Occupational health and safety management in "small size" enterprises, with particular emphasis on hazards identification

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Abstract

The article presents the element of occupational health and safety management in enterprises, with particular emphasis on the identification of occupational hazards. The factors that may be a source of occupational hazards have been classified and divided. The aim of this study was to assess the impact of occupational hazards on work safety in the opinion of employees of micro and small enterprises. The research was carried out using the proprietary questionnaire. The results were verified by means of a direct interview with elements of observation. The research was compared with the trends prevailing in the enterprises of the European Union countries according to the results of the research conducted by EU-OSHA. Polish respondents considered physical and psychophysical factors to be the main occupational hazards. The results turned out to be very similar to those presented by EU-OSHA in its publicly available reports. The basic principle of occupational health and safety management, i.e. identification of occupational hazards, is reliability and correctness. Identification of occupational hazards gives the opportunity to take correct and effective corrective and preventive actions reducing occupational risk, for example through the effective use of personal protective equipment, or a more detailed treatment of both introductory and instructional training. The article also highlights the migration of individual occupational hazards, which depends on many factors, both professional and non-professional.

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1. Introduction

Regardless of the thematic scope of the management systems their based on continuous improvement of all elements of the company's activity - continuous improvement according to the Deming cycle (Aziz et al., 2019; Kiseľáková et al. 2020; Kaynak, 2003). Among many commonly used management systems, the most basic are, previously mentioned, the quality management system, environmental management system and the occupational health and safety management system - three pillars of which the importance is absolutely important for the success of the company (Čierna and Sujová, 2020; Kostetska et al., 2020; Ladewski and Al-Bayati, 2019).

An occupational health and safety management system is part of an organization's overall management system that includes the organizational structure, planning, accountability, policies, processes and resources needed to develop, implement, review and maintain an occupational health and safety

policy. Safety management includes the implementation of functions such as (Silla et al., 2017; Bambra et al., 2009; Ladewski and Al-Bayati, 2019; Niciejewska and Klimecka-Tatar, 2018; Wang et al., 2019):

- identification of hazards,
- identification of the causes of dangerous errors,
- occupational risk assessment and reduction,
- formulation of health and safety policy and goals,
- planning and organization of activities required to achieve goals,
- training and motivation of employees to work safely,
- employing people capable of organizing and carrying out goals and task
- working conditions control,
- control of people's behavior,
- constant improvement of the company's safety system.

One of the areas that are implemented in the health and safety management process is the identification of hazard. It is the basis of all other OHS management activities, especially when implementing new solutions, e.g. in heavy industry (Ulewicz et al. 2019, Kapustka et al., 2020b) and technological transformation 4.0 (Ingaldi and Ulewicz, 2020). It is important - for the successful implementation of all other management functions in the area of occupational health and safety - reliability, accuracy and realism of identified occupational hazards. The basis is certainly the knowledge of the classification and division of individual hazards. It is worth mentioning that the attitude to certain hazards (in particular hazards resulting from the application of modern technologies) among the society may be different (Ingaldi and Klimecka-Tatar, 2020)

The development of techniques and technologies as well as economic progress have generated a multitude and variety of hazards, including professional ones. Technical and technological progress has certainly improved work processes. Due to them, among others, excessive load with physical effort has been replaced by static effort, excess of signaling stimuli and noise. On the other hand, the automation of many work processes resulted in monotony and monotony, which were dangerous for the musculoskeletal system (Weale et al. 2018; Woźny, 2020). On the other hand, the automation of many work processes resulted in monotony and monotony, which were dangerous for the musculoskeletal system. It can be said that hazards over the last century have changed their intensification and thus their impact on human health. Of course, they are not just limited to physical factors. Globalization has brought not only technical hazards, but most of all psychosocial hazards resulting, inter alia, from various forms of employment, job instability, etc. (Teo, et al. 2020; Koradecka 2008). As it turns out, technological advances have not solved the problems related to safety and health protection at work. Rather, it shifted gravity from physical to psychophysical hazards (Niciejewska and Mazur, 2016; Teo, et al. 2020;). In recent months, however, our entire life - both professional and private - is subject to biological hazards related to the COVID-19 pandemic.

2. Identification of occupational hazards in micro and small enterprises in the light of available EU-OSHA reports

Small-sized enterprises, i.e. micro and small enterprises, very often constitute the backbone of the economy. They are considered a key element among all economic entities, primarily driving economic growth through strong shaping of GDP, but also employment growth and social integration. In occupational health and safety research, a lot of attention is paid to small-sized enterprises. The reason for so much interest is that in small-sized enterprises the most negligence in occupational health and safety management is noticed. Both the working conditions and the working environment are not as required.

The work environment is a type of unnatural environment that has been created by man. In the process of work, a person is directly and indirectly influenced by many hazards. Hazard

as a concept first appeared in Hepburn's work, who defined it as "an evolving pre-accident situation" (Lewandowski, 1995). According to the literature on the subject, there are potential and active hazards, as well as direct and indirect hazards. As already mentioned, hazards are practically everywhere - in the work environment, family environment, political and social environment, recreation and leisure, education, culture, science, etc. The mentioned direct hazards in the workplace that affect a person include (Kapustka et al., 2020a; Stave and Wald, 2016; Wooley and Byers 2020; Kontogiannis et al., 2000; Reese, 2018; Silla et al., 2017; Ulewicz et al., 2015):

- physical hazards,
- biological hazards,
- chemical hazards,
- neuro-psychological hazards.

The hazards that directly affect people in the work environment include the already mentioned physical, biological, chemical and (here we are dealing with a different nomenclature) neurological and psychological hazards. On the other hand, hazards affecting the human environment indirectly also become physical, chemical, biological, and psychological-social hazards (Teo, et al. 2020; Wooley and Byers 2020; Kontogiannis et al., 2000).

The literature on the subject also provides the following definition of a hazard. In the ergonomic approach to work, a hazard is "a specific factor that, under certain circumstances, could cause damage to an element of the human - technical facility - environment (...)" (Mahdavi et al., 2020; Lewandowski, 1995).

In many literature items, the hazard is most often defined as a factor that has the ability to cause loss of life or health (Dall'Ora, et al., 2016; Wang et al., 2019). Commonly, hazards are also divided into "overt" and "hidden" hazards. The hidden hazards include, above all, psychosocial and psychophysical hazards (Teo, et al. 2020) They are difficult to identify and to evaluate. In practice, hazards are divided into two main groups, namely – hazards resulting from hazardous factors and hazards resulting from harmful and nuisance factors (Koradecka, 2000) This division is presented in Figure 1.

Fig. 1. Division of hazards affecting human health and life in work processes

There is no clearly defined limit of their occurrence between the above-mentioned hazards, because in given conditions, harmful factors may become hazardous factors, and nuisance - harmful (Lewandowski and Niciejewska, 2019).

In almost every work process, a person has to interact, directly or indirectly, with the so-called objects of work, namely - tools, machines, raw materials, materials, semi-finished products, or finished products. These work items in their natural impact zones are a source of mechanical hazards - mainly injuries. These are very important hazards, as their specificity means immediate consequences (Domínguez et al., 2021).

In the light of data such as International Labor Organization, on average, there are about 130 million accidents at work each year - mainly those caused by mechanical factors. In the literature, mechanical factors are divided into the following groups (Koradecka, 2009; Reese, 2018; Rączkowski, 2020):

- moving machines and transported items;
- moving parts;
- sharp, protruding, rough elements;
- falling elements;
- liquids under pressure;
- slippery, uneven surfaces;
- limited spaces;
- position of the workplace in relation to the ground, e.g. working at height or in a recess;
- others, such as hot or cold surfaces.

Mechanical hazard should be understood as all impacts of physical factors on humans that may be a source of injuries caused by mechanical action of machine parts, tools, workpieces or ejected solid or liquid materials. An employee's contact with moving parts of machines and devices may lead to injuries as a result of impact, being drawn into the moving parts or being cut, crushed and punctured. Parameters that influence the health effects of people exposed to mechanical factors are (Domínguez et al., 2021; Koradecka, 2000, Lewandowski, 1995):

- location of the factor interaction zone in relation to the employee zone;
- energy of interaction between the mechanical factor and the worker;
- kinetic energy of elements or machines;
- potential energy of parts that may move under the influence of gravity;
- type, shape and smoothness of the surfaces of elements with which the worker may come into contact;
- location of the elements relative to each other that may create danger zones when moving.

The hazards caused by mechanical factors, as in the case of other hazards, should be effectively eliminated or limited, through design and organizational solutions, or with the help of technological and technical solutions, e.g. shields are devices that constitute a material barrier between employees and a dangerous (mechanical) factor. They are used to ensuring human protection (Bambra et al., 2009).

In turn, safety devices are all, but not constituting a material barrier, protective devices. They include, among others pressure sensitive mats, safety valves, load limiters and interlocking devices, etc. Of course, there are a number of other measures to reduce mechanical exposure. They consist, among others on the mechanization and automation of work activities, or the use of systems for diagnosing malfunctions. There are also those that ensure safe access (stairs, ladders, clamps) and access to maintenance sites, means for disconnecting energy and dissipating stored energy, etc.

Only when none of the available measures allows to achieve an acceptable level of risk, personal protective equipment should be used. In terms of risks, these will be all personal protective equipment that protects the employee against the

risk of falling from a height, against falling objects as well as sharp elements and slipping. (Brown et al., 2021).

Physical, chemical, biological, and psychophysical factors are among those risks that can be nuisance or harmful. Harmful factors are those where the permissible exposure values are exceeded and lead to deterioration of the health of the employee, e.g. deterioration of hearing due to exposure to excessive noise levels (Klimecka-Tatar & Niciejewska, 2016; Wooley and Byers 2020; Teo, et al. 2020; Forget, 2011). Nuisance factors do not constitute a direct health hazard, but their exposure may also intensely affect the employee's health. Nuisance factors make work much more difficult and significantly contribute to quick fatigue, both physical and mental, and lower employee productivity. They can also be the cause of more frequent mistakes made by the employee in the process. They can also be the cause of more frequent mistakes made by the employee in the work process. The most numerous group of material work environment factors in terms of nuisance and harmfulness are physical factors - the following components (Reese, 2018; Samnani and Singh, 2014; Koradecka, 2008, Ulewicz et al., 2015):

- noise (infra sound, ultrasonic, audible, impulse, etc.);
- mechanical vibrations (vibrations);
- radiation (electromagnetic, laser, ionizing, thermal);
- lighting (natural, luminance, color);
- microclimate (hot, cold, moderate);
- electric current;
- air pollutants (gaseous, solid and liquid).

The internal changes that take place in the human body require the relative stability of its parameters. The human body has the ability to maintain homeostasis despite the changing parameters of the work environment. The balance (homeostasis) of the human system may refer to the heat and water-mineral balance of the body. In terms of professional work, they are primarily related to the microclimatic conditions in the work environment. Each organism has the ability to assess microclimatic conditions and adapt to them. However, when the adaptive abilities of the organism are exceeded, processes begin to occur in the organism that limit the physical and mental abilities of a human being, as well as impair the immune system that protects the human organism against other harmful environmental factors. They are very important from the point of view of human productivity, but also health and life (Dall'Ora, et al., 2016; Samnani and Singh, 2014).

Noise is another element of the microenvironment that can be both a nuisance and a harmful factor. This classification depends on the value of the noise level and the employee's exposure to this factor. If the noise level during an 8-hour working day does not exceed the permissible standards, but its value fluctuates around 75-80 dB, then it can be called nuisance noise, if the noise level during the said working time exceeds the hygienic standards (80 dB) or resulting from the labor code and regulations (85 dB), then noise should be called as a harmful factor. The harmfulness or nuisance of noise is determined by the sound pressure level, noise characteristics as a function of frequency, noise duration and the degree of mental preparation of the employee for noise (Forget, 2011).

Lighting is another physical factor that creates the micro-work environment and has a direct impact on people and their work. Obviously, the participation of various external stimuli in influencing an employee is uneven. However, most of the impressions and information a person receives while performing work are perceived by the organ of sight. It is as much as 85-90% of all stimuli. Due to the fact that human eyesight is adapted primarily and to the best extent to natural lighting, the source of which is the sun, it is difficult to provide the employee with various work processes (not infrequently at different times of the day and night) - the best in terms of lighting physiology. Of course, the human eye has adaptive skills and can adapt the eye to the conditions prevailing at a given moment and specific conditions. The accuracy of the visual work is assessed in the so-called vision functions that occur as eye contrast sensitivity, visual acuity, perception speed (Reese, 2018; Liao Pin-Chao et al., 2021)

The high level of industrialization of the modern world means that people are more and more often exposed to contact with hazardous substances and chemical preparations both in the work environment and outside it. They cause many diseases, especially of the respiratory system, but also dermatitis, psychoneurological disorders and cancer (Kapustka et al., 2020). According to the European Agency for Safety and Health at Work (EU-OSHA), about 18 million chemicals are produced in the world, of which over 30,000 are available on the market in EU countries (EU-OSHA, 2020).

Nowadays, biological agents constitute a very important group of hazards that have a significant impact on the life and health of employees of particular professional groups. Biological factors include both micro- and macro-organisms, as well as such structures and substances produced by those organisms which, when present in the work environment, have a harmful effect on the human organism and may cause occupational diseases (Stave and Wald, 2016; Wooley and Byers 2020). It is estimated that over several hundred million employees worldwide are exposed to these factors in the work environment. In Poland, farmers, foresters and health care are among the professional groups most exposed to biological factors. Experts say that reported biological exposure events or diseases represent only a small percentage of the phenomenon that is larger. The reason for the underestimation may be an improperly diagnosed ailment, a disease, e.g. among farmers. The biological hazards factor include prions, viruses, bacteria, fungi, internal and external parasites, plant and animal allergens and toxins. (Reese, 2018).

A very important group of factors influencing the health and functioning of an employee in the work environment are psychophysical risk factors. In the context of professional work, these factors can be divided into hazards resulting from physical workload (physical ailments) and hazards resulting from mental workload. In this group of factors, the literature on the subject reports on musculoskeletal ailments resulting from working conditions, non-ergonomic work positions, uncomfortable or forced postures during work, as well as mental workload causing stress (Mahdavi et al., 2020; Teo, et al. 2020; Weale et al. 2018; EU-OSHA, 2014). It is a group of risk fac-

tors that are very difficult to reliably identify, assess occupational risk and characterize the effects and causes of negative phenomena. Stress can be the cause of other pathological phenomena as well as the result of other factors, e.g. creating physical working conditions (Hassard & Cox, 2017). In recent years, both CIOP-PIB and EU-OSHA have placed great emphasis on the reliable identification of psychophysical (especially psychosocial) hazards in the work environment, as well as the assessment of their occupational risk (Bambra et al., 2009).

Assessment of how a given hazard affects our occupational health and safety depends on many factors, but the starting point is certainly the type of industry and the size of the enterprise. In the light of the available reports of studies conducted by the European Agency for Safety and Health at Work, it turns out that the hazards that European workers indicate as the most common in the work environment are physical hazards (work in conditions of excessive exposure to noise, work in a changing microclimate environment) and psychophysical hazards (Eurofound, 2014; Esener, 2019). In the area of psychophysical risks, European employees indicate the dangers of monotony and monotony of work and the dangers associated with a non-ergonomic work position, which in turn leads to the vulnerability of the musculoskeletal system (Mahdavi et al., 2020). It turns out that every fourth employee complains of backaches, neck and lumbar muscles (FACTS71, 2007, EU-OSHA, 2020). The area of psychophysical hazards also includes hazards related to occupational stress, which is the result of pathological social phenomena in the work environment. Recent reports also draw attention to the current biological hazards that undoubtedly dominates the entire world.

The aim of this study is to assess the impact of occupational hazards on work safety in the opinion of employees of "small-sized" enterprises.

4. Research area

The presented research results refer to research conducted in 2018-2019. At that time, almost 3,150 questionnaires were sent electronically to "small-sized" enterprises, i.e. micro (1-9 employees) and small (10-49 employees). As feedback, almost 1,800 completed questionnaires were obtained, of which over 700 were not suitable for analysis. After verifying the correctness of the questionnaires, 1006 correctly completed questionnaires were finally assigned to the analysis and evaluation of the obtained answers. The research covered many areas related to safety and health protection at work. This article presents a part of the research related to the identification of occupational hazards.

The research has a survey character - and the survey questionnaire was designed for the purposes of this research. The group of respondents was equal to the number of business entities that took part in the survey and amounted to 1006.

The survey was addressed to enterprises from the micro and small enterprises, which for the purposes of the study were called "small-sized" enterprises. The research covered economic entities with up to 49 employees, with different profiles

depending on the industries - production, service, commercial and mixed.

Service enterprises constituted the largest group - 58%. When it comes to the age structure, the most numerous group of respondents were employees aged 35-44 - 37.9%.

More than half of the surveyed employees have been working for more than 6-10 years. Almost $\frac{3}{4}$ of the surveyed employees declared that they perform professional work of a physical or mixed (mental and physical) nature. Over 60% of the respondents declared having secondary or higher education.

In order to verify the results of the research, a direct interviews with the elements of observation in selected construction companies in the Śląskie Voivodeship have been made. The area was selected on the basis of the following premises:

- the industry that most frequently responded to the survey were production and service companies in the construction industry,
- the largest number of completed questionnaires was obtained in the Śląskie Voivodeship,
- availability and consent to direct penetration in the enterprise (consent to interview and observation of employees during work)

5. Results and discussion

The aim of this study is to assess the impact of occupational hazards on work safety in the opinion of employees of "small-sized" enterprises. On the basis of the results obtained through the questionnaires it is possible to present cumulative results concerning the distribution of indications by respondents of factors that significantly affect work safety and constitute health and life hazards – table 1.

Table 1. Distribution of indications (by average) of factors hazardous for life and health, most frequently occurring in the opinion of respondents by sector of activity, and the results of the test of significance of differences between indications for the production and service sectors - statistically significant values on the level $\alpha = 0.05$

Variable	Average rating by type of enterprise				
	production companies	service companies	commercial companies	mixed companies	together
A) dangerous (accidental) factors	3.734	3.888	3.194	2.993	3.702
B) physical factors	2.983	2.859	2.833	2.514	2.840
C) chemical factors	2.589	2.565	2.389	2.157	2.508
D) biological factors	2.519	2.615	2.472	2.221	2.532
E) psychophysical factors	2.925	3.148	3.222	2.700	3.035
Median	MW test results				
	Z	P			
A) 4.000	-2.556	0.011			
B) 3.000	1.709	0.087			
C) 2.000	-0.089	0.929			
D) 2.000	-1.878	0.060			
E) 3.000	-2.979	0.003			

Among factors hazardous for life and health, the highest score for indications (on average) was given to dangerous factors. Half of the respondents assessed them as very important. They were considered the most dangerous in both the manufacturing and service sectors, with the latter being significantly higher ($Z = -2.556$, $p = 0.011$). Another highly rated

factors hazardous for health and life were, according to the respondents, psychophysical factors. Also in this case, the ratings of service sector employees (3.148) in relation to the manufacturing (2.925) were significantly higher ($Z = -2.979$, $p = 0.003$). The hazards from physical and chemical factors was assessed as insignificant.

Table 2 presents the results concerning the distribution of indications of factors hazardous for life and health that occur most often in the opinion of the respondents, according to their age. As the age of employees increases, the importance of such life hazardous factors as traumatic factors ($\tau = 0.087$, $p < 0.001$), physical factors ($\tau = 0.126$, $p < 0.001$), chemical factors ($\tau = 0.101$, $p < 0.001$) and biological factors increases. ($\tau = 0.086$, $p < 0.001$). The presented dependencies are not high but statistically significant.

Table 2. Distribution of indications (by average) of factors hazardous for life and health, most frequently occurring in the opinion of respondents, by age of respondents, and the value of the tau-Kendall correlation coefficient between age and types of life hazards - statistically significant values at the level of $\alpha = 0.05$

Variable	Age						
	18-24	25-34	35-44	45-54	56-64	65 and more	Together
A) dangerous (accidental) factors	3.043	3.282	3.715	3.795	4.061	3.000	3.702
B) physical factors	2.522	2.443	2.835	2.980	2.879	2.250	2.840
C) chemical factors	2.275	2.047	2.613	2.590	2.394	2.000	2.508
D) biological factors	2.130	2.125	2.660	2.563	2.515	2.000	2.532
E) psychophysical factors	2.957	2.639	3.165	2.853	3.424	4500	3.035
Correlation							
Tau		P					
A)	0.087	0.000					
B)	0.126	0.000					
C)	0.101	0.000					
D)	0.086	0.000					
E)	0.000	0.991					

Table 3 presents the differences in the assessments of hazards to life and health that occur most often from the point of view of employees of micro and small enterprises.

Table 3. The difference in the assessments of hazards to life and health that occur most frequently from the point of view of micro and small workers (Mann-Whitney test results) - statistically significant values at the level of $\alpha = 0.05$

Variable	MICRO ENTERPRISES		SMALL ENTERPRISES	
	AVERAGE	SD	Average	SD
A) dangerous (accidental) factors	3.6298	1.0422	3.7890	1.0831
B) physical factors	2.8367	0.8142	2.8440	0.8744
C) chemical factors	2.4918	0.7898	2.5275	0.8611
D) biological factors	2.4918	0.8213	2.5802	0.8345
E) psychophysical factors	2.9927	0.9972	3.0857	0.9763
MW test results				
Z		P		
A)	-2.4665*	0.0136		
B)	0.1313	0.8955		
C)	-1.0094	0.3128		
D)	-2.6071*	0.0091		
E)	-1.5761	0.1150		

Employees of small enterprises (10-49 employees) significantly more often indicated the importance of dangerous traumatic factors ($Z = -2.4665$; $p = 0.0136$), and in particular of biological factors ($Z = -2.6071$; $p = 0.0091$), as hazards to life and health in comparison with employees of micro enterprises (1-9 employees). The results from the direct interview, in turn,

showed that the hazards that dominate and significantly affect the work safety of "small-sized" enterprises are:

- hazards arising from physical agents, and psychophysical
- hazards resulting from dangerous (accidental) factors.

The respondents indicated that the most common ailments were the same as the phenomenon of occupational stress and ailments of the musculoskeletal system.

Reliable and real identification of occupational hazards in the work environment is the basis for the implementation of subsequent processes related to occupational health and safety management in the enterprise, including such as: occupational risk assessment, preventive measures, motivating employees to safe and accident-free work, or improving working conditions. As it results from the presented research results - both on a European and national scale - the most frequently indicated hazards in the work environment, respondents indicate hazards related to physical factors of the work environment, hazards related to psychophysical and biological factors (Cantonnet et al. 2019). Of which, in the time of the COVID-19 pandemic, it seems that biological hazards have dominated all others. Additionally, the consequence of pandemia is the risk of psychophysical factors, especially psychosocial ones. A general fear of the effects of the COVID-19 virus, a shared fear, often resulting from incorrectly duplicated information - all this determines almost every sphere of human life - both private and professional. Enterprises, workplaces and organizations are forced to change their working conditions in connection with hygiene and sanitary restrictions. Some employees can work remotely, which also determines the emergence of risks related to its performance, often at home. However, a large part of the employees must work stationary in contact with the client, patient, applicant, remembering to apply appropriate safety measures resulting from provisions and regulations, as well as internal employers' orders. In this difficult time, employees exposed to direct contact with another person perceive various stimuli and consequences of biological hazards, such as immeasurable but equally dangerous psychosocial risks - from verbal aggression to physical violence.

6. Summary and conclusion

Occupational health and safety management is the implementation of a number of functions that follow the Deming cycle principle. Continuous improvement of the occupational health and safety area should be a priority of the company's health and safety policy. Reliable performance of each function contributes to the success of the entire health and safety policy in the enterprise. Knowledge as well as skilful classification and assignment of individual potential hazards resulting from factors shaping the work environment is the basis for the correct assessment of occupational risk, corrective actions and prevention.

Summarizing, it should also be stated that the type and intensity of hazards in Polish and European enterprises is very similar. As a result, it is possible to successfully implement solutions in Polish enterprises concerning the aforementioned corrective, preventive and increasing the level of safety and

hygiene at work. It is primarily about the appropriate level of initial, instructional, periodic and specialist training, but also taking care of appropriate personal protective equipment. Forming pro-safe behavior among employees is a major challenge for people responsible for health and safety in enterprises. The unification of both the structure of occupational hazards and the unity in their classification is very important in this process. Based on the reported research results, it can be concluded that dominate and significantly affect the work safety in micro and small enterprises are hazards arising from physical and psychophysical agents as well as hazards resulting from dangerous factors. It should also be emphasized that the migration of hazards, but also changes in the intensity of their occurrence or changes in the time associated with exposure to a given factor (dangerous, scolding or nuisance) depends on many aspects - the development of techniques and technology, the level of awareness of safe and accident-free work among the working community and changes taking place in the domestic and world economy.

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“小型”企业的职业健康与安全管理，特别是危害识别

關鍵詞

安全管理
职业危害
危险因素
妨害因素
有害因素

摘要

本文介绍了企业职业健康与安全管理的要素，尤其着重于职业危害的识别。已经对可能引起职业危害的因素进行了分类和划分。这项研究的目的是从小型和小型企业的雇员的角度评估职业危害对安全生产的影响。使用专有问卷进行了研究。通过对观察元素的直接采访来验证结果。根据EU-OSHA进行的研究结果，将该研究与欧盟国家企业中的流行趋势进行了比较。波兰受访者认为身体和心理生理因素是主要的职业危害。结果与EU-OSHA在其公开报告中提供的结果非常相似。职业健康与安全管理的的基本原则，即职业危害的识别，是可靠性和正确性。识别职业危害可提供采取正确有效的纠正和预防措施的机会，例如通过有效使用个人防护设备或对入门和指导培训进行更详细的处理来降低职业风险。本文还强调了个人职业危害的迁移，这取决于许多因素，包括专业因素和非专业因素。