

CURRENT ISSUES OF RECOGNITION AND PREVENTION OF OCCUPATIONAL HEALTH DAMAGES IN HUNGARY FROM THE SOCIAL, POLITICAL AND ECONOMIC CHANGES OF REGIME UP TO NOW

GYÖRGY UNGVÁRY

József Fodor National Public Health Centre¹

ABSTRACT

Having reviewed the yearly frequency of the reported occupational health damages (occupational diseases and injuries) between the changes of regime (1989) and now, the author found that - with the exception of some short periods - especially the frequency of occupational diseases has decreased continuously, and for the past years it has stabilized at an unrealistically low level compared to the available international data. The author analysed the supposed causal factors in the background of this undesired phenomenon, among others the relevant regulatory, economic, organizational activities, functions and other task solutions of the different sectors of occupational health and safety (OHS). The professional qualifications of the persons who do these activities and are responsible for functioning and tackling these tasks were also examined. It was concluded that the discovered deficiencies hinder OHS in its expected functioning and significantly decrease its efficiency this way threatening the health and safety of working people. Based on his conclusions the author suggests undertaking certain tasks, the consideration (and mainly the realization) of which allows no delay for the sake of health and safety of the working population. Taking into consideration the professionally and ethically equally worrisome defects disclosed in the prevention, recognition and/or reporting of occupational diseases, causing financial damage verified by relevant cost estimations, outstanding priority should be given to the prevention of occupational diseases in the forthcoming years of Hungarian OHS. As a first step to achieve this, the relevant knowledge of professionally competent doctors of the occupational health care services, which they acquired during preparation for their specializa-

Corresponding author: György Ungváry, MD, PhD, DSc

Nagyvárad tér 2 .

H-1096 Budapest, Hungary

e-mail: g.ungvary@omfi.hu or ungvarygy@gmail.com

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¹ *Last workplace*

tion exam, should be inserted into a system of requirements as practical tasks and the accomplishment of these tasks should also be demanded. Professional inspection, supervision of the authorities as well as employers responsible for the workplace safety and health should carry out regular inspections of well-defined content in order to make sure completion of the requirements. Comparing the studied data with those of the recent international literature, the author came to the conclusion that different practices, to be further explored, in the different countries, not in accord with occupational health and safety regulations guaranteeing safety and health of working people, are in the background of the international estimations accounting for the large number/rate of fatal cases due to occupational and/or work-related diseases.

KEY WORDS: occupational diseases, under-reporting, causes, insufficient prevention, financial damage, recommendations for solution.

INTRODUCTION

In Hungary the recorded health damages of occupational origin (first of all the occupational diseases²) have decreased first rapidly soon after the change of regime (between 1989 and 1994) later tendentially with interruptions by one or two short (2-4 year) periods characteristic of transitional small frequency increase, lagging more and more behind the expected values and then they have been reduced to small prevalence far from reality (*Figure 1*), (Ungváry, 1994; 2000A; 2004A; 2008; 2010A; 2016; Kudász et al., 2017).

Comparing our previously collected data with those of several developed countries (*Figure 2*) our defects were already remarkable about two decades earlier (Ungváry, 2007; 2010A). Likewise Kudász et al. (2017) have recently found smaller prevalence in the Hungarian data of 2000-2015, compared to the Czech and Belgian similar data. In the international literature recently more exact estimations have appeared than before about the yearly number of occupation related injuries (work accidents) and fatal cases due to occupational and/or work-related diseases concerning several countries in different regions of the world (Hämäläinen et al., 2007; 2017; Takala et al., 2017). These studies are of definite importance from the point of view of further research aiming at the protection of health and safety of working people. According to Takala et al. (2017) the yearly number of fatal cases due to occupational diseases (~ 4,000 cases) is larger by one order of magnitude in Hungary than all the fatal and non fatal occupational

² According to the Hungarian traditions, (similarly to other countries), distinction is made between occupational diseases and work-related diseases. Diseases decisively in causal relationship with occupation (including the effects [exposures] of working conditions, work, physical and societal work environment) are considered as occupational diseases. Work-related diseases are classified as diseases demonstrably evolving due to several pathogenic factors, not of workplace origin, but can be influenced by effects of the work environment, work activity, work conditions, together with other risk factors, which may modify e.g. their progression. Such diseases originating in several pathogenic factors are e.g. the ischemic heart disease and hypertension. Reporting of work-related diseases is not obligatory. Occasionally, statistical difference appears in their frequency between groups of workers and the general population (e.g. chronic bronchitis of miners).

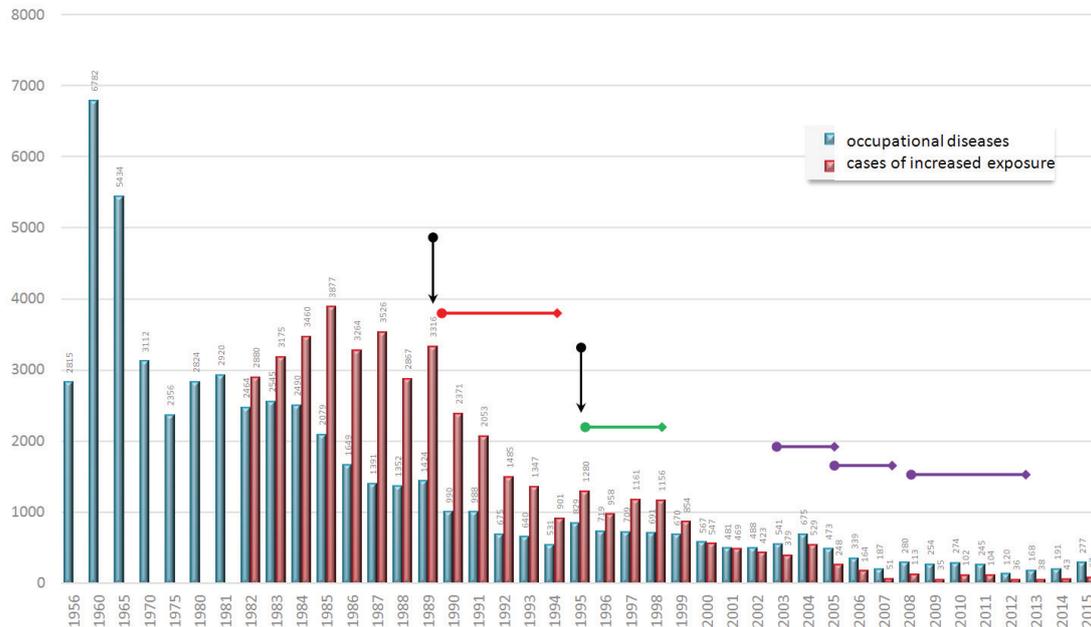


Figure 1. Yearly number of reported and verified/registered occupational diseases and cases of increased exposure in Hungary from the beginning of obligatory reporting (1956 and 1982, respectively) up to 2015. After the change of regime (the period between 1989 and 1994, marked with red horizontal arrow) the frequency of both indicator parameters has drastically decreased, probably due to changes in the industrial and agricultural structure associated with the change of regime (i.e. termination of building the unrealistically planned “country of iron and steel”, breakdown of heavy industry and underground mining, etc.) as well as the concomitant mass unemployment. The occupational health care service converted from industrial hygiene responsible for reporting the two indicator parameters started its activity in 1995 and then it seemed that the reported number of both parameters would approximate a real value (1995-1998, green horizontal arrow). From 1995 the two indicator parameters have decreased below unreal level. Between 2003 and 2005 following the professional instructions of the Inspectorate of Occupational Health and Safety and the Chief Public Health Officer the number of reported cases temporarily slightly increased. Between 2005 and 2007 due to the changes accompanying the staff reduction in the occupational health system and later between 2008 and 2014, due to dysfunctions caused by the reorganizations and the financial economic world crisis the frequency of the two indicator parameters decreased to an unlikely low level from where it could not significantly move forward even after the crisis (from 2015 up to now). (Further explanations are in the text). Source: NIOH yearly reports, (OMI, 1991-2016).

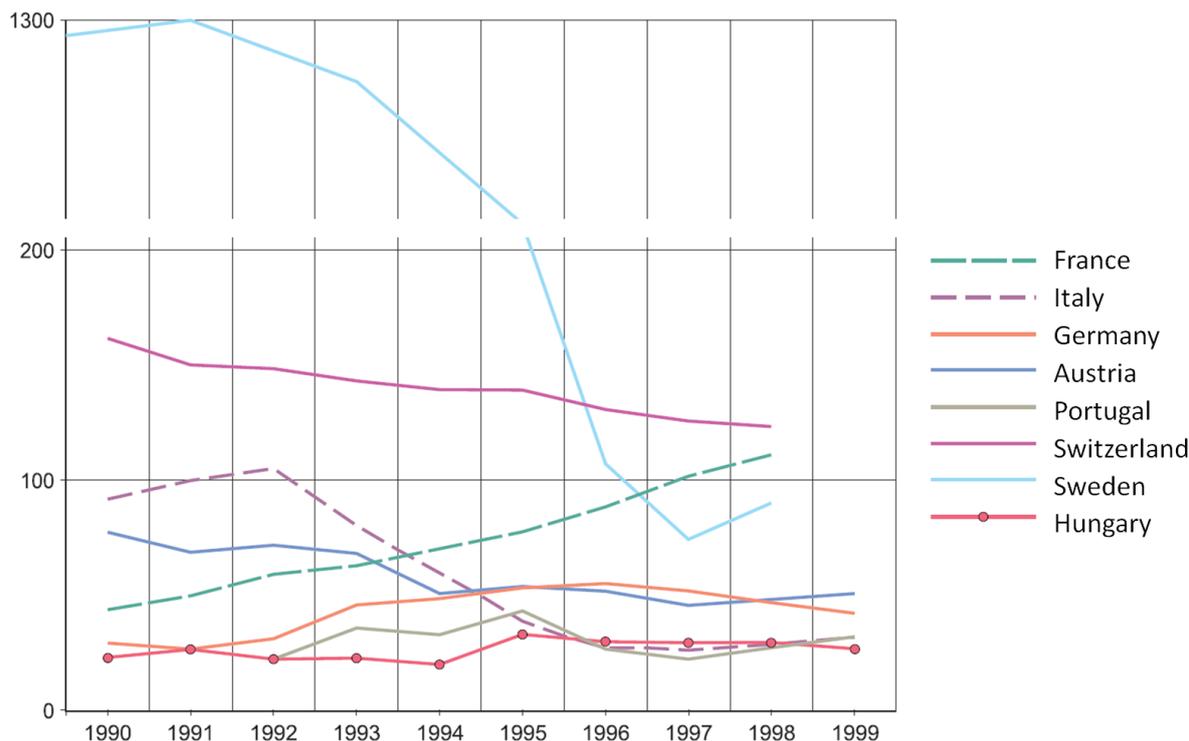


Figure 2. Standardized yearly prevalence of occupational diseases per 100,000 employees between 1990 and 1999 in some developed European industrialized countries and Hungary. The prevalence in Hungary hardly reached the low regions of the developed European countries (further explanations are in the text). Source: Ungváry, 2010A.

diseases (200–300 cases per year) recorded by the occupational safety bodies between 2000 and 2014 (OMI, 1991–2016). According to the detailed publication by SLIC (2016) the financial economic world crisis decreased the efficiency of the occupational safety supervision, which only partly explains the decrease in the recognition/reporting of occupational health damages. However the incidence of Hungarian cases has not increased even after the crisis (OMI, 1991–2016). Considering the above mentioned data and, first of all, the fact that in principle all occupational health damages are preventable, we think that this phenomenon should be stopped. Therefore it is necessary to explore its causal factors and demonstrate some of its unacceptable consequences. As a result of this decision, by the author's suggestion, a document containing detailed analyses and recommendations was prepared for the Committee of Preventive Medicine of the Hungarian Academy of Sciences (HAS) (Ungváry, 2016). The present paper, in harmony with the before mentioned document, wants to call the attention to the public health importance of this problem.

METHODS

Using the available official reports we analysed the incidence of verified occupational diseases and cases of increased exposure reported according to the relevant rules and methodological guidelines (*Figure 1*), current changes of country-wide effects in the economic structure, the ratio of unemployment, the number, education, training and experience in scientific and educational tasks of experts responsible for reporting, intellectual and infrastructural conditions of the university chairs and the national instituteion determinately influencing the theoretical and practical directions of the profession and the capacity of human resources of the supervision by professional bodies and authorities. The following materials were used: opinions of authors and publishers of the reports, data suppliers, the National Institute of Occupational Health (OMI: Hungarian abbreviation) and its legal successors, university chairs providing specialist education and training and the experts carrying out their accreditation as well as reports of the Hungarian Labour Safety Inspectorate, Occupational Health Inspectorate of the State Public Health and Medical Officer's Service, Work Safety Committee and also scientific papers published in professional peer-reviewed journals, Hungarian textbooks and handbooks, and finally, positions taken up by the Professional Board of the Specialty, leadership and general assembly of the relevant scientific society (KSH, 1989-2016; HIETE, 1989-1999; OMMF, 1990-2016; OMI, 1991-2016; Ungváry, 1993; 1994; 2000B; 2003; 2004B; 2007; 2008; 2009; 2010A ; 2010B; 2016; SE, 2000-2007; 2016/2017; Vega, 2009; ILO, 2009; 2010; 2014; SZK, 2010; Ungváry and Morvai, 2010; Groszmann and Nagy, 2012; SLIC, 2016; Lesfalvi, 2016; Madarász, 2016; Kudász et al., 2017).

RESULTS

1. Reduction, “reorganizations” of institutional, professional management of occupational health and safety

1.1. Stopping of National Research Institute of Work Safety

The National Research Institute of Work Safety was first degraded in 1995 to be a research public endowment without financial support then in 2007 it was terminated without legal successor. With this provision the staff capable for professionally control occupational safety, performing its research tasks and high level education, as well as upbringing of a new generation of professionals faded away.

1.2. Development and reduction of the National Institute of Occupational Health

The National Institute of Occupational Health (NIOH) achieved significant results in the field of science, education, practice and international recognition between 1991 and 2004. The successfulness was backed up by a PHARE support of 12 million € between 1999 and 2003. The NIOH lost its eight-storied outpatient's department of occupational health already in 1991.³ The so-called reorganizations of the NIOH started in 2005 and a continuous reduction has been going on ever since. Its original staff number decreased from 227 to 76 between 1991 and 2016 (*Figure 3*).⁴ In 2007 40-50 % of the institute's building was occupied by other institutes and at the same time NIOH was transferred from the State Public Health and Medical Officer' Service to the National Work Safety and Labour Inspectorate General, where it was degraded to a division in 2011. In 2012 it started functioning as a part of the newly formed National Labour Office and in 2014 it was transferred back to the National Chief Medical Officer's Office, also as a division.

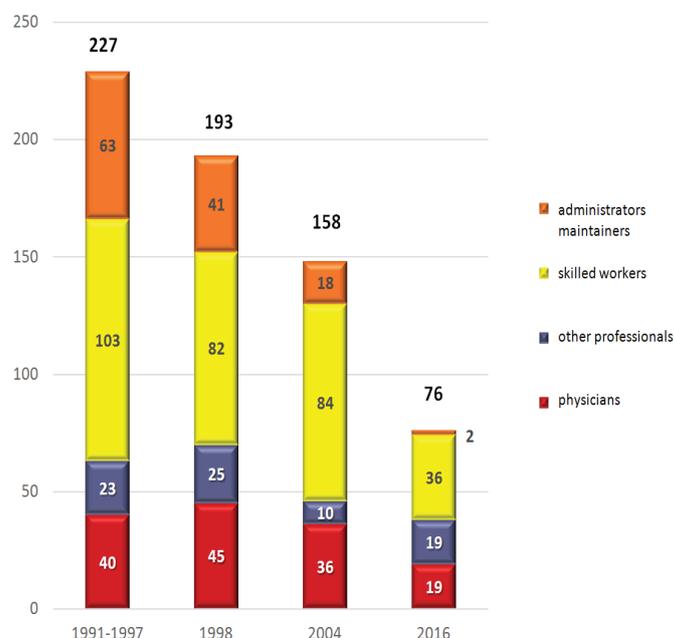


Figure 3. Number of staff employed in the National Institute of Occupational Health (NIOH) between 1991 and 2016. The reduction in the workforce is striking and – considering the volume of tasks – it is not explicable. Source: Document prepared for the Committee of Preventive Medicine of the Hungarian Academy of Sciences, Ungváry, 2016)

³ Loss of the outpatient department was the „result” of uncontrolled privatization just before the change of regime. Following the change of regime, in spite of parliamentary interpellations by the MP of Csepel and the government, the National Institute lost its polyclinic for ever.

⁴ Collection of information to this paper was closed by 31st December 2016. However, at the time of preparing this paper, in 2017, following a further reorganization, there are only 67 staff members working in the NIOH's legal successor, the Occupational Health Directorate of the newly formed National Public Health Institute.

- 1.1.1. Narrowing of the conditions of scientific capacity and diminishing the efficiency of scientific work of NIOH.* Its staff number with scientific degree decreased from 16-20 (25-30% of the graduated personnel) to 2 persons (both are chemists), there is no independent scientific project with financial support in the Institute, there is no Ph.D. project and there are no Ph.D. students. All these and also the fact that the number and results of publications characterizing the level of scientific work decreased to a fraction of the earlier publication number, indicate that NIOH in its present state has difficulties with the overall direction of research in this professional field, and also with doing research itself.
- 1.1.2. Specialist training and continuing medical education activity.* Majority of the significantly lower number of specialists than earlier being employed in the NIOH are not specialized in occupational health. Therefore they are unsuitable to teach higher level occupational health according to the former requirements partly due to those mentioned in point 1.2 and partly because from the point of view of teaching, basic units and departments of the institute (polyclinic, occupational inpatient department, experimental and human occupational physiology, ergometry, epidemiology, experimental and human toxicology, emergency response system, biometry, animal house) were either closed or the majority of the remaining departments function only with insufficient staff.⁵ The development of this situation is naturally also connected with the decision, which closed the chair of Occupational Health based on the national institute functioning in the frame of the University responsible for providing specialist training and continuous medical education in occupational health and work hygiene in Hungary. The infrastructure and instrumentation of the replacing university units (mostly public health institutes⁶) providing medical training and their teachers inexperienced in using them are not suitable (not because of their own fault) to teach work hygiene, occupational health in specialist training courses and continuous medical education.

2. Occupational health care

One of the basic pillars of work safety is the occupational health practices providing occupational health care. With the exception of some practices (especially those working for some multinational firms) most of them do not work properly (e.g. they do not perform some parts of the primary prevention tasks prescribed by the requirements of specialist examinations and legal regulations like analysis, identification and risk analysis of work load, stress, environmental effects with material, energy and information flow). In addition to the prevention of work-related diseases one of the most important tasks of the occupational health care service is diagnosis and reporting of occupational diseases. According to our analyses the 200-300

⁵ In spite of the above mentioned situation, in 2016 the National Accreditation Committee accredited the legal successor of NIOH, the Occupational Health Directorate, as a specialist training institution for teaching occupational health and work hygiene.

⁶ In the University of Debrecen, the licence was given to the institute of Public Health Faculty.

cases reported between 2006 and 2015 are only about 1/20 part of the real values (compared to other countries like Sweden and Switzerland; *Figure 2*). This is confirmed by the most recent international estimations, as well (Takala et al., 2017). These estimations calculated the number of work-related fatal (i.e. not all occupation related) diseases almost 4,000. On the contrary, remarkably small is the number of reported and recorded malignant diseases of occupational origin, diseases caused by workplace distress, shock waves (demographic, economic, technical-technological and ecological) of civilization or newly emerging diseases of occupational origin due to the developments in the world of work (*Figure 4*).

Moreover, in none of the yearly reports, including the most recent ones, have we found data on those work-related, occupation related diseases which are listed among the most frequent disease groups of fatal cases according to the various definitive international estimations, even if some of their data remarkably differ from each other in number or rates (Hämäläinen, 2010; ILO, 2014; GBD, 2015; 2017; Hämäläinen et al., 2017; Takala et al., 2017).

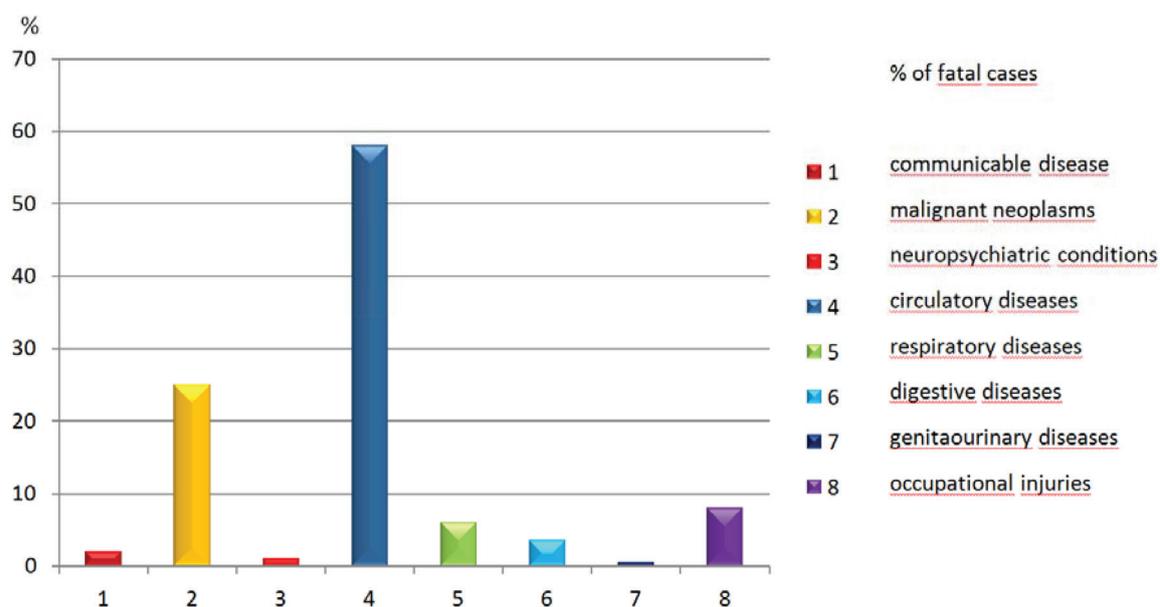


Fig. 4a. Work-related mortality in WHO's EURO region in 2011. Source: Takala et al., 2017

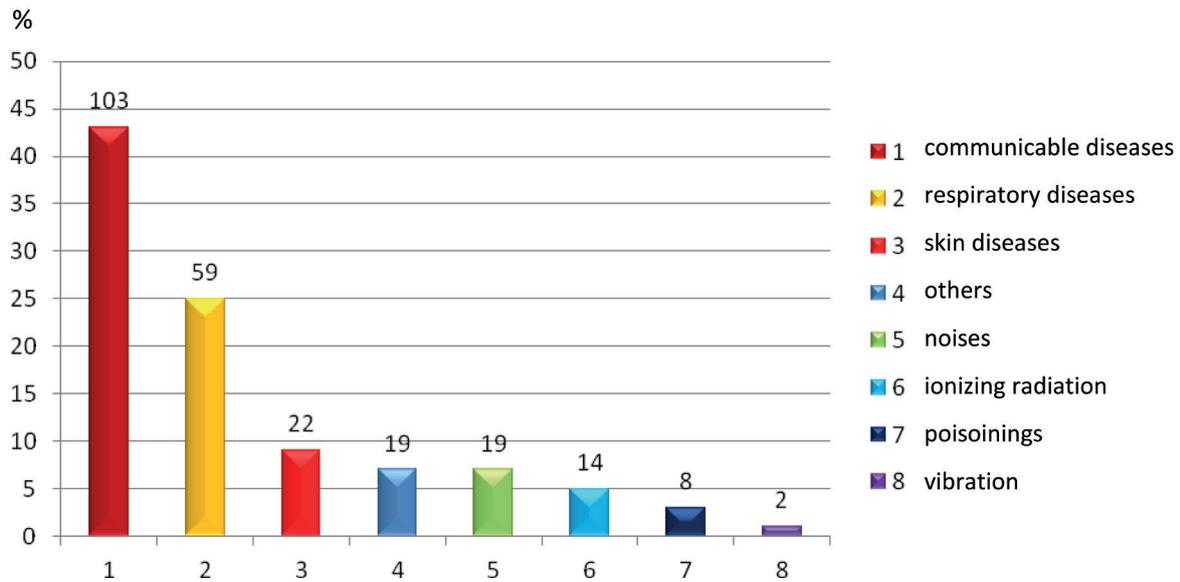


Fig. 4b. Distribution (%) of reported occupational diseases in Hungary, in 2011, $\sum N^{\circ}$ of cases: 246 (Source: OMI, 1991-2016)

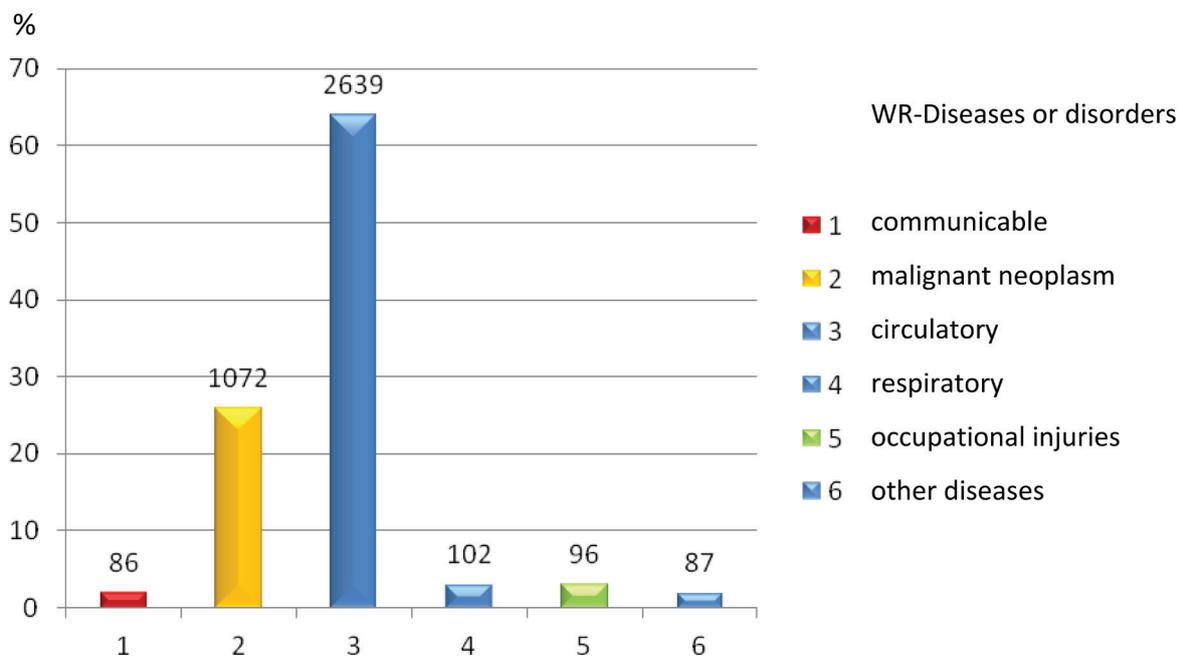


Fig. 4c. Number of estimated work-related death cases in Hungary in 2011. ref.: WHO Euro, $\sum N^{\circ}$ of cases: 4082 (Takala et al., 2017)

Figure 4a,b,c. The distribution of reported cases differs both from the Hungarian and the WHO's Middle-East-European regional distribution of the fatal cases by disease group. The unrealistically low number of annually reported cases in Hungary is striking. It is concluded that prevention is not only worrisome, but in the light of the data demonstrated, it cannot be targeted either. The total number of occupational diseases reported annually (246 cases) is lower by more than one order of magnitude than the annual number of workplace/occupation related fatal cases (~4 000).

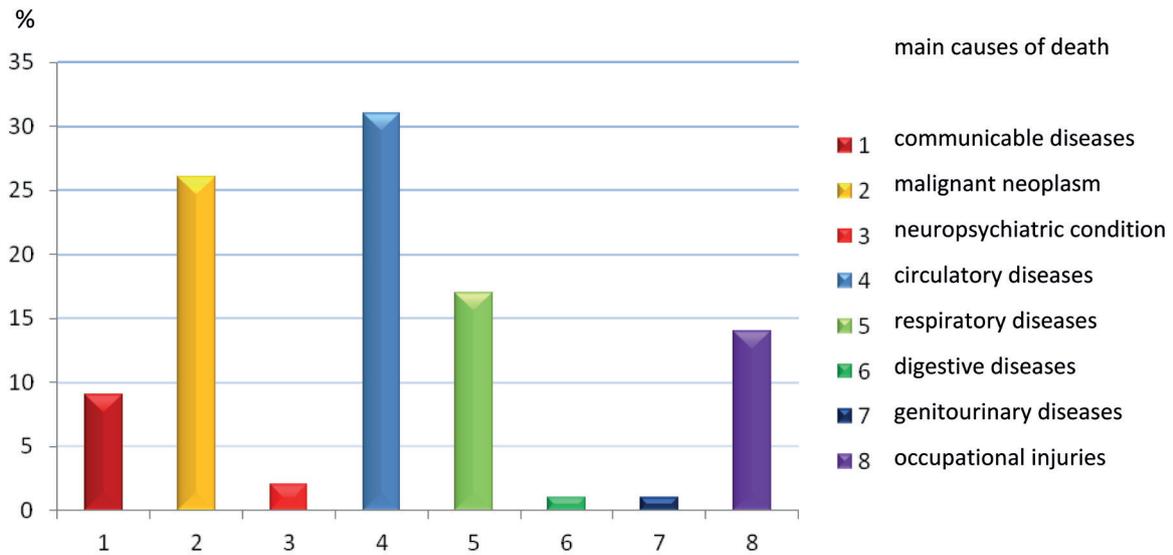


Fig. 5a. Breakdown of the estimated fatal work-related mortality by WHO Regions in 2015. The main causes of death are demonstrated in % of total fatal cases (2,784,465). Source: Hämäläinen et al., 2017.

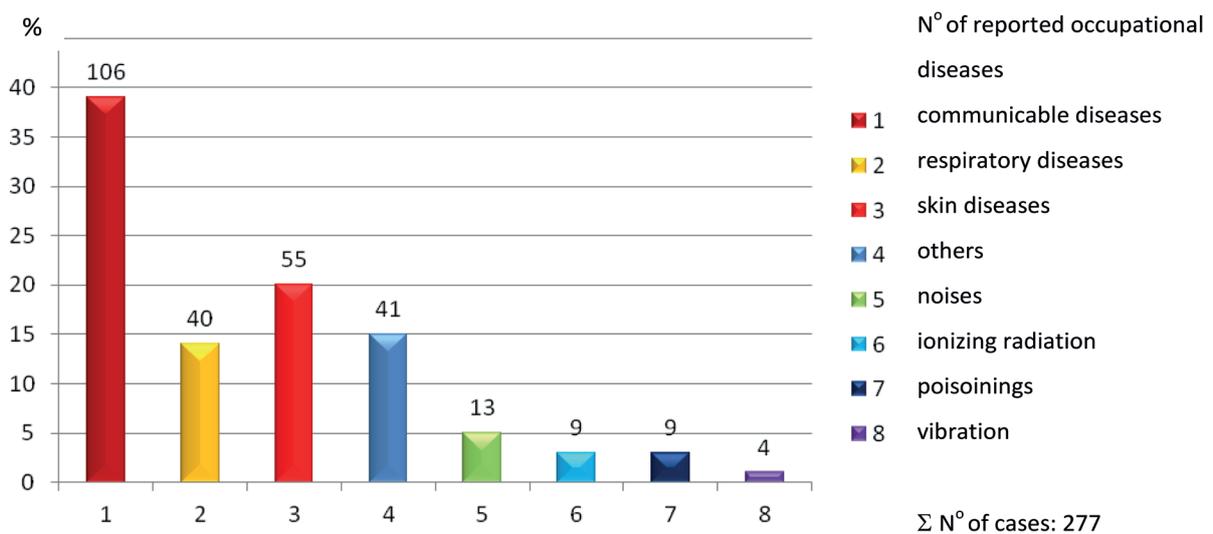


Fig. 5b. Distribution (%) of the total number of occupational diseases in Hungary in 2015, according to the required reporting groups. Source: Yearly Reports of the National Institute of Occupational Health (OMI, 1991-2016). Striking is the great proportion of the infectious diseases in Hungary, which is high even if compared to the proportion of estimated fatal cases in the European region (Hämäläinen et al., 2017).

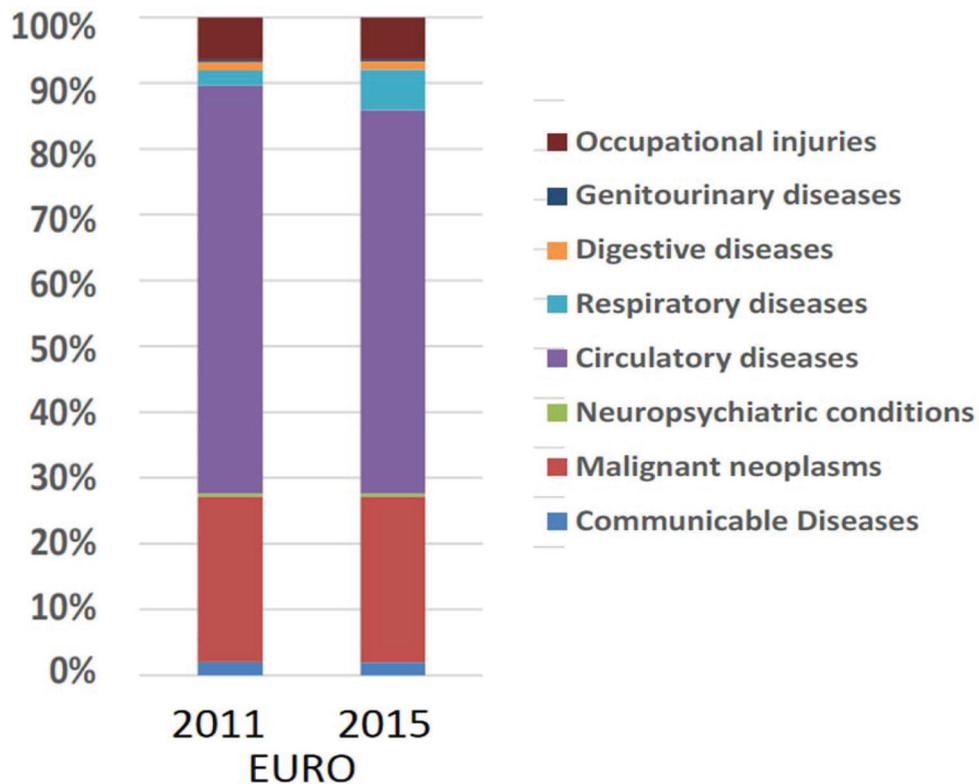


Fig. 5c. Comparison of fatal work-related mortality in WHO's EURO Region between 2011 and 2015. Source: Hämäläinen et al., 2017

Figures 5a,b,c. Classification of distribution is similar in the diagram series of Figures 4 and 5 but the percentage of Hungarian cases in the individual groups do not even resemble each other with the international ones. The total number of occupational diseases reported in Hungary (277) increased slightly compared to that in 2011, but it remained far from the expected value. The distribution of cases by disease changed but did not approximate the international distribution pattern. Diseases causing the highest proportion of mortality (circulatory, malignant tumours) can not be traced in the Hungarian diagram series.

Notes to Figures 4 and 5: An estimated 2.3 million deaths occurred annually across the countries for reasons attributed to work according to ILO estimates. The biggest mortality burden came from work-related diseases accounting for 2 million deaths whilst the remainders were due to occupational injuries. The GBD 2015 Study reported 1,086,000 deaths of which 204,000 from occupational injuries and 882,000 from diseases caused by selected occupational risks. The main reasons for the differences were that the GBD process does not yet count cardiovascular, communicable, neuropsychiatric conditions and genitourinary system diseases at work (Takala et al., 2017)

2.1 The efficiency of the professional supervision of occupational health activity is undoubtedly unsatisfactory. There are only 20 inspectors (working only part-time) responsible

for professional control of about 2500 occupational health practices. Workplace hygienists have no supervision; NB: the total number of specialists in workplace hygiene is fewer than 30 in Hungary, therefore this service is unable to cope with the expected tasks; there is no regulation for the employment of workplace hygienists.

3. *The yearly number of reported occupational accidents* increased between 2013 and 2015 (the number of cases raised from 17,222 to 21,088. The number of fatal occupational accidents showed a monotonous yearly increase between 2012 and 2015 (Figures 6 and 7).

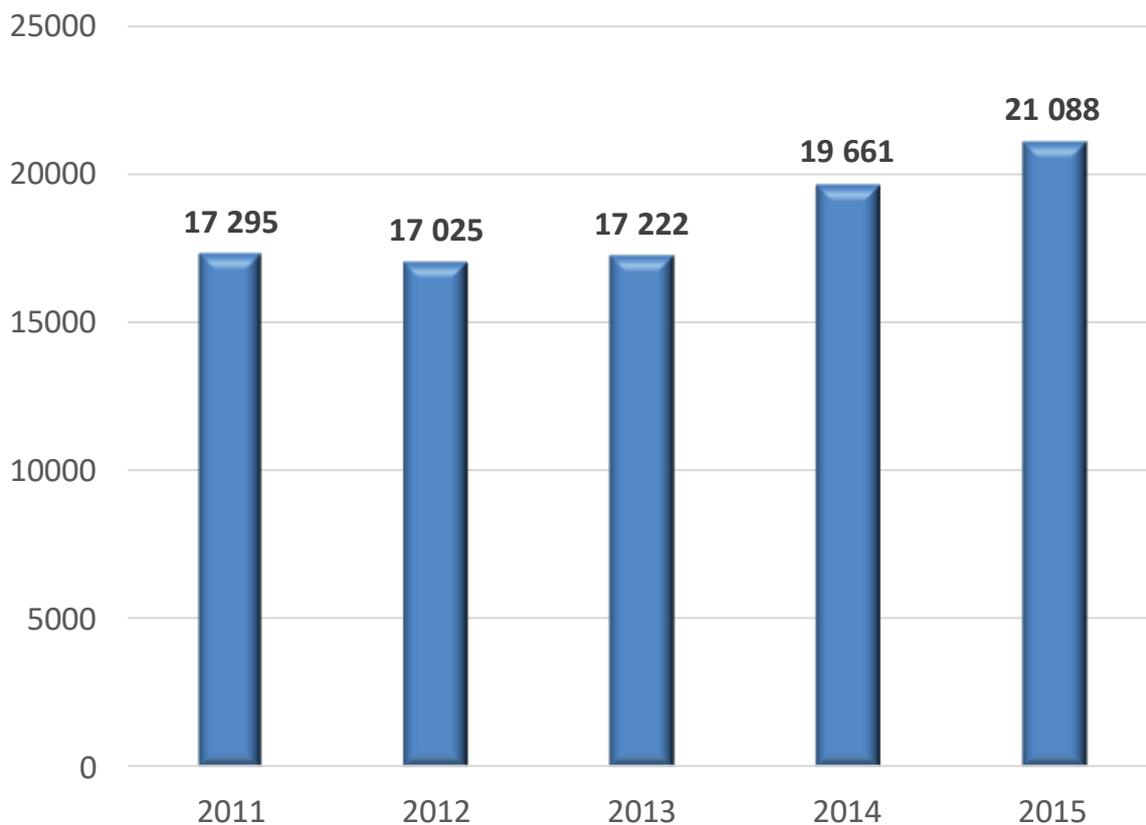


Figure 6. Yearly recorded number of all occupational accidents in Hungary between 2011 and 2015. The number of cases has increased during the last 2 years. Source: Yearly Reports of the National Labour Inspectorate. (OMMF, 1990-2016).

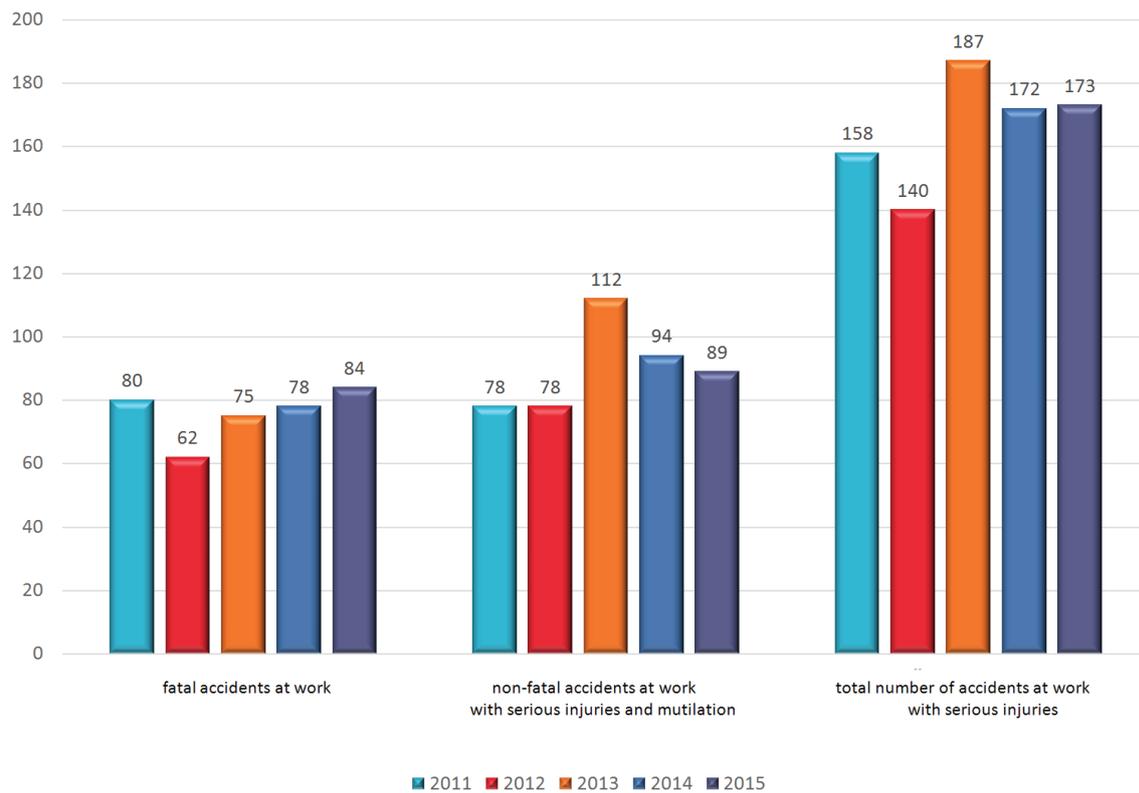


Figure 7. Yearly number of recorded serious work accidents in Hungary between 2011 and 2015. The number of fatal accidents significantly decreased in 2012, however since then a monotonous increase can be observed. Source: Yearly Reports of the National Labour Inspectorate. (OMMF, 1990-2016).

4. Losses due to functional insufficiency.

Work in the black economy causes loss of about 100 billion Forints (HUF) in the state budget yearly, in addition to the disadvantageous consequences in the social condition, income, health care and pension of the concerned people. A study prepared in 2015 in the frame of a significant TÁMOP project⁷ estimated the costs of work accidents and occupational diseases 214.2 billion Forints spent in 2013 (Table I).

⁷ Social Renewal Operational Programme (partly financed by the European Union)

TABLE I.

**The expenditures on occupational injuries
and occupational diseases in Hungary in 2013**

Expenditure/cost types	Total (billion HUF ⁸)
Opportunity cost of accidents not required to be reported	4.5
Future loss due to occupational injuries	37.5
Opportunity cost of unapparent occupation injuries	45.2
Opportunity cost of reported occupational injuries	41.3
Cost of unregistered occupational diseases and health damages	85.7
Total expenditure	214.2

Source: Study made in the priority project of TAMOP 2.4.8-12 in 2015

5. *The workers not employed in an organized way* have no work safety prescribed by the law (and consequently there are no controls). The self-employed people and those employing their family members face significant risk of health damage due to self-exploitation; due to lack of data we do not know for sure whether child labour can be excluded at all.
6. *Insufficiency in the quantitative work of the supervision of authority* is one of the greatest problems of our work safety or definitely the greatest one. According to the available data the supervision can control only 2 or 3% of the economic units a year; i.e. an economic unit can be controlled once in every 33-50 year. According to ILO considering the ratio of labour safety inspectors Hungary is in the last place among the examined European (mostly EU member) countries: 2.45 labour safety inspectors/100,000 employees. According to the SLIC publication (published in October 2016) among the responding European countries the most employees (about 22,000 in 2014) had to be controlled by each inspector in Hungary. In the 17 examined EU member states the average ratio was 11,510 employees per inspector. According to the SLIC study between 2007 and 2014 (as an effect of the economic crisis) significant changes have been carried out by the Labour Supervisions in every country and these changes are still going on. Its conclusion is: "It is necessary to explore and

⁸ Note: in 2013 the exchange rate between Euro and HUF was 302.46, i.e. 1 Euro was HUF 302.46. Meanwhile the monthly minimum wage was HUF 98,000; the average gross monthly average wage (for the whole national economy) HUF 103,600; the subsistence minimum was HUF 87,510; and the food basket in a one-person household HUF 24,099. Concerning the old-age pension, Hungary was listed in the lower third among the Member States. (source: KSH)

interpret what kind of problems and risks might occur related to workplace health protection and work safety...” We also came to the same conclusion in every analysed area of our document prepared for the Academic Committee (Ungváry, 2016).

DISCUSSION

Our results are discussed in groups around 4 points.

1. *Regulation completeness of occupation safety and health*

Hungary already in the period of political “melting” (end of the ‘60ies – beginning of the ‘70ies) used to look for connections with the EEC and these connections have broadened in the course of time. Since 1985, already in the period of the so-called normalization, Hungary has expressed its readiness to establish a new, from CMEA independent, relationship and finally in 1989 (the year of change of regime in Hungary) a new era started for our country. In July 1989 during the Paris summit of the SEVENS it was decided that financial, economic and technical support of Poland and Hungary will be initiated. Accordingly, in August 1989 the PHARE Program (Poland and Hungary Assistance with Restructuring the Economy) started. From the point of view of the present paper it was extremely important that the European Association Agreement between the EC and Hungary was signed with the final goal that Hungary would become member of the EEC. Soon after this agreement came into force (1st February 1994) Hungary started the preparations for the harmonization of laws concerning work safety in connection with the joining process to EEC and then the harmonization itself, including the relevant bi- and multilateral professional consultations. As a result, on 1st May 2004 Hungary became a member of the (then already existing) European Union. At the same time this also meant that the country’s regulation of work safety basically corresponded to that of the countries with the most modern market economy. As Hungary has reactivated itself in the ILO where it used to be a member since 1922, by ratification all ILO conventions related to work safety and health, our country’s regulation concerning work safety, supplemented with other rules aiming at carrying out the country’s special and substantial tasks, can be considered complete.

2. *Realization and efficiency of the completely regulated occupational safety and health.*

Correspondence to the law itself certainly was/is not finished with fixing the rules. It is a process depending on several factors therefore it is not only time-consuming but also depends on the manageability of numerous duties of a country (e.g. cost demands). Takala et al. (2017) listed Hungary among the 20 safest countries according to the frequency of fatal work accidents. This seemingly reassuring statement does not mean that the occurrence and prevention of fatal work accidents are all right. The annual number of reported fatal work accidents increased between 2013 and 2015 (*Fig. 6*). Though even the highest case number of the annual increases was below the estimated value, the increase was regarded (rightly) as unacceptable by the employee side of the Labour Safety Committee. The data in *Table I*.

indicate greater “real values” than that reported or estimated. Moreover, even the source of estimation (Takala et al., 2017) does not exclude the possibility that the estimated value may be a result of underestimation. Also considering another fundamental estimation result of Takala et al. (2017), according to which we have to reckon with about 4,000 fatal cases of occupation related diseases in a year, we face the question: how should we value the overall efficiency of our work safety and health? We have not done a full analysis yet. However, the problems presented in the Results part are definitely more serious than only teething troubles normally accompanying modernization and reorganization of a specialty and they endanger the efficient functioning of our more contemporary work safety and health and they demand intervention. Therefore we have drafted recommendations the fulfilment of which is necessary to make the level of the Hungarian work safety and health acceptable and to ensure that regulation of our work safety meet the functions of primary prevention in workplace safety and health (Figure 8).

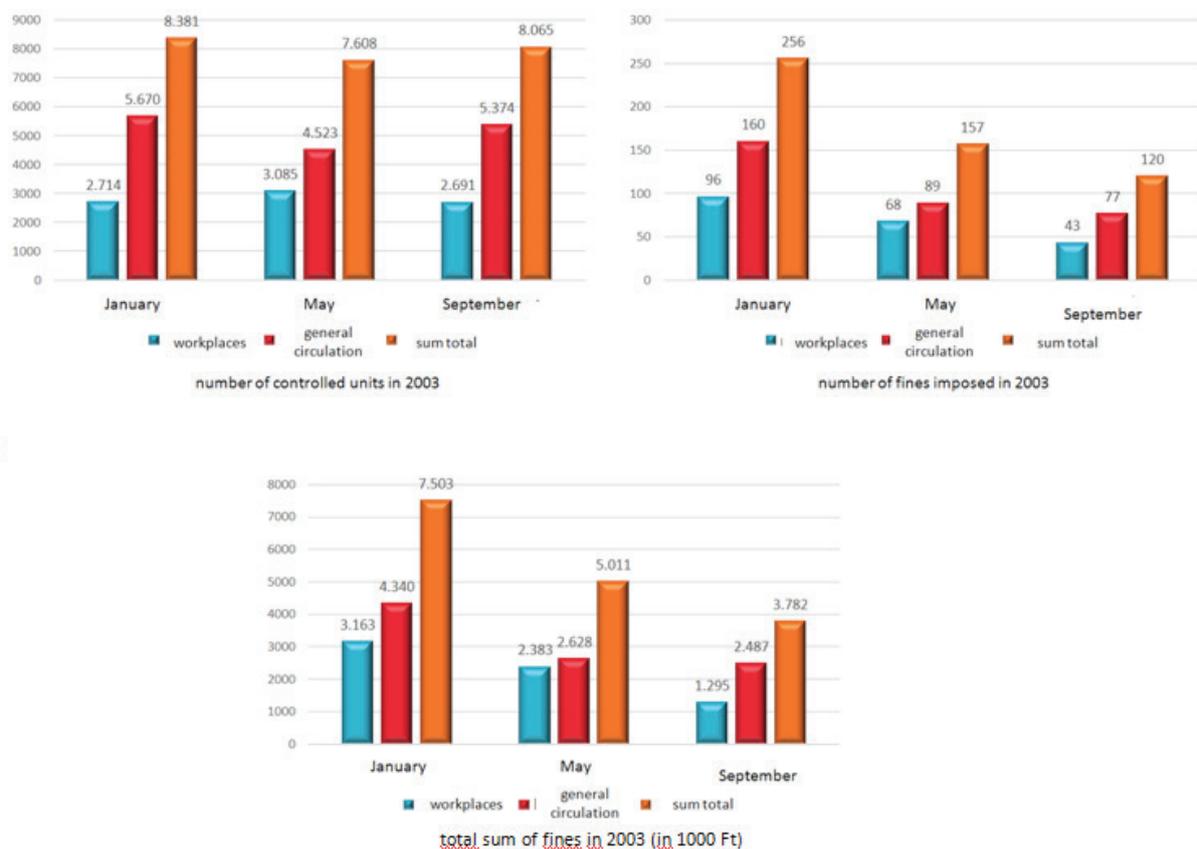


Figure 8. Supervisory control of workplace safety and health as a tool of primary prevention. In 2003 the Chief Medical Officer of Hungary ordered a country-wide supervisory control action on three occasions in certain workplaces in order to assess the effectiveness of the introduced law on the protection of non-smokers' health. On two occasions he let the involved partners know about the time of the control in advance while on the third occasion he did not give any information beforehand. The results proved: supervision is one of the most important tools of prevention in workplace safety. Although the number of controlled workplaces was similar on all occasions, the number and the amount of fines had a monotonous significant decreasing trend. Source: Ungváry, 2003.

3. *Recommendations to consider correcting the efficiency of occupational safety and health in Hungary*

- 3.1. Taking into consideration some not sufficiently exact data determining the efficiency of work safety (e.g. the required number of the labour inspectors, professional composition and renewing tasks of contemporary occupational health service) on the one hand, and on the other hand the presumably not or not sufficiently known factors of the efficiency of work safety (e.g. workplace risk factors endangering safety and health, number of days spent on sick-leave of occupational origin and its distribution by work accidents and occupational diseases), as well as the above mentioned SLIC conclusions (2016) it is necessary to examine without delay the whole sphere of the problem (structure, functioning and efficiency of work safety) with inclusion of governmental and non-governmental organizations (employers, employees, scientific institutions, educational institutions, civil organizations, churches, etc.). This could be realized in the form of a National Occupational Safety Profile (NOSP) similar to the Hungarian National Chemical Safety Profile (Ungváry, 1997), which was the basis of the first chemical safety act in the world. Suitability of the method chosen for working out the profile is indicated by the fact that the law based on conclusions of the profile was passed in the Hungarian Parliament in 2000 by votes of 300 “for” and only 3 “against”. The conclusions drawn by means of exact and comprehensive professional agreements based on the NOSP are suitable for determination of the direction and scope of the improvements in occupational safety and health.
- 3.2. It is justified to bring an independent, modern national institute of occupational health and safety into life similarly to the most developed countries (USA, Finland). Today such institutes do not exist in the miniature and small countries only. N.B.: as it was already mentioned, previously in Hungary there were two separate institutes, the National Research Institute of Work Safety and the National Institute of Occupational Health. Their revitalization would create a basis apt for scientific research of the professional field, providing possibility to manage the tasks requiring current research, to take over the latest and most efficient international methods, and also to train not only occupational safety and health experts but also trainers (teaching staff) qualified to teach the specialty at university level.⁹ Note: It is very important that the staff of experts qualified for higher (university level) education activity would grow up exclusively in an institute with appropriate infrastructure and instrumentation in a branch of science changing more rapidly than any other one in order to be able to recognize, estimate and manage

⁹ Note: The public health institutes of the medical universities are suitable for gradual teaching occupational medicine. It would be important to teach occupational medicine in the gradual curriculum as a stand-alone discipline. However, these institutes are not able to prepare the candidates for their specialist exams of either occupational health or work hygiene or to train them in further education courses because they lack the appropriate structural and instrumental capacity, and the teaching staff. Considering the Hungarian traditions, this would not be necessary if the mentioned recommendations were implemented. A single university chair based on a central institute of occupational health and safety would be able to provide specialist training and further education in occupational medicine and work hygiene for the whole country (as it used to function successfully in the past).

the newer and newer, qualitatively and quantitatively increasing risk to human health in the changing world of work. A member state of the knowledge-based Europe, the knowledge-based Hungary certainly must not exist without such an institute. We would like to make it perfectly clear that occupational safety and health and the inspectorate of occupational safety and health are parts of a very important primary prevention system serving for the health of people. This institute would be at the same time a background institution of this system.¹⁰

- 3.3. Occupational health care should be vetted, re-regulated and upgrading of its functions should be reconsidered. Regarding the serious professional deficiencies and suspicion of possible uncovered ethical offence, accomplishment of this task should have high priority. It is urgently required that occupational health service providers should be financially independent of the employers and their financing should be ensured (e.g. introduction of the so-called 3rd or accident insurance). The referral system to specialist consultation by the occupational health service should also be corrected (Ungváry, 2007). It would be more practical to amend and make multifaceted the structure of occupational health services. It would be worth considering the establishment of so-called occupational health care centres of practice groups (with the assistance of occupational psychologists, work hygienists, occupational safety and health specialists). We would like to emphasize once again that first of all the occupational health care service is responsible for the fact that in Hungary the yearly reported number of verified occupational diseases is only ~1/20 part of the real number of cases.
- 3.4. According to our opinion it is important and urgent to extend the occupational health care provision of the active employees with particular elements of secondary prevention, e.g. changes in the referral system (paradigm shift – SZK, 2010), and to ensure sufficiently frequent and efficient professional and supervisory control of the authorities over the occupational health care activities.
- 3.5. Occupational safety and health of the working people not employed in an organized way should also somehow be ensured, the self-exploitation endangering their own health and safety and also of their family should be prevented and their occupation related health status should become known (Szakmáry et al., 2003; Ungváry and Szakmáry, 2004).
- 3.6. It must be taken into consideration that the inspectorate of occupational safety and health is a primary prevention tool of public health of definite significance therefore its efficient functioning is of profound interest of Hungary. In case of ensuring conditions of its appropriate functions the efficient inspectorate of occupational safety and health can do the most to prevent occupation related death of several thousand working peo-

¹⁰ This institute can not be compensated by the Directorate for Occupational Health functioning (from 2017 on) as a part of the newly formed National Public Health Institute! This remaining institute could be at the same time the starting seed of a new up-to-date National Institute of Occupational Health to be formed in the future for the professional direction of occupational health research and education.

ple, to improve the life quality of working people of unknown number, to increase the length of age (life years in retirement) and to lengthen the self-supporting ability to the nearest time of the end of life. At present the inspectorate is definitely not able to attain these objectives satisfactorily (though not of its own fault) in the whole country because it controls yearly only 2-3% of the employers. In the course of detailed elaboration and realization of the recommendations regarding the inspectorate first of all the recommendations of experts of the most competent occupational safety and health inspectorate, SLIC (2016), the National Policy of Occupational Safety and Health (EU Commission, 2014) as well as the in the future to be elaborated National Occupational Safety Profile should be taken into consideration and the deadlines of accomplishment of the recommendations and objectives have to be prescribed and controlled.

- 3.7. It would be reasonable to bring the updated Subcommittee for Occupational Safety and Health of the National Academy of Sciences into life again and to lay down the expected tasks and requirements. This Subcommittee could assist the scientific direction to ensure continuous modernization and development of our occupational health and safety. At the same time it could be one of the pledges of the success of primary prevention in our public health.

4. *International/inter-country comparability of the frequency of occupational diseases and accidents*

Conclusions of Takala et al. (2017) made it unambiguous that occupational health and safety, including occupational health care requiring specialists' activities, has the task of high priority to recognise, acknowledge and prevent occupational diseases, as according to their estimations, the number of fatal cases due to work related illnesses exceeds ten times the yearly number of death cases caused by work accidents. Agreeing with the presented and estimated standpoints of the international organizations and various countries regarding the work related illnesses, the author, based on the Hungarian experience and on his not realized conception in Hungary (Ungváry, 2010A) - recommends resolving two tasks. In order to fairly compare the results achieved in the various countries and to judge the progress in the prevention of work related mortality, considering the success in the elaboration of the global harmonization system of chemical safety, it is necessary to determine the definition of occupational and occupation related diseases exclusively scientifically, free from legal, compensational and economic considerations, with contributions by the experts of competent international organizations (ILO, WHO, UNEP, UNIDO, FAO), competent scientific and other (representatives of employers' and employees' interests) organizations, institutions, civil societies etc., and to recommend introducing it globally, similarly to GHS with the help of the competent decision makers and officials of the United Nations.

Similar professional standardization is required regarding the currently used list of occupational diseases. In the currently effective internationally recommended lists (EU Commission, 2003; ILO, 2010) the heterogeneity of grouping is striking (*Figure 4*). Different diseases are listed next to each other e.g. infectious diseases, skin diseases, respiratory diseases or cardiovascular diseases, however there are well-known infectious diseases of all the three

organs or organ systems (among them those related to occupation) (e.g. furunculosis, influenza and pneumonia associated with it, the recently appeared SARS or heart diseases caused by the complication of certain infections). The situation is the same with chemical compounds; these may cause not only acute or chronic intoxications but also specific diseases of the above mentioned organs and organ systems (e.g. toxic irritant or necrotic dermatitis, toxic pneumonia, cirrhosis of the liver or heart damage caused by benzene and trichloroethylene). A further informative example can be mentioned regarding classification of malignant diseases, which may be caused by physical (e.g. ionizing radiation), chemical (e.g. arsenic, vinyl-chloride, ethylene oxide) or biological (e.g. HPV) pathogenic factors. However malignant tumours can also be classified according to the affected organs and organ systems. In our opinion correct comparison of the frequency of occupational diseases in different countries requires uniform classification of occupational diseases. In our Hungarian textbooks occupational diseases are presented according to three different systems, like aetiological factors, diseases of organs and organ systems and occupation related illnesses (Ungváry, 2000; 2004; Ungváry and Morvai, 2010). For scientific purposes we recommend using comparisons based on all three grouping systems. Comments: i) simultaneous grouping of occupational tumours distinguished from each other according to aetiological, organ specific and occupational relationships offers possibilities for the most informative comparison; ii) a closed list is not advisable because it does not make it possible to recognize, among others, newly emerging occupational infections.

The relevant Hungarian law, whilst it covers the diseases listed by ILO and EU, respectively, prescribes the list of reportable diseases uniformly according to aetiological classification. This is the reason why the diseases caused by already known aetiological factors are also on the list including occupational diseases due to psycho-social factors, overstrain and inappropriate ergonomic conditions. A prominent task of the near future is to include into the list of reportable diseases “plague of our age”, the diseases caused by distress due to workplace induced or imported stressors and their consecutive diseases (Ungváry 2009; 2010B). This is especially justified because Palkovits (2013) and his group updated Selye’s stress theory (1936; 1956) according to which the human central nervous system or organism, respectively, reacts with not identical but different “specific” responses to the various stressors. Finally we note: the Hungarian list of reportable diseases is an open list, which makes it possible to report earlier not known, newly emerging but definitely occupational diseases. As the accomplishment of both our recommendations would significantly increase the efficiency of primary prevention in case of control warranting appropriate success by the decision maker (which could/should also be an international organization); its public health importance is evident. Taking into consideration this recommendation and the most recent results of Takala et al. (2017) according to which, as we have already cited several times, the number of fatal cases due to occupation related diseases exceeds ten times the yearly number of death cases caused by occupational accidents, so it seems reasonable to requalify our recommendations to a professional obligation requirement.

On the whole we think prevention and recognition of occupational diseases and work-related illnesses must have high priority in the coming years of occupational safety and health. Precondition of the execution of activities related to the high priority in Hungary is the accomplishment of the already elaborated recommendations and those to be formulated after the elaboration of the National Occupational Health and Safety Profile. Out of the recommendations to be realized overall vetting and reorganization of the occupational health structure and functions are of utmost priority as elimination of defects related to prevention and recognition of occupational diseases is first of all the task of this professional field of occupational health and safety. Therefore modernization of occupational health care service is of primary importance. In order to perform the preventive tasks of occupational health care expertly and comprehensively, and – following a paradigm change – the fitness for work medical examinations (elemental part of primary prevention tasks) at a high level, as well as, to accomplish the solution of the secondary prevention tasks most extensively the medical professional and occupational safety and health inspections controlling the services need strengthening simultaneously with the modernization of the occupational health care.

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