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## OVERVIEW OF THE MACEDONIAN SITUATION IN THE FIELD OF OCCUPATIONAL SAFETY AND HEALTH AND FUTURE RECOMMENDATIONS

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**Abstract:** The paper presents the current situation and trends in the field of OSH in Macedonia true the situational analysis and give the main focus on implementation of the risk assessment as a basis for continuous improvement of the working conditions and reducing the possibility of injuries and occupational diseases. There is also a review of the reported accidents at work reported by legal entities in Macedonia and the analysis of injuries by the economic activity and their severity. Through analyses of the current situation in the Republic of Macedonia and the trends, we would like to express the necessity of the systematic approach towards solving the problems in the field of safety at work by implementation of preventive measures. The analysis will contribute to the building of the criteria for preventive measures and education into a single system for further professional development of employees, employers and those who are responsible for safety and health at work in companies and institutions with a unique idea – to reduce or prevent occupational injuries and diseases. The study of the problem provides guidance and concrete activities for realization of the strategies for improvement of the processes and measures for safe procedure, professional development and permanent training of employees regarding the safety at work. The results impose the conclusion that the problems should not remain unobserved and that they need to be included as key objectives of the strategy for occupational health and safety.

**Keywords:** occupational safety and health, risk assessment, working conditions, continuous improvement, trends

### 1. INTRODUCTION

Since 2007 the Law for occupational health and safety came in force and under the EU directive 89/391/EEC all legal entities are obliged to conduct a risk assessment for each workplace. By 2010 the process of authorization of legal entities certificated for conducting risk assessment has not yet been completed. In September 2010 the MLSP authorized only 17 legal entities that meet the requirements to perform some or all of the professional activities. Today their number has grown to 44 entities and is increasing continuously on annual level.

Occupational safety and health is defined as science of anticipating, recognizing, evaluating and controlling risks and hazards arising in or from the workplace that may harm the health and welfare of the workers, taking into account the potential impact on the communities and the working environment.

State Labour Inspectorate, is a body of the Ministry of Labour and Social Policy with the mission to guide the improvement of working conditions and productivity on the workplace. Labour Inspectorate operates throughout the country with a network of established Inspectorates which has 71 labor inspectors and 60 inspectors for labor, plus 11 integrated labor and occupational health and safety at work inspectors and 38 inspectors for safety and health at work.

In the recent years significant progress has been made in the improvement of the working conditions. However, the number of injuries, deaths and illness as a result of the working activities, are suggesting that there are a need of continuous improvement in that direction.

The activities that are used by the State Labour Inspectorate, Safety and Health at Work, including compliance with legislation of the Republic of Macedonia, international labor standards, Codes of Practice, providing technical advice, dissemination of information and continuous education of the employers and employees in the field of OSH. With those activities the State Labour Inspectorate aims to prevent accidents at work and occupational diseases in order to improve the working conditions.

Ministry of Labour and Social Policy and the Ministry of Health are responsible for the policy on health and safety at work, which is led by the goals related to EU accession. There has been visible progress in the modernization of legislation and strengthening of the institutional capacity, but there are still many obligations remaining under the EU's report for the year 2012.

Occupational Safety and Health Policy is based on the relevant international regulations and documents such as ILO Conventions, EU Directives and the EU Strategy. In 2007, Law on Occupational Safety and Health has been adopted and implemented in Macedonia. In this Law emphasize is given to the obligations of employers, rights and obligations of employees, OHS professionals

and representatives from the staff. For the first time as a legal obligation the risk assessment has been introduced together with the systematic recording and evaluation of all factors of the work process in order to define the types of risks and hazards in the workplace and working environment that can cause health issues, work injuries and occupational diseases.

Recognizing the risk assessment as an important part in the system of introducing the occupational safe and health should be accepted and supported by the employers, with active participation of the employees in the companies, institutions and the enterprises. By implementation of the activities for risk assessment and the declarations for safety and health at work the risks at workplaces should be decreased, which on the other hand will increase the productivity in the institutions and companies.

If we follow the manuals, recommendations, directives and conventions of International Labour Organization in order to understand the system of OSH we may conclude that it is a very complex issue inside the institutions and that it shouldn't be considered like a special activity in it, but needs to follow them and to be compatible and easy administrable with the other activities within the company.

Positive and negative influences of the risk assessment and other activities in realizing the system of safety and health at work, in cooperation with the employers and the employees, professional bodies for OSH, authorized medical organizations for labor medicine, SLI and other associations (or professionals) and the results of the data needs to be implemented by statutory legislative and national strategy of the country in this field.

According to the Law on Pension and Disability Insurance of Macedonia, occupational injury means injury that has been caused by the immediate and short-term mechanical, physical or chemical effect, and the injury that has been caused by unexpected changes in the human body position, impulsive load on the body or other changes in the physiological condition of the body, if such injury is related to the execution of the job activities.

Occupational injury means injury that has been occurred on a way from residence to work and vice versa, on a business trip, as well as other conditions that are related with the arrival at the work place.

According the Law as occupational injury can be considered illness of the employee directly incurred as a result of exceptional accident or force majeure during the performance of work or in correlation with it.

It should be emphasized that our employees use larger and broader rights in respect of injuries at work than the minimum recommendations from European Union.

Injuries at work and occupational diseases are directly related to the characteristics of the work process and workplace conditions.

According the Macedonian Directive 89/391/EEC on the Law for occupational safety and health, Article 9, paragraph c) and e) contains provisions for the obligation of employers to keep records of accidents on the job resulting in an inability to perform their duties for more than three days. In accordance with the national law and regulation employers should prepare reports for all the accidents at work that involves the employee. This provision of the Framework Directive is incorporated in our national legislation in Article 36 of the Law on Occupational Safety and Health (Official Gazette br.92/2007 yr.) where every employer is obliged within 48 hours in written form to notify the state administration responsible for the inspection of labor for each serious injury which causes absence longer than three days sick leave, any collective accident (when more people are injured) and every mortal injury caused at work. The employer is obliged to keep reports of any injury, occupational illness or accident at work. Experience indicates that a significant number of employers do not take this evidence and more importantly non-fatal injuries in general are not reported to the authorities.

## **2. SITUATIONAL ANALYSIS IN THE FIELD OF OSH IN R.MACEDONIA**

The unique indicators of the occupational safety and health at work in Republic of Macedonia are the data obtained from the annual reports of State Labor Inspectorates. Unfortunately there are no other statistics on the time of usage of the work equipment, personal protective equipment, staff training, prescribed work instructions and others that are directly influencing the preventive measurements. Those facts suggest that we analyze only the consequences - injuries and occupational diseases, rather than declare the causes which lead to their occurrence. Risk assessment as a process of systematic recording of all factors affecting the work process and conditions of work is a way to record all the dangers and hazards that can lead to injuries and illnesses, but also to reduce the performance of work. The awareness of the status of each job in terms of equipment that is used, staff training, process specifications, work organization, microclimate conditions, and the improvement measures lead to increased working ability, job satisfaction and increased work performance.

Fundamental reason for the occurrence of mortal injuries is uninformed workers about the potential risk of performing the job activities and non-compliance with the measures and regulations on occupational health and safety by employers, and in some cases by workers. The number of deaths caused by work injuries recorded in our country varies over a period of 1991 - 1999, and ranged from 34 (1991) to 0 (1999). For the period of 1998 - 2002 descending trend was registered (6-8) with an annual average of 3.6 (1 case per 100,000 employees), while in 2004 registered the highest number of deaths (total 18).

In Republic of Macedonia in the period 1987 - 1996 reduced numbers of injuries at work were registered, ranging from 12,691 in 1987 to 3.909 in 1996, which is reflected as a reduction of the total number of employees and the inadequate data records and reporting of the injuries at work. Thus shows that in the data records of injuries at work there are some technical problems and difficulties, but those statistics are much more applicable than the records of the occupational diseases.

In the early 1990s, the rate of injuries at work was 12/1000 employees (1993, 1994, 1995). Starting from 1997 to 2002, the rate of workplace injuries ranges from 6 to 12 injuries per 1000 employees, calculated on the actual number of state employees in the relevant year, which is lower than in the EU countries. The trend of descending in the total number of work injuries continues, where are from total of 1957 injuries at work recorded in 2005 the number has been decreased to 1048 in 2009 (according to the Institute of Public Health of the Republic of Macedonia). The number of inspection is reduced due to insufficient capacity of the State Labor Inspectorates (only 35 inspectors for safety at work in 2012), but the efficiency measured by the number of determined and eliminated deficiencies and irregularities as shown on chart 1, the SLI has performed with very high percentage of efficiency in the year 2012. This growing trend is result of the experience of the SLI staff and continuous effort of the inspectors which shows that this institution is highly dedicated to the implementation of the OHS systems in the country.

By obtaining a license to 39 legal entities for performing professional work in the field of safety at work, the drafting of the safety statement has been developed together with the content and data on which the procedure for risk assessment should be based. In 2012, 1472 employers have prepared a safety statement and risk assessment. Most of the identified deficiencies are related to:

- ≡ compulsory medical examinations of employees in authorized health institutions in the field of medicine 5232
- ≡ taking measures to eliminate the hazards of fire and explosions 2018
- ≡ staff training in the field of safety and health at work 3185
- ≡ the obligation of the employer to carry out training of employees providing first aid and provision of equipment for first aid 1707
- ≡ shortcomings in the field of electrical installations 1024
- ≡ 560 deficiency in construction
- ≡ shortcomings in terms of personal protective equipment 932.

Control supervisions 3384 were carried out to determine whether the solutions adopted to eliminate the identified deficiencies are performed in the specified time. In certain control inspections the labor inspectors are facing non proceeding irregularities and deficiencies of regular supervision, often it is consequence from the lack of resources for treatment by employers. As it is shown on chart 1 during 2012, 86,6% of the identified deficiencies and irregularities in the field of OSH were eliminated.

### 3. ANALYSIS AND TRENDS

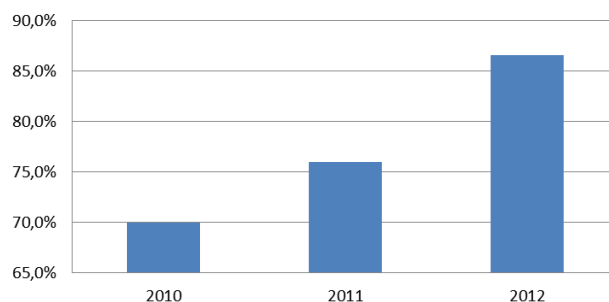
According the reports from the labor inspectors in 2009, 2010, 2011 and 2012 based on the inspection on the spot, in table 1 are given injuries at work or work accidents causing temporary inability for working more than 3 working days of the employee, collective injuries and injury with fatal outcome.

The largest number of injuries at work occurred in the manufacturing industry and construction. According the inspection on the spot and documentation related to occupational health and safety, the most common reasons for the occurrence of injuries are indifferent attitude of the employers and managerial staff in the consistent application of regulations on occupational health and safety, also untrained workers for safe operation, omitted medical examinations on employees to determine the health status of employees, failure to provide safe working space, not using personal protective devices and equipment, failure to check equipment operation, violation of the guidelines and procedures, and others.

**Table 1.** Number of injuries at work, collective injuries and more serious injuries with fatal outcome (report SLI) [5, 6]

Year	More serious injuries at work, or work accidents causing temporary disability for more than 3 working days	Collective injuries	Mortal injuries	Total injuries and fatal accidents
2009	494	1	12	507
2010	625	4	12	641
2011	786	2	14	802
2012	1446	5	13	1464

Percentage of eliminated deficiencies and irregularities in OSH by SLI



**Chart 1.** Percentage of eliminated deficiencies and irregularities in OSH by SLI (SLI reports)

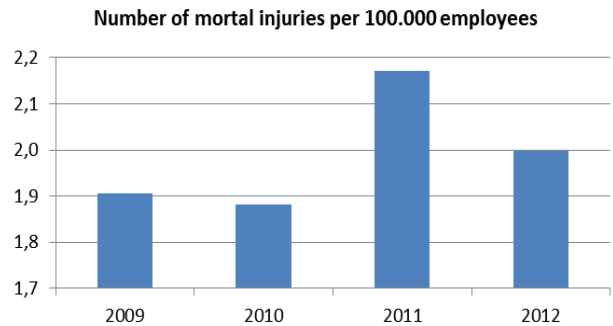
In 2009 only 1 collective injury has been reported and 12 injuries with fatal outcome, and only 507 total injuries including those with fatal outcome. This is resulted from the small number of inspection conducted in 2009 and still early stage of implementation of the OHS Law.

During 2010, 4 collective injuries occurred at work, including 2 in the manufacturing industry and 1 in other community, social and personal services and education. The number of registered cases has been decreased during 2011, but the manufacturing industry is still the most unsafe workplace. The reason for the occurrence of collective injuries is disrespecting of the guidelines and procedures for safety at work.

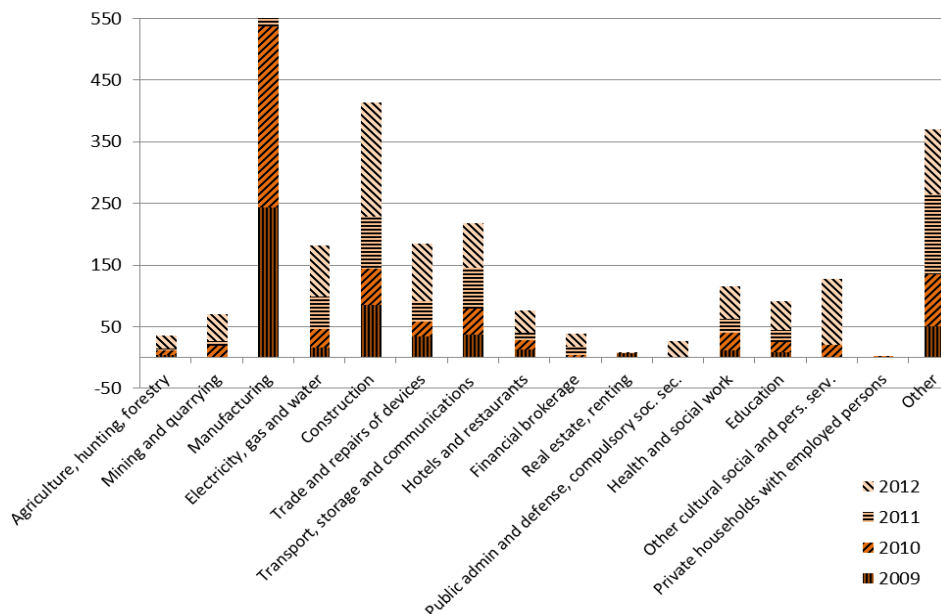
During 2011 SLI inspected 14 mortal injuries at work of which 11 in construction, where the reason was non-use personal protective equipment. In 2012 the data shows a small decrease of the number of mortal injuries from the year 2011 yet more mortal injuries than in 2010. The most common causes for injuries at work in 2012 are shown in details on the chart 6.

The chart 2 is showing that the number of mortal injuries in 2012 is significantly decreased regarding the year 2011, from 2,2 to 2 mortal injuries per 100.000 employees. Thus shows that with the increased efficiency in 2012 of the SLI one human life has been saved from the fatal outcome of the injuries at work. This result can be also caused by the increased total number of employees, since the research is based on the total number of employed population in Macedonia. Conclusion for the increased number of mortal injuries in the following years is directly related with the chart 1, better coverage in the reporting of injuries as a result of the increased efficiency of the SLI, and does not reflect the actual increase of mortal injuries.

The analysis of reported injuries, divided according the economic activity where injury occurred for the period from 2009-2012 are shown in the chart 3.

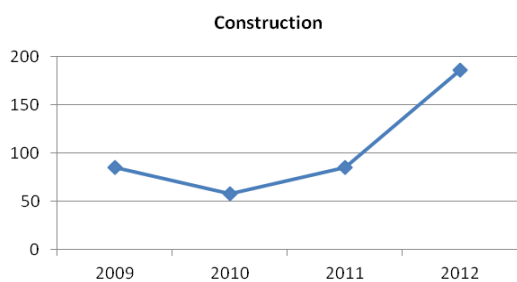


**Chart 2.** Trends of the reported mortal injuries per 100.000 employees 2009/2012

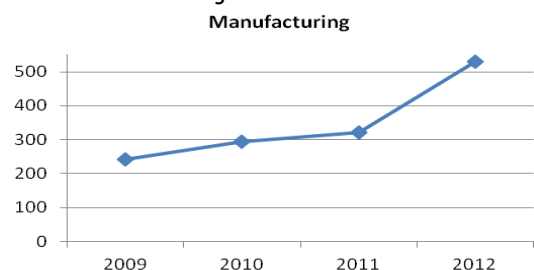


**Chart 3.** Data structure of injuries at work by economic activities during 2009/2012

On the chart 3 two significant pillars are showing the largest number of injuries in the manufacturing and construction. This data makes those two industries one of the economic activities with the highest risk on the working environment.



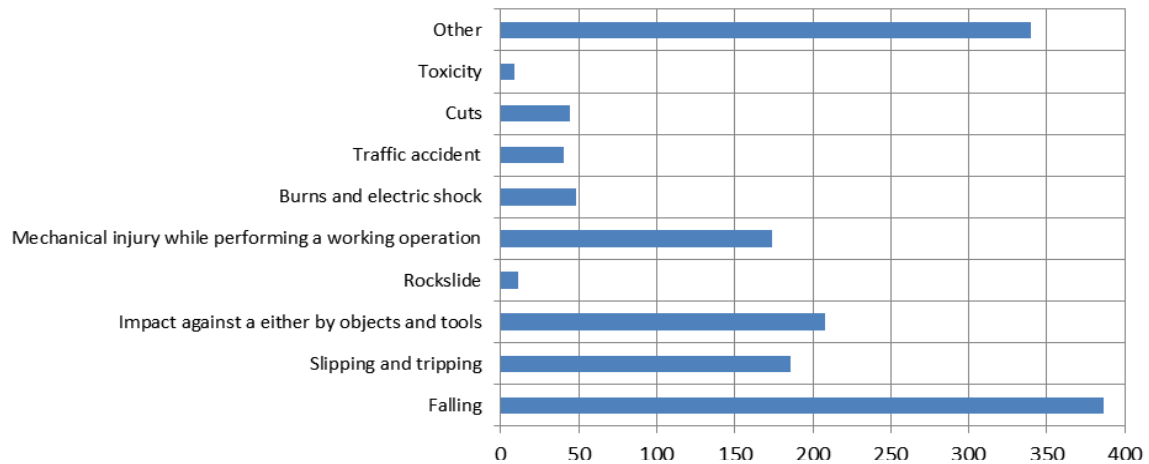
**Chart 4.** Trend of the injuries in construction



**Chart 5.** Trend of the injuries in manufacturing



According to the trend lines shown on the chart 4 and 5, manufacturing has a working environment with a higher risk than the construction industry since the highest number of injuries in construction in 2012 is 186 compared with the 529 in the manufacturing industry. The large number of injuries in the manufacturing industry is a result of the economic structure of R. Macedonia where the second economic activity that has the biggest impact is exactly manufacturing (11.0% in 2010, 11.2% in 2011 and 11.1% in 2012) which employs (19.2% in 2010, 19.4% in 2011 and 19.5% in 2012) of the total employed population in R. Macedonia. The growth trend of employees in the manufacturing industry is in direct correlation with the trend of increased number of injuries in the manufacturing industry as it is shown on the chart 5.



**Chart 6.** The most common causes for injuries at work in 2012

Chart 6 shows the most common causes for injuries at work in 2012. This analysis is of particular importance because we can specify the indicators that need to be implemented as a part of the OHS system in order to improve the working conditions. If most injuries occur due to falling, tripping or impact with objects or tools, of course we have to devote special attention to the organization of the work place and the working environment and training of the employees on the safety measures. Falling is the most common cause for injuries in the construction industry where the problem of existence of this type of injuries is in the non-compliance with the measures implemented with the OHS system by the workers and also the use of inadequate equipment for prevention of injuries or not using the equipment at all.

#### 4. RECOMMENDATION

The analysis has shown that the employees are the essential contributors to the risk assessment, realized inside the organizations, which gives directions of prevention that will contribute for protection of the workers in dangerous areas, and will eliminate harms at work place, health disorder, accident and death. The information and the recommendations of the act for assessment of risk should motivate all members in the organization, especially the employers, top management, workers and their representatives in order to establish (to use) the principals of prevention and manage with the process of safety and health at work and in the same time to establish the methods for continuous improvement. Occupational health and safety is interdisciplinary research discipline that unites the technology, medicine, psychology, law and others.

State Labour Inspectorate for the first time made a detailed analysis of the reported injuries in 2012, according to the economic activity, employer (city), the reason for the injuries and the consequences of the accident. The future recommendation for the State Labour Inspectorate is to establish an integrated system for monitoring and reporting of injuries at work and occupational diseases, which would enable recording and registration of all workplace injuries and occupational diseases.

Thus leads to the necessity of continuous education in the field of occupational health and safety that is already implemented in the Macedonian educational system. Namely, Faculty of Mechanical Engineering at the University Ss. "Cyril and Methodius" has developed a second cycle, master study program, where as a carrier of the program titled as "Management of occupational health and safety" has gathered a multidisciplinary team of experts from the following institutions: Faculty of Medicine, Faculty of Electrical Engineering and Information Technologies, Institute of Economics, Faculty of Technology and Metallurgy, Faculty of Civil Engineering, and Natural Sciences and Mathematics.

The main objective of the study program is to offer advanced multidisciplinary engineering knowledge through education of engineers and managers that after graduation will be competent to incorporate innovative skills acquired through in the development and implementation of the basic principles of safety at work in order to protect the health of workers and improve the workplace conditions. The study program is conceptualized to provide comprehensive education, and to advance the student's knowledge with in the latest scientific study and skills with special emphasis on the development of creative competences and autonomy in the professional work. Students that received the degree Master of Science in Safety at work are experts that possess

the essential theoretical, scientific and practical knowledge together with the required engineering, medical, economic and social fields. During the studies, students are developing a variety of specific competences for the design and management of the OHS systems that can be implemented at all levels of the modern business environment. The program enables the students with their competences to be significant creators for improvement of the working conditions that will increase the competitive advantage of the companies.

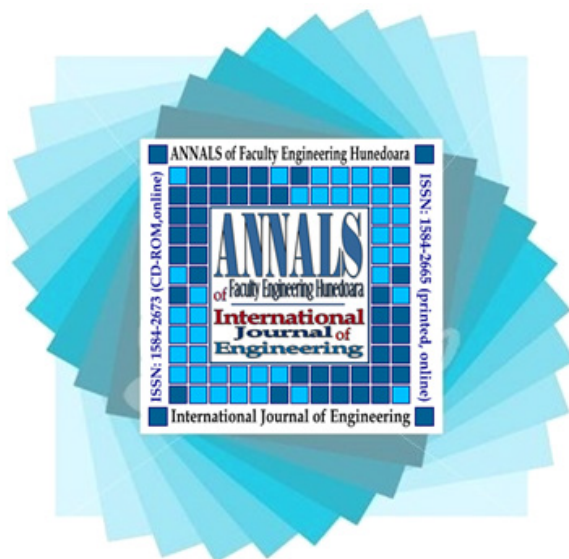
The overall objective of the study OSH program is to educate high quality personnel in the country and the region with excellent professional competencies identified in the country, the region and the European Union and the wider world.

The risk assessment should be realized by using national framework for safety and health at work, using national laws and regulations ensures development of the management of OSH that can be applicable for the special needs of the organizations, according their size and the nature of their activities.

This safety performance and health of workers protects the interest of workers, businesses and insurance companies for health and pension insurance and for its own community. To reduce and eliminate the negative effects it is necessary the risk creators to take responsibility and measures for its reduction. Therefore it is recommended for the production companies to invest in secure technologies, improving the conditions of the workplace and in the prevention of occupational illnesses and injuries at work. They should create and develop policies and management systems for occupational health and safety for creation of health worker and healthy workplace that will increase the productivity.

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