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Accident rates in Poland's foodstuff industry from the perspective of occupational safety management in the European Union

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ABSTRACT

The issue of accidents at work and accident prevention have significant impact regarding safety, health protection and work environment management for the European Union. Work conditions need to be improved in Poland. Solving this collective issue caused by humanitarian as well as economic considerations is a primary mission in businesses. Creating more quality jobs is one of the main goals of EU's social policy. Health and safety in the work environment are essential conditions for work quality. This article presents the incidence of work related accidents in EU. In the 28 member states of the EU (EU-28), 2015 recorded over 3.2 million workplace accidents which invoked at least 4 day work leaves and 3,876 deaths. The authors of this analysis present the issue of workplace accidents based on the examination of incidents in large foodstuff plants of the Lodz voivodship i.e. food processing businesses that have been continuously active for the five year period of 2008-2012. The food industry belongs to one of the most fundamental economic fields and is one of the most important factors of economy growth and amounts to about 20% of domestic production in the processing industry in Poland. The Lodz province has been chosen on account of its central location in the country. For the selected group of businesses, there is a marked increase of workplace accidents – from 258 in 2008, to 333 incidents in 2012 – for the study period in that the lowest incidence occurred in 2009 (211 accidents), and the highest in 2011 (358 accidents).

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INTRODUCTION

The activities of the European Union (EU) in regard to occupational health and safety have its legislative foundations in Article 153 of the EU Treaty (Asfaw, *et. al.,* 2013; Besnard, *et. al.,* 2014). The EU strategy in the area of health protection in the workplace declares that occupational health and safety is one the most important and most advanced aspects of EU policy (Bräunig, *et. al.,* 2012; Dziekoński, *et. al.,* 2017). In the EUROPEAN UNION COUNCIL (Carrillo-Castrillo, *et. al.,* 2016; Eurostat, *et. al.,* 2013; Pracodawcy, 2012) resolution regarding the new common strategy concerning occupational safety and health, it is stressed, that to continuously, consistently and permanently decrease the number of accidents at work, the member countries must strive to realize the aims that have been specified in the strategy, including, but not limited to, the creation of an overall culture of respect for health and danger prevention through endorsing changes in workers' behaviour and simultaneously encouraging employers to adopt strategies focused on health, and applying appropriate economic incentives at the national and community levels.

In 2015 (Zielińska, 2018), there were just over 3.2 million non-fatal accidents that resulted in at least four calendar days of absence from work in the EU-28 (Table 1). There was a decrease in the total number of non-fatal accidents at work in the EU-28 between 2010 and 2015, some 370 thousand fewer (equivalent to an overall reduction of 10.3 %). A closer examination reveals that the decrease was in fact recorded between 2010 and 2012, after which the number of non-fatal accidents at work was relatively stable, with changes between -1.2 % and 3.0 % each year during the period 2013-2015 (Bellamy, 2015). The decrease in the incidence rate (number of non-fatal accidents at work for every 100 000 persons employed) between 2010 and 2015 (down 10.9 %) was slightly greater than the decrease for the number

Table 1: Non-fatal accidents at work, by economic activity, EU-28, 2010-2015 (Eurostat, 2013)

S. No.	GEO/TIME	2008	2009	2010	2011	2012	2013	2014	2015	2016
1	European Union (current composition)	3 851 698	3 529 946	3 581 628	3 414 735	3 165 414	3 127 546	3 221 074	3 211 956	3 285 032
2	European Union (before the accession of Croatia)	3 851 698	3 529 946	3 569 725	3 401 167	3 154 261	3 115 837	3 209 405	3 198 811	3 271 769
3	European Union (15 countries)	3 576 513	3 319 927	3 353 323	3 209 991	2 962 972	2 933 579	3 029 448	3 010 385	3 071 241

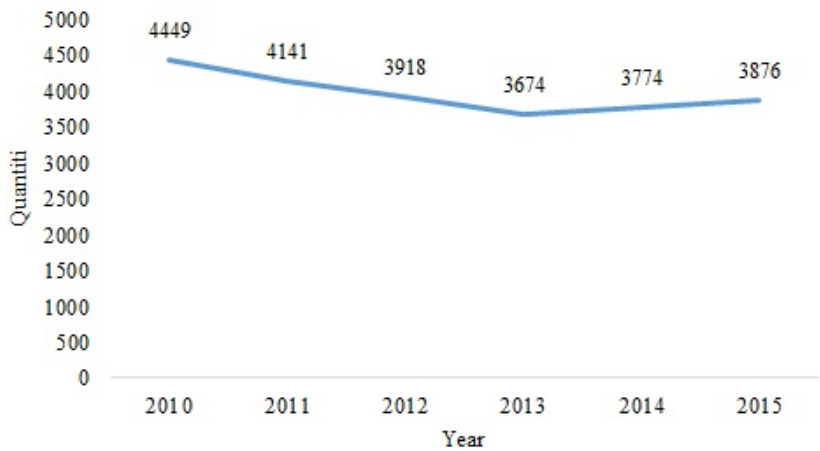


Fig. 1: Total all NACE activities, UE-28, 2010-2015(Eurostat, 2013)

of non-fatal accidents, reflecting modest growth in the total number of persons employed. In absolute terms, non-fatal accidents in the EU-28 were most common in manufacturing, where 625 thousand people had non-fatal accidents in 2015, 19.5 % of the total. The number of accidents, excluding fatal accidents occurring in Poland, fell during the period of 2008-2016 i.e. approximately 12,281 fewer – a drop of 12.75%. During this period, the workplace accident rate fell the most in 2014 in which 76,274 accidents occurred. However, given that the workforces of the activities are different in size, the incidence rate gives a clearer impression of where workers are more likely to encounter non-fatal accidents (Bird, *et. al.,* 1996). In 2015, there were 3 876 fatal accidents in the EU-28 (Fig. 1).

The priorities of various issues in Poland are focused on management systems in areas of quality assurance (Bird and Germain, 1996). Loss control management: Practical loss control leadership by Barwickam (2011) clean environmental and OHS. A growing number of companies are concurrently introducing highly developed management systems (Ślawska, 2010). The key to success is in their integration. The best elements of one system should be transferred to other systems. Employers are aware of this and know that a system is only for satisfying conscience, that it's a bureaucratic devise, not a live process of constant improvement. They appreciate the importance of workplace safety and it is seen in OHS services which are directly responsible to the employers (Cellier *et. al.,* 1996). Such high ranking indicates the essential support in realizing the companies' business goals.

MATERIALS AND METHODS

The research was carried out on large food processing companies that operate in the Lodz province which operated continuously between the years 2008-2012.

Based on Central Statistical Office data, it has been established that in the food industry of Lodz province, on January 1, 2008, there were registered:

- 2103 small companies employing up to 9 employees,
- 723 average-sized companies employing from 10 to 49 employees ,
- 177 large companies employing more than 50 employees.

On January 1, 2013, in the food industry of Lodz province, there were registered:

- 1873 small companies employing up to 9 employees,
- 644 average-sized companies employing from 10 to 49 employees,
- 153 large companies employing more than 50 employees.

The selection of researched objects was deliberate and recognized as the most typical case of non-random selection; moreover, it is based on subjective selection of researched units for testing (Młynarski, 1995). The main criterion for selection was that the companies' business activity was conducted within the Lodz Province in the food industry. The deliberate selection application has the characteristics of full in-depth research (Klepacki, 1984), in which only companies employing more than 50 employees, fully and continuously operational for 5 years i.e. 2008 to 2012, inclusive, were qualified. Small and average-sized companies were excluded from this research. Therefore, the research was carried out on all 152 large companies of the food industry in the Lodz province, which continuously functioned during said period. Complete data for 116 food industry companies was obtained through questionnaires. The materials derived from primary research include data concerning the years 2008 to 2012 and were included in the questionnaire title, "OSH Expenses and Accident Benefits from On-the-job Accidents," carried out in large companies in the Lodz province and the information gathered directly as a result of personal research. The information and source materials were collected during visits to the selected companies with the use of the questionnaire generated by the author, together with observations of labor in the production lines. Verification of collected information was carried out during similar interviews and conversations with OSH specialists at the studied companies.

RESULTS AND DISCUSSION

For the selected group of businesses, there is a marked increase of workplace accidents – from 258 in 2008, to 333 incidents in 2012 – for the study period in that the lowest incidence occurred in 2009 (211 accidents), and the highest in 2011 (358 accidents). Fig. 2 presents the numbers of workplace accidents for the study period (2008-2012), indicating a noticeable rise of incidents which may be tied to commercial expansion by the selected businesses.

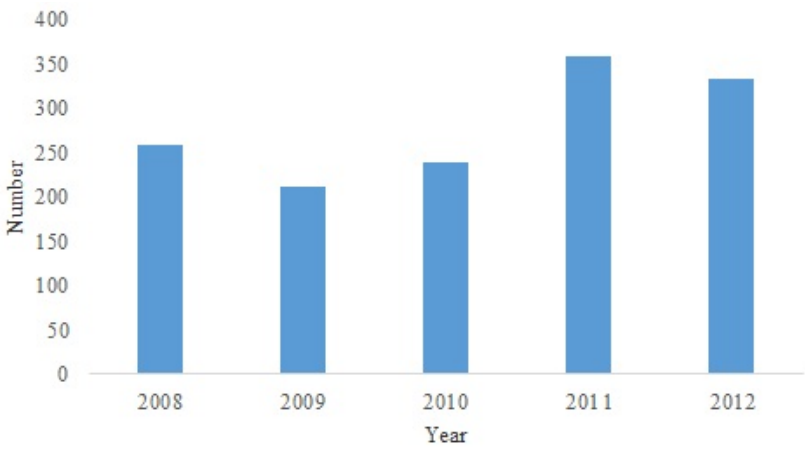


Fig. 2: Overall accident incidence for the selected businesses

Table 2: Number of serious, mortal and collective accidents in the selected food industry sector

Year	Type of workplace accident		
	Serious	Fatal	Collective
2008	0	0	0
2009	0	2	0
2010	0	0	1
2011	**7**	2	1
2012	2	2	0
Total	9	**6**	**2**

In the businesses of the food industry sector there were, during the study period, nine serious accidents, seven in 2011 and two in 2012 where four ended in death for four employees (2 – 2011, 2 – 2012). Furthermore, there were two collective accidents in the same industry sector during the study years: the first in 2010, in the bakery and cereal branch, and the second in 2011, in the dairy branch. Table 2 lists the numbers of accidents for the selected food industry based on injury classification.

During the study regarding workplace accident tendency rates in the selected plants, a number of external factors were determined which may have impact on the accident rates in said plants.

CONCLUSION

The issues of workplace accidents and prevention have, or should have, essential attention the world over in terms of safe production of products, health protection and work environment development. Having in mind the aspect of economic development it is worth noticing that the resolution of European Union Commission of June 25, 2007 regarding new Union strategy in the cause of occupational health and safety, states that the incidence of workplace injury should be falling at a significant and steady rate. Union members must strive to realize stated strategic goals including endorsing the general culture of respecting health and minimizing dangers through supporting change in the way employees behave while at the same time encouraging employers to adopt efforts concentrating on health and applying at state and Union levels appropriate economic premiums. Employers are conscious of the fact that a system which only strives to placate and is only a bureaucratic creation and not a living process of improvement is a waste of effort. They are aware of the importance of workplace safety which can be seen in the direct relationship between OHP personnel and plant management. This high relationship has as it goal reinforcement of a company's business goals. In 2015, there were 3 876 fatal accidents in the

EU-28. There was a decrease in the total number of fatal accidents at work in the EU-28 between 2010 and 2015, some 573 fewer (equivalent to an overall reduction of 12.9 %). During this period the number of fatal accidents initially decreased from 4 449 to 3 674 by 2013 (down 17.4 %) before increasing 5.5 % between 2013 and 2015. The decrease in the incidence rate (number of fatal accidents at work for every 100 000 persons employed) between 2010 and 2015 (down 13.3 %) was slightly greater than the decrease for the number of fatal accidents. As such, the number and incidence of fatal accidents fell faster between 2010 and 2015 than did the equivalent indicators for non-fatal accidents. The carried out research concerns companies from the food industry which operate within the Lodz province, and the results obtained cannot generalize the whole industry sector and companies in Poland. The research revealed that in the food industry there is an internal diversification of accidents. The branch with the highest accident rate is the dairy industry; whereas the branch with the lowest accident rate is defined as 'remaining food products production'. For the selected group of businesses, there is a marked increase of workplace accidents – from 258 in 2008, to 333 incidents in 2012 – for the study period in that the lowest incidence occurred in 2009 (211 accidents), and the highest in 2011 (358 accidents). In the businesses of the food industry sector there were, during the study period, nine serious accidents, seven in 2011 and two in 2012. In the five year period of the study (2008-2012), examining selected foodstuff plants, an increase of workplace accidents was noted of 29%.

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CONFLICT OF INTEREST

The author declares that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy have been completely observed by the authors.

ABBREVIATIONS

%	Percentage
et al.,	And others
EU	European Union
Fig.	Figure
I.e.	It means

REFERENCES

Asfaw, A.; Mark, C.; Pana-Cryan, R., (2013). Profitability and occupational injuries in U.S. underground coal mines. Accid. Anal. Prev., 50: 778–786 (**9 pages**).

Bellamy, L.J., (2015). Exploring the relationship between major hazard, fatal and non-fatal accidents through outcomes and causes. Safety Sci., 71: 93–103 (**11 pages**).

Barwickam, A.M., (2011). Wypadki przy pracy, choroby zawodowe i związane z pracę – występowanie i prewencja, ZUS. Prewencja i Rehabilitacja, 4: 15-16 (**2 pages**).

Besnard, D.; Hollnagel, E., (2014). I want to believe: Some myths about the management of industrial safety. Cognition Technol. Work., 16(1): 13–23 (**11 pages**).

Bird, F.E.; Germain, G.L., (1996). Loss control management: Pract. Loss Control Leader, Oslo, Norway: Det Norske Veritas.

Bräunig, D.; Kohstall, T., (2013). Calculating the Int. Return on Prev. for Companies: Costs and Benefits of Investment in Occupational Safety and Health. Final report. International Social Security Association, Geneva.

Carrillo-Castrillo, J.; Onieva, L.; Rubio-Romero, J.C.; Arquillos, A., (2016). The Causes of Severe Accidents in the Andalusian Manuf. Sect.: The Role of Hum. Factors in Off. Accident Invest. Hum. Factors Ergon. Manuf., 26: 68-83 (**16 pages)**.

Cellier, J.M.; Eyrolle, H.; Bertrand, A., (1995). Eff. of age and level of work experience on occurrence of accidents. Percept Mot Skills. 80: 931-40.

Dziekoński, J.; Zielińska, A., (2017). Zarządzanie bezpieczeństwem i higieną pracy w okresie restrukturyzacji, fuzji i przejęć podmiotów gospodarczych, Roczniki Naukowe UJK, Gospodarka Współczesna, 4: 7-22 (**16 pages).**

Eurostat, (2013). Eur. Commission, Methodologies and Working paper on Accidents at Work (ESAW). Summary method, Eurostat Method Working paper.

Maciołek, H; Zielińska, A., (2012). Aspekty bezpieczeństwa i higieny pracy w produkcji rolno-hodowlanej w świetle wybranych regulacji prawnych. J. Ecol. Health, 16(4): 176-183 (**8 pages)**.

Norimitsu, I., (2015). Statistical accident analysis and electrical fatality rate in Japan, 2002–2011 - Causes and preventive measures of fatal electrical accidents. IEEE Electrical Accident Safety Workshop. 26-30 January 2015.

Ordysiński, S., (2013). Częstość wypadków przy pracy a wiek i staż poszkodowanych, Bezpieczeństwo Pracy – Nauka i Praktyka, 7: 22-26 **(5 pages).**

Pracodawcy, (2012). Podręcznik Koalicji Pracodawców RP na rzecz biznesu odpowiedzialnego.

Ślawska, G., (2010). Prawne aspekty wypadków przy pracy, ZUS Prewencja i rehabilitacja, 3: 11-21 **(11 pages)**.

Zielińska, A., (2018). Finansowe skutki wypadków przy pracy, Roczniki Naukowe Ekonomii Rolnictwa i Rozwoju Obszarów Wiejskich, 105. 1: 101-110 **(10 pages).**

Zielińska, A., (2017). Ocena zależności pomiędzy składką na ubezpieczenie wypadkowe a profilaktyką bhp w przedsiębiorstwach przemysłu spożywczego, Roczniki Naukowe Ekonomii Rolnictwa i Rozwoju Obszarów Wiejskich, Warszawa, 104. 3: 106-114, **(9 pages).**

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