

АНАЛИЗ СОСТОЯНИЯ ПРОФЕССИОНАЛЬНОЙ БЕЗОПАСНОСТИ В ОТРАСЛИ ПОДЗЕМНОГО СТРОИТЕЛЬСТВА ЧЕХИИ И ЗА РУБЕЖОМ

Житка Лаура Влцкова

¹ Технологический университет, Брно, Чехия

Аннотация: Обеспечение сохранности и безопасности сотрудников является первостепенной задачей на сегодняшний день. Это влияет как на процесс строительства объектов гражданского назначения, в том числе при проходке подземных тоннелей, так и на финансовые затраты, связанные с обеспечением надлежащих мер безопасности. Заинтересованность заказчика заключается в том, чтобы обеспечить соблюдение требований законодательства и в то же время не увеличивать цену на проведение работ, создавая безопасную рабочую среду для строительства. Здоровье и безопасность рабочих важно во многих областях, в том числе подземных, транспортных, железнодорожных, гидротехнических и мостовых сооружениях, строительстве инженерных сетей и атомных электростанций. Для производства работ в области строительства подземных сооружений на чешский рынок часто выходят транснациональные или иностранные компании. Точно так же чешские компании участвуют в конкурсах по выбору подрядчика за рубежом. В данной статье рассматривается не только квалификация координатора по безопасности и охране труда при проведении подземных работ в Чешской Республике и некоторых странах Европейского Союза, но и метод обеспечения координации охраны труда. При разработке требований законодательства все страны исходили из общего требования – защиты здоровья рабочих, занятых в подземном производстве. Приоритетом является создание безопасного рабочего места, на котором можно достичь максимальной производительности. С другой стороны, законодательные требования отдельных стран также учитывают опыт человеческого поведения, что меняет требования к способу управления охраной труда. Была исследована взаимосвязь требований законодательства для достижения одной и той же цели – создания безопасной рабочей среды.

Ключевые слова: безопасность, здоровье работников, производственные факторы, трудовой кодекс, координатор, производственные травмы, строительство, условия труда.

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Analysis of the state of professional safety in the underground construction industry in the Czech republic and abroad

Jitka Laura Vlčková

¹ Brno University of Technology, Brno, Czech Republic

Abstract: Workplace safety is of paramount importance today. This determines both

construction site organization, including when driving underground tunnels, and safety costs to ensure appropriate safety measures. Both the building owner and the building contractor are interested in ensuring that workplace safety requirements are satisfied without increases in construction costs and that a safe working environment is provided. For the production of works in the field of construction of underground structures, multinational or foreign companies often enter the Czech market. Likewise, Czech construction companies participate in competitions to choose a contractor abroad. The paper discusses not only the qualifications of occupational health and safety specialists for the underground construction industry in the Czech Republic and some countries of the European Union, but also a occupational safety and health management system. Developing the legislative requirements, all EU countries proceeded from the general requirement for occupational safety and health in the construction industry. The priority is to provide a safe working environment, thereby ensuring maximum productivity of employees. On the other hand, the legislative requirements of some countries take into account the national patterns of human behavior, which changes the requirements for occupational safety and health management. We study the interrelation of the legislative requirements of different countries to achieve a common goal: a safe working environment at construction sites.

Key words: safety, worker health, production factors, the Labor Code, coordinator, occupational injuries, construction, working conditions.

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Introduction

With the enlargement of the European Union to include other Member States, efforts have been made since the 1980s to increase the level of safety and health of workers in the new Member States, as European legislation in this area, including that of the new Member States, has been at different levels. Different levels of national legislation allowed for competition, but unfortunately at the expense of safety and health at work, with all the negative effects that result not only for employees, but also for employers and society as a whole [1–4].

In June 1989, Council Framework Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work was adopted on the basis of Article 118a of the Treaty establishing the European Community. This Directive lays down, for the Member States of the European Communities, the basic principles for

establishing national legal systems for the protection of the life, health and safety of workers at the employer's workplace, on the assumption that workers are exposed to dangerous environmental factors at their place of work.

European Union (EU) began to address the issue of occupational safety more intensively as early as 2004, when, following an alarming analysis of accidents in the construction industry in the EU, it called for improvements in health and safety by transforming Directive 92/57/EEC into national law. Laws and decrees that entered into force in the Czech Republic in 2006 incorporate these new EU requirements.

Experimental details

Health and safety analysis in the Czech Republic

The turning year in which the most significant changes related to occupational safety in the Czech Republic (CR) took

place can be considered the year 2006, when new regulations influenced by the policy of the European Union (EU) entered into force. After the accession of the Czech Republic to the EU, the requirements for environmental aspects and especially for safety and health at work (OSH) on the construction site increased. The most important changes for construction participants in the construction are the introduction of new obligations for the contracting authority and the establishment of a new position of health and safety coordinator on construction sites, which until then was not known on construction sites in the Czech Republic. In order to perform the activity, the health and safety coordinator must meet the conditions of professional competence and obtain a certificate of successful examination at an accredited company. It is a managerial activity with the aim of achieving effective and efficient health and safety. The establishment of a health and safety coordinator is also related to the new obligation to prepare a health and safety plan and to ensure the safe implementation of the construction.

The Labor Code newly stipulates the obligation to conclude a written agreement between employers [5], whose employees perform duties at one workplace and to authorize one of them to coordinate measures to protect the safety and health of employees. Furthermore, the employer is obliged to provide employees with training on legal and other regulations to ensure health and safety, which complement their professional prerequisites and requirements for the performance of work. The Labor Code is followed by Act No. 309/2006 Coll., which sets out the responsibility for creating a safe workplace. In the first part of Act No. 309/2006 Coll. entitled «Additional health and safety requirements in labor relations» states in § 3: «Employer who

carries out the construction or participates in its implementation as a contractor of construction, assembly, construction assembly, demolition or maintenance work... («contractor») for another physical person... («the contracting authority») shall, in co-operation with the contracting authority, provide equipment for safe of work.»[6]. This stipulates the obligation of the contracting authority to provide co-operation to the contractor in matters of health and safety. In the third part of Act No. 309/2006 Coll. other tasks of the contracting authority are listed, including:

- 1) Designate in writing one or more health and safety coordinators on the construction site (usually by an order contract concluded during the construction preparation phase);

- 2) Hand over to the coordinator all documents and information for his activities (especially for the elaboration of the plan, including information about natural persons who may be staying on the construction site with his knowledge);

- 3) Provide the coordinator with the necessary cooperation;

- 4) Commit all construction contractors to cooperate with the coordinator;

- 5) Ensure the elaboration of a health and safety plan on the construction site;

- 6) Deliver notices of commencement of OIP work;

- 7) Ensure that a copy of the notice of commencement of work is posted in a visible place at the entrance to the construction site.

These obligations are delegated to the contracting authority by law, mainly because the vast majority of constructions today are not carried out by employees of one contractor. The activities of several contractors are carried out on a common construction site, which created the need for these contractors to be coordinated with each other in terms of ensuring health and safety.

In 2016, health and safety regulations were updated in the Czech Republic, with increased requirements for the qualification of the health and safety coordinator, his duties and the content of the health and safety plan was determined. At the same time, it was agreed that non-compliance with occupational health and safety would be sanctioned, as accidents caused by non-compliance with safety regulations have a significant financial impact on the entire economy. In the amendment, Act No. 309/2006 Coll. on ensuring other conditions of safety and health protection at work, the responsibility of the contracting authority for the level of health and safety is enshrined. The contracting authority is obliged to ensure that the health and safety requirements are included in the construction documentation prepared in the preparation phase. The coordinator must now have a secondary education with a GCSE in the field of technical education or a university degree in technical education. The contracting authority is obliged to designate a coordinator in writing. The coordinator must be appointed during the preparation of the construction and during the implementation of the construction. Furthermore, the amendment designated the coordinator as the developer of the health and safety plan on the construction site. Following the amendment to Government Decree No. 591/2006 Coll., On more detailed minimum requirements for safety and health protection at work on construction sites, a new Annex No. 6 was added in 2016, which sets out the content of the health and safety plan.

Health and safety analysis in EU countries

In order to compare the provision of safety requirements on construction sites in the Czech Republic and abroad, it was necessary to determine whether there is

an obligation to appoint a coordinator in other countries and what is the scope of activities of the coordinator of safety and health at work in these countries. These are mainly EU countries, as they have shaped their legislation on the basis of the same requirements that have resulted from European Directive 92/57/EEC. Based on data collection, information was obtained from 12 respondents: Czech Republic, Slovakia, Poland, Germany, France, Italy, Spain, Portugal, Finland, the Netherlands, Scotland, Macedonia. I evaluated the obtained data and compared how many health and safety coordinators have to pass the qualification exam for their activities and regularly renew it, how many qualifications they get with a one-time exam and how many do not have to pass the exam and professional education is sufficient for KOO activities. I compiled a graph from the obtained data for clarity.

Foreign sources state that: «For example, 2.8 million nonfatal occupational injuries and more than 4,600 workplace fatalities occurred in the United States in 2014. The U. S. Occupational Safety and Health Administration (OSHA) estimates that, in addition to the incalculable human cost, occupational illness and injuries cost businesses in the United States about \$170 billion each year» [8]. Injury prevention for construction workers is discussed in the publication *Interventions to prevent injuries in construction workers* by Henk F van der Molen, Marika M Lehtola, Jorma Lappalainen, Peter LT Hoonakker, Hongwei Hsiao, Roger Haslam, Andrew R Hale, Monique HW Frings-Dresen, Jos H Verbeek. In it, the authors point out that: «Construction workers are frequently exposed to various types of injury-inducing hazards. A number of injury prevention interventions have been proposed, yet their effectiveness is uncertain.» [9]. In *Safety Interventions for the Prevention of Accidents at Work*

Requirements for the education of coordinators in EU countries

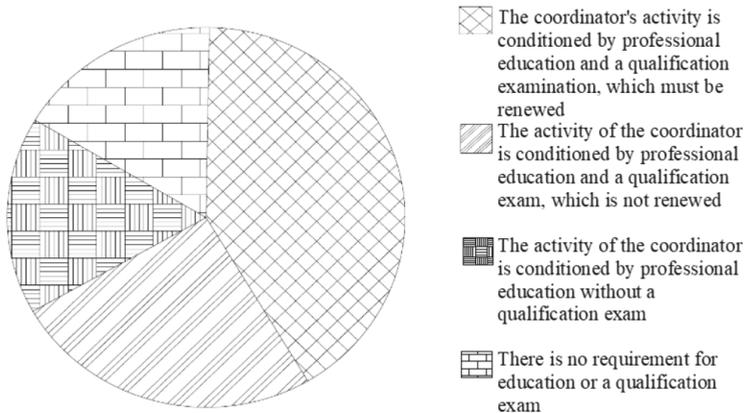


Fig. 1. Requirements for the qualification of a health and safety coordinators in EU countries [7]

by Dyreborg J., Lipscomb H. J., Olsen O., Törner M., Nielsen K., Lund J., Kines P., Guldenmund F., Bengtsen E., Gensby U., Rasmussen K., Zohar, D. mention that it is estimated that: «Accidents at work are estimated to kill more than 300,000 workers worldwide every year (Concha-Barrientos, Nelson, Fingerhut, Driscoll, & Leigh, 2005). In the European Union, the number of fatalities amounts to nearly 5,000 cases annually, and accidents at work cause many more cases of disability each year (Eurostat, 2004b). Aside from the human cost, workplace accidents also represent a significant economic burden to society (Eurostat, 2004a)» [10].

In 2007, the European Statistical Office Eurostat published the incidence of fatal accidents at work in 2006 in 15 countries of the European Union, Norway and Switzerland. The Czech Republic had 2.79 deaths per 100,000 employed persons, which corresponds to an average of 2.8 deaths in 2006. The lowest number of fatal accidents at work was recorded in the United Kingdom and the highest in Portugal, where the mortality rate was four times higher. In Portugal, there is a health and safety coordinator on construction

sites, who must have a university degree and a certificate, which he must renew every five years. Unfortunately, it was not possible to determine whether the position of coordinator is defined in the United Kingdom. Designers in the UK (as well as in Australia) must design buildings in a way that is safe to implement. In order to work on a construction site, you must have a CSCS card in the UK, which contains a chip with qualification information. Workers have a green card, professionals a blue card, managers black and construction supervision, designers, etc. silver. To obtain a black card, you must pass the Managerial and Professional (MAP) CSCS Health, Safety & Environment Test and also be qualified at Construction NVQ level 4 or higher. To obtain a silver PQP CSCS card, you must pass the Health, Safety & Environment Test at the Managerial and Professional level. The conclusion is that the incorporation of health and safety into the project and the multi-level construction management system has a positive impact on reducing accidents. The number of fatal accidents is not related to the education requirements of the health and safety coordinator, but to

the approach of the whole society to the responsibility for health and safety.

The above information shows that the reduction of accidents and the implementation of safe constructions is at a much higher level in countries that have accepted safety as a society-wide responsibility. Even at a time when the safety of workers was not yet as high as it is today, there were builders who put the price of human life first. The number of fatal accidents is not related to the year in which the construction was carried out, nor to the requirements for the education of the health and safety coordinator, but to the approach of the whole society to health and safety. For most buildings, many problems can be avoided at the time of construction. It is possible to use modern information technology in the preparation of security measures to ensure the construction [11]. The time for quality preparation of the building before its own implementation is also very important. It is a time when the technical, organizational and safety provision of individual stages of construction is solved so that the actual implementation of the construction takes place smoothly and safely. Most managers say that employee safety is a top priority but ensuring employee safety

is a persistent and costly issue, even in countries with well-developed regulatory policies and enforcement [12].

Conclusion

The goal of safety and health at work is to create rules that protect employees from the negative consequences associated with the work process. It could be said that this is a state of working conditions that eliminates or minimizes the effects of dangerous and harmful factors of the work process and the working environment on the health of employees. It is important to get workers to take responsibility for their health and lives. However, when assessing the risks associated with construction, it is equally important to take measures to ensure the safety and health of the public moving in the vicinity of the construction, where construction production may be endangered.

The effort in solving health and safety on the construction site is to ensure a coordinated approach of all construction participants to create common values, as they strive for especially in the Scandinavian countries, where the primary goal is to achieve greater efficiency in construction, both economically, ecologically and safety, based on quality construction preparation.

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ИНФОРМАЦИЯ ОБ АВТОРЕ

Житка Лаура Влчкова – PhD, vlckova.j@fce.vutbr.cz, Технологический университет г. Брно, Брно, Вевержи 331/95, 602 00, Чехия.

INFORMATION ABOUT THE AUTHOR

Jitka Laura Vlčková, PhD, vlckova.j@fce.vutbr.cz, Brno University of Technology, Brno, Veveří 331/95, 602 00, Czech Republic.

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