

## Workplace safety in furniture industry plants (selected aspects)

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**Abstract:** *Workplace safety in furniture industry plants (selected aspects).* The practical aim of the study was to define the safety of the working environment of persons employed in the furniture industry in the local labor market of the Opole Voivodeship based on selected aspects. For this purpose, data related to occupational hazards, causes of accidents at work and accident rates were used. The paper recommends a method of recognizing the working conditions, with particular emphasis on the work environment. An analysis of selected indicators shaping safety the work environment was performed. It has been found that despite the apparent improvements in this field, it is still on an unsatisfactory level.

*Key words:* workplace safety, furniture industry, accidents at work, harmful factors

### INTRODUCTION

The development of a proper human work environment is indispensable in any enterprise that pursue to develop itself, compete on the market and operate in accordance with the applicable health and safety regulations. The work environment affects both the health and well-being of people, as well as the efficiency of its work and the length of the productive age. In the workplace, there are many factors that can have a negative effect on the worker. Frequently, it results in lower physical or mental efficiency and fatigue which may in turn lead to inferior productivity or cause an accident in the workplace. Also often they cause serious health consequences, e.g. a disability is a direct result of an accident at work or occupational disease. Work environment plays an important role in all sectors of the national economy. The furniture industry has been one of the most dynamically developing branches of the Polish economy for many years. Polish furniture is sold throughout the world, and its production is one of the most important industries in both Polish and global economy. In 2016, Polish furniture industry achieved a production value of 42 billion, of which over 90% are exported furniture (<https://home.kpmg.com/pl>). Analyzing statistical data, it can be noticed that the companies that have mastered the furniture market in Poland are mainly micro and small enterprises, many of which are run as family business. Unfortunately, this branch of industry, despite significant sales success, technological and technical-organizational progress, is characterized by the presence of numerous factors affecting negatively the quality of widely understood working conditions and non-compliance with applicable regulations in the field of workplace safety. The manifestation of this is a high level of threats and a large number of accidents at work, which weaken human capital to a significant extent.

### MATERIALS

In order to characterize the work environment properly, the concept of working conditions should be brought closer as they are strictly correlated. The term “working conditions”, applied both in scientific literature and practice of economic life, has not been precisely defined yet. It is usually referred to as "general physical and psychosocial factors stemming from the operating environment and influencing the people who perform work" (Pocztowski 2008). Therefore, often the term "working conditions" is identified with the term "work environment" (Gajdzik 2014). It is reflected in the detailed classification of working conditions, which comprise organizational and technical elements (including material

working environment and work organization), economic (related to the type of contract, remuneration, additional benefits for employees) and social (including interpersonal relations on the line of the superior - employee and employee-employee) (Olszewski 1997). However, it should be remembered that the working conditions in relation to the material working environment play a superior role.. In addition, the literature on the subject distinguishes the aesthetic factors (e.g. interior architecture, furnishing rooms) sanitary and hygienic (e.g. a canteen), temporary (e.g. time spent in the workplace), the content of work (e.g. the scope of duties entrusted to employees) (Gajdzik 2014). Working conditions are an integral part of the professional functioning of each employee.

The material environment creates a "set of factors conducive to (or unfavorable) work efficiency and at the same time guaranteeing (or the opposite) an employee proper conditions of hygiene, health, safety and aesthetics" (Wiatrowski 2000). Analyzing them in detail (i.e. those that affect the employee in an indirect or direct way), following factors are distinguished (Polek-Duraj 2007): physical (including noise, lighting, mechanical vibrations, dustiness of air), biological (i.e. the impact of live microorganisms, among others, viruses, bacteria, fungi), chemical (e.g. contact with toxic substances), psychophysical (mainly arising as a result of performing work causing physical or psychoneural load, e.g. long-lasting muscle tension). The nature of the material work environment and the hazards present in a given position is conditioned by, among others the specificity of production, the technology used, the work organization system. The degree of their impact on the employee and work depends on:

- type of factor, time and period of activity and severity,
- nuisance of work,
- individual immunity and human sensitivity to a given factor as well as the state of health and the current condition of the employee.

The demonstration of the relationship between these factors and their impact on employees is not an easy task. It cannot be assumed that the occurrence of harmful, burdensome or dangerous to health factors is synonymous in each case with the possibility of an accident occurring during the performance of duties by the employee or professional diseases. Therefore, they also do not always decide that the performance of professional duties in a given workplace is carried out in safe conditions or not. This is conditioned by a number of aspects, including the organization of work, the type of workstation, the employer's provision of personal protective equipment, periodic health and safety training. However, on the basis of research and information on harmful, dangerous and onerous attempts may be made to predict their health effects. In addition, these factors determine the individual predispositions to work and resistance to fatigue and unfavorable impact of the work environment.

A safe and healthy work environment along with a properly implemented work organization and appropriate economic and social conditions are of key importance for the quality of work. It is a crucial element in increasing employment rate, improving productivity and enhancing social cohesion.

## RESULTS

In order to determine the level of occupational safety of persons employed in the Opole region in the furniture industry statistical data presented by the Central Statistical Office and furniture industry plants were analyzed. In the research participated 80 randomly selected furniture industry companies belonging to the group of small enterprises (i.e. with the number of employees not exceeding 9). Their choice results from the fact that they constitute 94% of all economic entities from this particular industry in the Opole region. They operate on the market for an average of 10 years and have a relatively stable economic and financial

situation. The analysis uses information on occupational hazards, causes of accidents at work and the level of accidents. Data for analysis was adopted for the years 2008-2017.

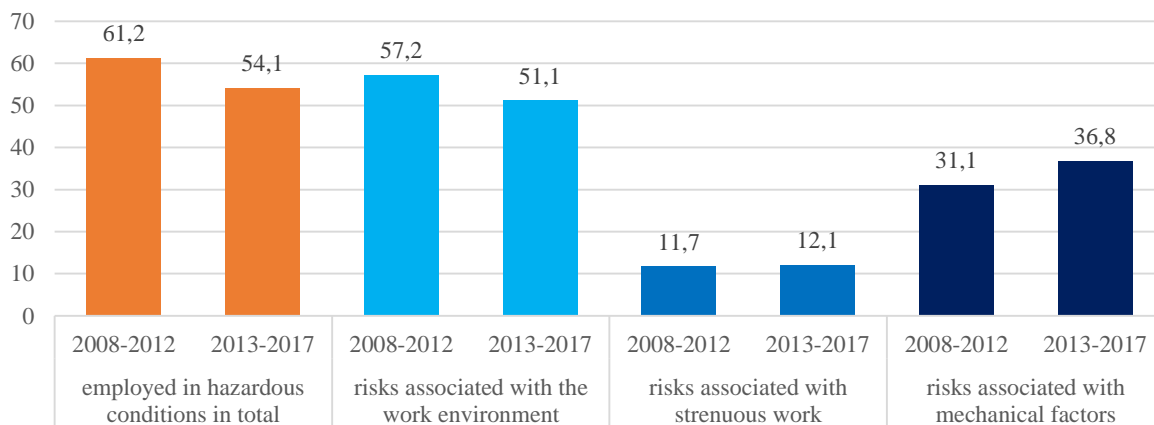
**Table 1.** Employed in hazardous conditions in 2008-2017 (per 1000 employees)

Specification	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Manufacturing industry in total (Poland)	147.0	142.9	138.2	100.6	138.1	133.1	126.1	124.1	119.9	118.7
Wood and furniture industry in total	248.6	253.3	251.9	244.4	247.1	237.4	221.0	212.5	193.0	196.7
Furniture industry in total	171.1	212.9	197.1	183.0	190.6	180.4	155.5	136.3	136.8	134.3
Furniture industry in Opole Region	210.9	199.7	166.0	145.9	162.1	129.0	105.6	96.5	91.5	132.3
Analyzed plants	184.6	208.1	209.5	200.8	164.7	147.5	128.9	110.2	112.8	129.4

Source: Own study based on data obtained from Statistical Yearbooks of Industry from 2008-2017 and analyzed plants.

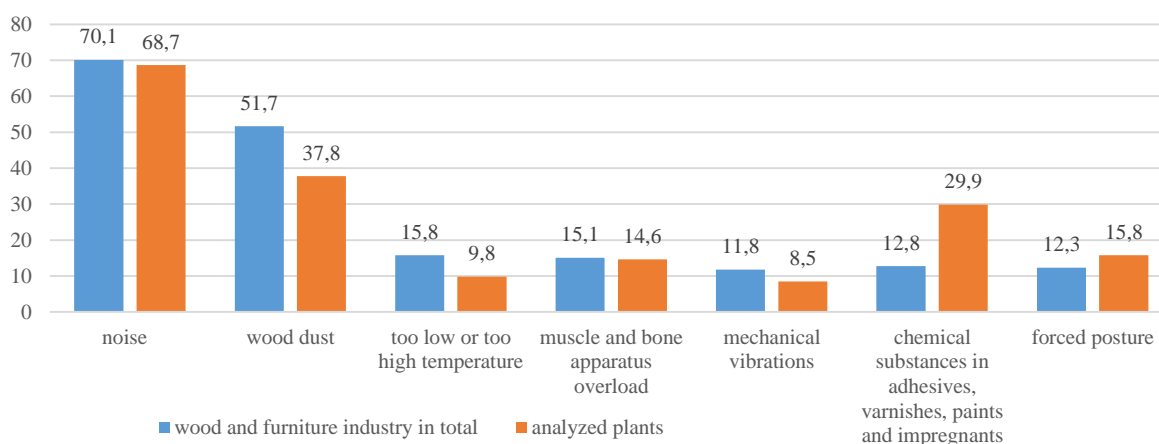
Considering the employment rate in hazardous conditions, it can be noticed that the furniture industry in Poland is characterized by higher values than the average in the entire manufacturing industry, despite a systematic decrease since the beginning of the analyzed period. In the analyzed period, on average, every sixth employee was exposed to work characterized by various threats. The situation is similar in the Opole region, except for the years 2013-2016, when it was significantly lower. Unfortunately, according to recent data, the employment rate has grown yet again and currently is at a comparable level with national data. It should be noted, however, that the rate of employment in hazardous conditions in the production of furniture in the reporting period decreased, but not enough to make it at a satisfactory level. This indicates that the level of occupational hazards in the industry is still too high. However, it should be noted that for the wood and furniture industry it is yet a bit higher, which proves that in other sectors the situation is even worse. Nevertheless, the level of threats in the analyzed period has not changed significantly. Therefore, it can be concluded that in the analyzed industry in the Opole region and throughout Poland, none significant measures were applied to eliminate or at least eradicate existing occupational hazards.

Consequently, the level of threats in the plants was analyzed detailing harmful, hazardous and onerous factors in the workplace. Based on the synthetic data presented in figure 1, it can be stated that more than half of the employed persons work in conditions of health risk. Nevertheless, it can be seen that there has been a slight improvement in the last 5 years. The highest level of risk is a consequence of factors existing in the work environment, which is largely due to the specificity of the furniture industry. A high degree of danger (over 1/3 in total) is also created by mechanical factors. It is often caused by the use of obsolete equipment in the production process. Nearly all the owners of the plants covered by the research admitted that a significant impact on the occurrence of such a situation results from too high costs of purchasing modern machines and tools. The low percentage of employees is exposed to risks related to the nuisance of work, which may indicate that the mere operation of machines, tools or other devices does not cause employees major problems.



**Figure 1.** Employed in conditions of threat of hazardous, harmful and onerous factors in the examined plants in the years 2008-2012 and in the years 2013-2017 (%) (source: Own study based on data obtained in the analyzed plants).

Considering that the greatest number of threats to the health and life of employees results from the material working environment, based on an in-depth analysis of the data, it was determined which of the factors are relevant and to what extent (Figure 2). The major threat both in the wood and furniture industry as well as in the furniture production sector is noise. In analyzed plants during the considered period, it considerably exceeded the acceptable standards. Additionally, the relatively high degree of threat is wood dust and chemicals contained in adhesives, varnishes, paints and impregnants. Every third employee was exposed to their impact. It is worth noting that only in the case of the interaction of chemical substances, their level is higher than in the wood and furniture industry. The lower percentage of employees in other branches of industry is not due to better working conditions in this respect, but only owing to the fact that work with adhesives, various impregnants, etc. constitute a minor part of all duties performed. In addition, in several plants workers were exposed to too high or too low temperatures, but compared to the entire industry, it was more than twice lower. It is because furniture production, unlike in most other branches, occurs behind closed doors, which largely translates into better conditions in this matter. The frequency of occurrence of other threats is negligible and has no significant impact on the health of persons employed in the analyzed industry.



**Figure 2.** Structure of employees exposed to hazards related to the work environment in the examined plants against the background of the entire wood and furniture industry in the Opole region in 2008-2017 (in%) (source: Own study based on data obtained in the analyzed plants and data provided by the Central Statistical Office in Opole)

Based on the data presented in figure 3, it is worth noticing that the level of accidents in the analyzed sector both in total and in the studied plants is definitely higher than the national average in manufacturing industry. It also surpasses the average in the wood and furniture industry. It is worth noting, however, that in both cases it presents a downward trend, although in the recent period it is rather symbolic. On this basis, one may attempt to state that working conditions, particularly the material work environment in the furniture production, pose a high risk of losing health.

**Table 2.** Accident rate per 1000 employed in manufacturing industry, in the wood and furniture and furniture industries in Poland and in the surveyed plants in 2008-2017.

Specification	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Manufacturing industry in total	15.70	12.20	13.10	13.60	12.50	11.64	11.59	11.12	10.99	10.64
Wood and furniture industry in total	18.20	14.10	15.20	15.70	14.30	13.74	13.39	12.78	12.40	12.32
Furniture industry in total	18.60	14.80	15.50	16.20	14.90	13.36	12.79	12.52	12.03	11.98
Furniture industry in Opole Region	18.10	16.60	15.80	15.20	15.10	14.30	13.01	12.98	12.70	12.40
Analyzed plants	17.80	16.10	15.30	15.10	14.80	13.90	13.70	13.10	12.50	12.50

Source: Own study based on data obtained from the Statistical Yearbooks of the Accidents at work from 2009-2017 and data obtained in the analyzed plants.

Analyzing the data presented in figure 3, it can be concluded that the majority of accidents in the wood and furniture industry, as well as in other sectors, arise as a result of mistakes made by employees. The most common causes resulting from the human factor include, firstly incorrect employee's behavior (the cause of more than half of all accidents). To lesser extent, they are: arbitrary behavior of the employee, deliberate failure to use protective equipment and improper physical condition of the employee.



**Figure 3.** Causes of accidents in the workplace in the wood and furniture industry in total and in selected plants in the furniture sector of the Opole Voivodeship in 2008-2017 (in%) (source: Own study based on data obtained in the analyzed plants and data provided by the Central Statistical Office in Opole.)

It is worth pointing out the differences in the causes of accidents between the sector and the entire industry. The factories in which furniture is made are characterized by a smaller number of accidents resulting from an inadequate technical and organizational factor, which may indicate a relatively decent organization of work and properly prepared equipment. Unfortunately, considering the human factor, in the case of furniture manufacturing plants, it is more principal than in other sectors of the wood and furniture industry. It is disturbing, that by taking appropriate steps the technical and organizational reasons of accidents can be reduced to a minimum, while the reduction of human causes is complicated since often the

behavior of employees is unpredictable. Therefore, it can be concluded that improvement of working conditions and, as a consequence, its quality will not be achievable until on the one hand employees themselves will deliberately ignore the recommendations regarding compliance with OHS, and on the other employers will expose them consciously or unconsciously to the risk of health or even life.

## SUMMARY

Each of us is adapted to live and work in an environment with specific characteristics. Deviations of environmental parameters from accepted conditions accepted as safe can cause various negative disturbances in human functioning and have a negative impact on the quality of not only work, but also life. Therefore, an essential element is to provide working conditions that will allow for safe work, corresponding to certain standards and norms in this field.

In the light of the analysis carried out in the furniture sector of the Opole Region it can be assumed that the level of workplace safety in the analyzed period, have not been sufficiently improved and is still unsatisfactory especially from the point of view of employees. Nevertheless, there is a high percentage of employees exposed to the impact of nuisance, dangerous or harmful factors, as well as high rate accident. In addition, employees' approach to occupational safety also leaves a lot to be desired. Considering noble position of Polish furniture industry on the international market, the carried out research does not indicate that it translates into safety, and thus an increase in the quality of the work environment.

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**Streszczenie:** *Bezpieczeństwo pracy w zakładach produkujących meble (wybrane aspekty).* Celem praktycznym opracowania była próba określenia bezpieczeństwa pracy osób zatrudnionych w branży meblarskiej na lokalnym rynku pracy województwa opolskiego na podstawie wybranych aspektów. Realizacja celu została oparta na analizie danych odnoszących się do zagrożeń zawodowych, przyczyn wypadków przy pracy oraz poziomu wypadkowości. W artykule zaproponowano sposób ujmowania warunków pracy, ze

szczególnym uwzględnieniem środowiska pracy. Dokonano analizy wybranych wskaźników kształtujących bezpieczeństwo pracy. Stwierdzono, że pomimo widocznej poprawy w tym zakresie, nadal jest ono na niezadawalającym poziomie.

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