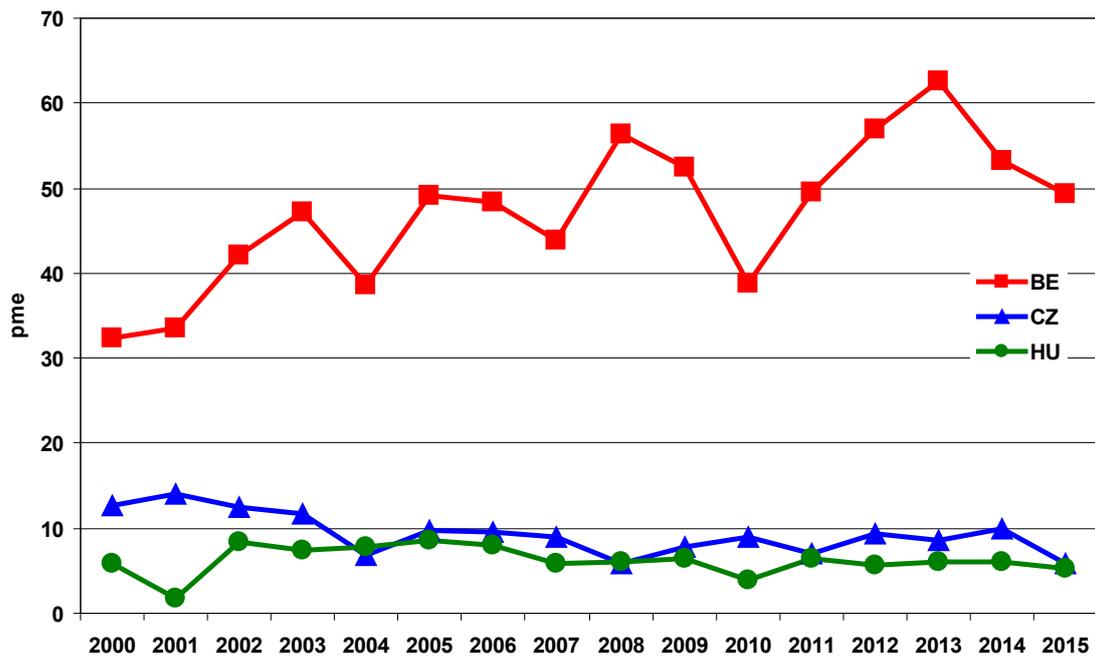


Figure 7. Evolution of registered occupational malignancy rates in Belgium (BE), the Czech Republic (CZ) and Hungary (HU) in 2000-2015 (pme)

DISCUSSION

The number of occupational diseases decreased in the last decades in all the three countries in our analysis, however, this phenomenon is perceivable on longer timescale. In Belgium, first demands due to respiratory diseases have been falling at least since 1975 (earliest data published in the reports). In the period from 1987 the figures for all accepted cases peaked in 1992, when in the list system in the private sector only, almost 5000 permanent incapacities were accepted: 3359 due to vibration syndromes, 466 due to noise induced hearing losses, 338 due to silicoses and 316 due to asbestos related diseases.

The Czech time series are available from 1985 and new cases peaked in 1990-1991 with more than 5000 diseases each year. Since then the number of cases has decreased (Brhel, 2001) and stabilized below 1250.

Annual Hungarian data are available from 1956. The peak of 1961 (around 8600 cases) was followed by a constant decrease, which can be attributed to better industrial hygiene and occupational health. From 1970 the incidence ranged between 2000-3000 cases annually in the following one and a half decade (Ungváry et al., 1997). There were 2804 registered cases in 1981, followed by a steep fall to around 600 in 1995 (OMÜI, 1993). From 2004, figures plunged to the all-time lowest (120) in 2012.

For 1990-2006, decreasing registration rates have been published for other countries too: Austria, Denmark, Finland, Italy, Switzerland. Whereas increased rates were seen in Spain, France and Portugal (Eurogip, 2009b).

Underreporting is perceived as an issue in most European countries, except Germany. Recognition systems are very diverse, although they cover more or less the same set of diseases. However, the criteria and consequences, the players entitled to report, and the chances of positive decision are very country specific (Eurogip, 2015). This applies to the updating of the list of eligible diseases and criteria thereof (Eurogip, 2016).

There is no solid evidence available concerning incentives to reporting occupational diseases (Curti et al., 2016).

Belgium

Varying degree of difference can be seen in the comparison of summary data of reports by occupational physicians and the two sets of accepted compensation claims (summed by the authors, Eurogip's proper calculation). The latter two should be identical but we could not remove duplicate cases (e.g. a person receiving temporary and then permanent incapacity for the same disease in the same year). Bearing in mind this source of bias our estimation can be acceptable for the period and is preferable over the reports (*déclaration*) that are not reviewed. In our calculations we have certainly underestimated occupational malignancies in Belgium because we could not identify non-respiratory malignancies. However, our sums seem to be acceptable because in comparison with Eurogip's time series of occupational cancers in 2000-2008 the difference is within the range of 2-16 cases (1-8%) with the exception of the year 2006, where the difference was 70 cases (29%) (Eurogip, 2010).

Tendinitis was included in the list from 2012 that visibly augmented figures (due to temporary incapacities). The rise of registered occupational diseases in the last years is practically due to physical agents, namely musculoskeletal disorders (not due to vibration). In a comparison of ten Western-European countries, Belgium was the third in the rate of registration regarding musculoskeletal disorders in 2014 (Eurogip, 2016b). Respiratory diseases contain various entries, including asthma and alveolitis. For malignancies, mesothelioma cases were predominant (e.g. 193 cases of 219 accepted occupational malignancies in 2008), which is characteristic of other Western-European countries, like France, Germany, Austria, Denmark, Finland, Italy, Switzerland and Sweden (Eurogip, 2010). The reports contain few diseases due to biological agents (infections) including very scarce zoonoses.

The Czech Republic

From 2008 on, the Czech reports contain an expert analysis in which underreporting is mentioned every year. The 2015 analysis emphasizes that not only self-employed persons but more and more employees halt the investigation procedure due to fear of job loss. Physical agents were predominant and carpal tunnel syndrome was very common. Biological agents were frequently registered: besides diseases of agricultural origin (ringworm, milker's nodule, farmer's lung), tropical infections due to missions (malaria, dengue, giardiasis) were identified as well. Scabies from the health and social care sector, vibration syndromes and pneumoconioses from the mining industry were registered commonly. Musculoskeletal disorders were found among assembly line workers, too. Mesothelioma registration incidence was below 10 cases/year.

Hungary

The expert analyses of the Hungarian reports emphasize the evident underreporting and that the reported cases do not represent current Hungarian working conditions and hazards at work either. Recently the figures have dropped to unprecedented depths. Concerning specific diseases, the change in the recognition criteria of noise induced hearing loss can explain some part of the fall in case numbers, while we cannot give explanation for the quasi disappearance of vibration syndromes in the last years. During 2004-2010 silicoses were very common, most of them were mild X-ray findings among former miners that have retired from mines closed decades before. Occupational allergies (rhinitis and asthma) were uncommon and have practically disappeared in the last years. Recently, biological agents have taken the lead: mass gastrointestinal infections in the health and social care sector have been reported more readily. There were some scabies cases but we are certain that most infestations have not been reported. Zoonoses were certainly highly underreported, the situation was better for ornithosis and probably for Lyme-disease. The incidences of the latter two diseases showed conformity in the public health and the occupational reporting systems. Tropical infections acquired during missions have not been reported either. (Budavölgyi and Kudász, 2015) The majority of registered malignancies were lung cancers of former uranium miners, although incident cases were reported due to carcinogen chemicals. Registered cases of mesothelioma have been <10 cases/year, which is far below the mesothelioma cases reported in the Hungarian cancer registry (Kudász et al., 2017). Owing to the open list, a few diseases due to psychosocial factors were registered.

CONCLUSIONS

Multiple reasons are suspected behind the above trends. The Czech and Hungarian peaks in the early 90-ies were due to the change of regime, where privatization and the downfall of heavy industry wiped off jobs and disablement pensions due to occupational diseases were attractive solution for the interested parties. Heavy industry, especially coal mining, continued shrinking in the observed period (EIA, 2014). The change of economy in the developed world has significantly altered the industry in Western Europe too, as pictured by the longer time trends in the Belgian reports. On population level, exposure to classical occupational hazards must have decreased and as a consequence, classical occupational diseases could have become rarer. Meanwhile, the new and emerging risks are still not fully understood and occupational medicine lacks that sort of solid criteria that are available for the classical ones. Furthermore, employment patterns have changed with more frequent change of jobs, subcontracting, self-employment, which do not help straightforward diagnostics and exposure assessment (Benach et al., 2002; EU-OSHA, 2009; Savolainen et al., 2013). We should not exclude that the working environment in most sectors in Europe became less hazardous, which is suggested by the decrease of fatal accidents at work (Eurostat, 2017b). Industrial technologies have advanced and preventive measures became more common and more effective for classical hazards. Awareness of occupational health and safety has developed, which is marked by the solid European occupational safety and health legislation. Furthermore, chemical safety has improved significantly as a consequence of REACH as well (EC, 2013c).

It seems that high number of registered occupational diseases is not linked to high reporting activity. E.g. in France the easy (automatic) and generous (non-work factors are not considered) acceptance system pushed the figures high by many musculoskeletal disease cases. Registrations of this type of diseases were the major cause of difference (Eurogip, 2015). This seems to apply to our comparison, as Belgium extended its list system, an upsurge of registered cases followed.

The dire Hungarian figures make us think on the purpose of the reporting system. In most Western countries individual compensation is the major outcome of the reports. Local prevention by eliminating harmful exposures can be another aim, although it is hampered by the fact that many diseases are characterized by long latency periods (e.g. cancers) and by the time of the identification of the disease the technology (and/or the company itself) may disappear. However, this is not the case for e.g. allergic diseases and several acute musculoskeletal diseases, which were also scarce in the Hungarian dataset. Data collection can take place with a more epidemiological approach with the aims of getting a picture on exposures and ill-health at work and defining national priorities and plan actions. The Hungarian system seems to be unable to reach any of the above goals and represents the tri-partite parties' altogether low interest in occupational health. Policy makers' attention was drawn to the possible underlying phenomenon several times by authentic sources, which is in fact the counter interest of concerned parties (employee, employer, occupational physician). The proposed solution, which was the introduction of a separate work accident insurance branch, was put aside by changing politics (Ungváry, 2007). The authors hope that the recent national programme on occupational health and safety will be accompanied by practical implementation action plans backed by appropriate human resources and budget. (NGM, 2016)

The authors think that the former high numbers of occupational diseases will not return but underreporting is very probable, especially in Hungary. The different purposes that may be linked to a reporting system require different approaches and structures, otherwise they serve nothing. It is challenging to develop incentive systems that could provide reliable data on occupational diseases.

As national accident insurance schemes differ hugely and evolve in time, the difference in the registration rates and the distribution of disease categories feature extremely varied patterns. An example for this issue is the case of musculoskeletal disorders (Eurogip, 2016b). Thus, it will be extremely difficult to run any valid and truly comparable, European level data collection on occupational diseases.

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