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# INJURY INDICATORS TREND IN THE QUALITY CONTROL OF OCCUPATIONAL SAFETY AND HEALTH

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**Abstract -Occupational safety is the active prevention and elimination of hazards and harmfulness that can be caused by injuries, occupational and other illnesses and damage to workers' health of at work. An effective occupational safety and health system includes continuous tracking of performance indicators. These indicators define a set of values that are used to measure the results of an activity or a process of occupational safety and health and the quality of its functioning at the same time. Monitoring the state of the occupational safety and health system using indicators provides insight into the current situation. If it is not satisfactory, it is a signal for detecting methods and designing improvement measures.**

**The efficiency and quality of the occupational safety system can be monitored through absolute and relative indicators of occupational injuries. In terms of the number of employees relative indicators give a more realistic picture of the state of occupational safety: incidence rates and its trends. The data obtained through these indicators are suitable for comparison, e.g. at the level of a state with certain standards, at the level of a company with another company dealing with the same activity or business activity. The linear trend as a method of dynamic statistical analysis allows for a look at the state of occupational safety over a given period of time and the general tendency of its movement (decrease or increase) to be determined and, as the most important, future behaviour to be predicted.**

**The paper presents the state of occupational safety and health through the injury indicators trend in relation to the number of employees in the Republic of Srpska, and in the industrial, mining, and forestry production systems.**

**The aim of the paper is to present a model of monitoring of occupational safety and health at work by using the injury indicators trend in relation to the number of employees. The emergence of a rising trend imposes the need to optimize occupational health and safety at the level of the state, industry, or company.**

**Key Words: occupational safety and health, quality, performance, injury indicators, trend**

## I. INTRODUCTION

The required quality of the system represents the desired outcome of its functioning. The desired result of the occupational safety and health system functioning is a safe and healthy working environment for all employees, which means eliminating and preventing hazards and harmfulness by applying occupational safety measures. Occupational accident occur as a result hazards and harmfulness in the working environment. The consequences

of an accident can manifest themselves in the form of: injury to workers, interruption of the technological process of production and damage to material and natural resources [1].

Therefore, the occupational safety and health system desired quality is a working environment without accidents at work, but in real life it is hardly possible so the number of accidents has to be maximally reduced, and if accidents do happen then their consequences have to be mitigated by some measures.

Quality as an integration concept and occupational safety and health as an integration part of each business system are based on the same essential principles as shown in Table 1. The quality of the occupational safety and health system is influenced by the following factors [3]: technical, human, organizational and external.

Table 1. Principles and relation of quality and occupational safety [2]

Occupational safety	Quality
Objective: zero accident	Objective: zero defects
Analysis of incidents	Analysis of events
Documenting the politics of safety, the procedures and the instructions	Documenting the politics of quality, the procedures and the instructions of work
Safety committees	Quality circles
Participation of the workers	Participation of the workers
Statistical analysis of accidents and injuries	Statistical control of the process
All accidents and injuries could be prevented	The not conformities could be prevented

The need for constant monitoring of the state of work and environment, communication of all stakeholders in the process, as well as the implementation of measures that modify the existing state and reduce the risk requires application of a systematic approach, selection and constant monitoring of the occupational safety system performance indicators [4]. The effectiveness and quality of the occupational safety is evaluated on the basis of the value of the occupational performance and the performance of the organization [5], and is “measured” by appropriate indicators.

The productivity and competitiveness of an organization are seriously compromised if the occupational safety system is of low quality. The low level of safety impairs the quality of human resources in the organization, due to the increase in the number of accidents and occupational diseases, as well as the disruption of social relations and the culture of safety. In our business environment, there is a widespread belief that investing in occupational safety is expensive, but examples of good practice show all the positive effects of a quality and effective occupational safety system through a positive impact on the performance indicators and competitiveness of the organization.

## II. INJURY INDICATORS AND THEIR TRENDS AS A TOOL OF QUALITY CONTROL OF STATE OCCUPATIONAL SAFETY AND HEALTH

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Success performance indicators are used to monitor, measure and manage results in the field of occupational safety, that is, tools to monitor progress and success in achieving occupational safety objectives [6]. These are numerical indicators, which at the state and company level should provide information on what happened in the previous period and what are the current problems and difficulties in achieving occupational safety and health.

For the purpose of monitoring the state of occupational safety and health, or the number of injuries at work as a quality indicator of its condition, it is appropriate to use indicators of injuries at work and their trends. The negative consequences of unfavorable working conditions and poor quality of the working environment, in the form of injuries at work over a period of time, can be traced through absolute and relative indicators. The index absolute and relative indicators of injuries at work and the average number of employees in the Republic of Srpska for the eight-year period (2011-2018) are shown in Table 2.

Indices as relative indicators allow the level of observed occurrence (number of injuries at work) to be analyzed in different time periods. Base indices show the level of the number of injuries at work in relation to the selected baseline value (in our case the number of injuries in the first year of observation), and the chain indices in relation to the previous year.

On average 103 injuries per month occurred in the Republic of Srpska during the observation period, and 3 injuries at work occurred per day.

From the data in the Table 2., we can see that since 2014 in the Republic of Srpska there is an increase in the number of injuries annually, and in 2018, the increase is 39% compared to the initial year.

Table 2. Number of injuries at work and average number of employees in the Republic of Srpska (RS) for the period 2011-2018

Year	Number of injuries in the Republic of Srpska			Average number of employees in the Republic of Srpska <sup>1</sup>
	Number of injuries in the Republic of Srpska <sup>2</sup>	Index		
		Base	Chain	
2011	1129	100.00	-	238956
2012	1157	102.48	102.48	238178
2013	1136	100.62	98.18	238640
2014	1098	97.25	96.65	241544
2015	1119	99.11	101.91	245975
2016	1232	108.95	109.93	253305
2017	1447	127.90	117.39	263476
2018	1567	138.79	108.51	266309
Total	9885			

It is more appropriate to use relative indicators for analytical analysis of the state of occupational safety and health, one of them is the rate of injuries incidence at work per 1000 employees. Comparability is an advantage of using relative indicators:

- in two different time periods,
- between different companies, industries and branches.

In Fig. 1. the rates of occupational injury incidence per 1000 employees in the Republic of Srpska compared to those in the counties of the region and the European average for the period 2014-2017, are shown.

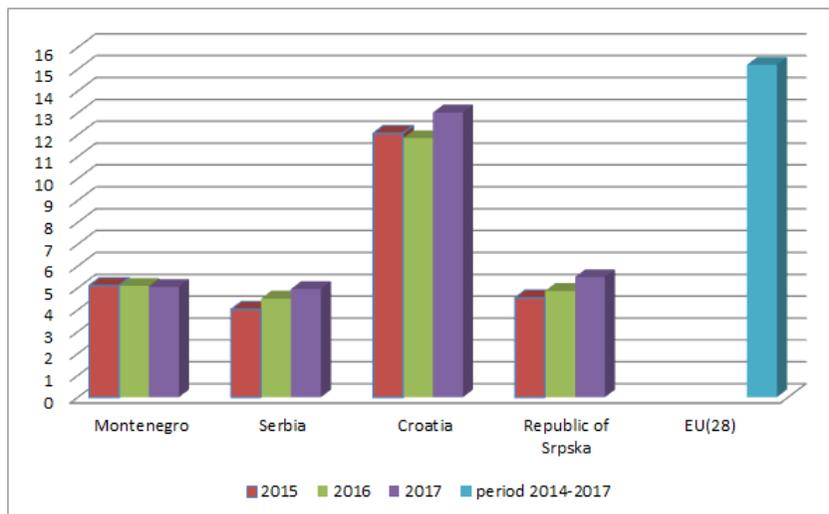


Fig. 1. Injury incidence rates per 1000 employees in the countries of the region, Republika Srpska and the EU average for the period 2014-2017<sup>3</sup>

<sup>1</sup> Source: Institute of Statistics, Republic of Srpska

<sup>2</sup>Source: Ministry of Labor, War Veterans and Disabled Persons' Protection RS and The Republic Labour Inspection Service in Republic of Srpska Inspectorate

The injury incidence rate per 1000 employees is obtained as the ratio of the number of injuries at work (N) and the average number of employees (Z) in the observation unit by the formula [7]:

$$N_{1000} = \frac{N}{Z} \cdot 1000 \quad (1)$$

It is convenient to use the linear trend dynamic statistical analysis method to observe the general tendency of movement of the injuries incidence rate per 1000 employees. Using a linear trend, one can track the change in the incidence rate (decrease or increase) over a certain period of time and predict its value in the future.

The procedure for calculating the trend of injury incidence rate per 1000 employees in the Republic of Srpska for the period (2011-2018) is shown in Table 3.

Table 3. Calculation of trend value of injury incidence rate per 1000 employees in the Republic of Srpska for the period 2011-2018

Year	N <sub>1000</sub> in the RS	Variable time			Trend value	Residual deviations	
	y <sub>t</sub>	x <sub>t</sub>	x <sub>t</sub> *y <sub>t</sub>	x <sub>t</sub> <sup>2</sup>	y <sub>t</sub> '	y <sub>t</sub> - y <sub>t</sub> '	(y <sub>t</sub> - y <sub>t</sub> ') <sup>2</sup>
2011	4,72	1	4,72	1	824,69	-819,97	672354,1
2012	4,86	2	9,72	4	896,25	-891,39	794579,7
2013	4,76	3	14,28	9	967,81	-963,05	927469,2
2014	4,55	4	18,2	16	1039,37	-1034,82	1070857
2015	4,55	5	22,75	25	1110,93	-1106,38	1224081
2016	4,86	6	29,16	36	1182,49	-1177,63	1386817
2017	5,49	7	38,43	49	1254,05	-1248,56	1558907
2018	5,88	8	47,04	64	1325,61	-1319,73	1741693
Σ	39,67	36	184,3	204		-8561,55	9376757

Starting from the general form of the linear trend function:  $y = bx + a$ , by calculating the trend coefficient  $a$  (section in the ordinate) and  $b$  (slope of the trend model), using the values in Table 3. we obtain the final linear trend formulation for the used data (Fig. 2. ):

$$y = 0,14x + 4,34 \quad (2)$$

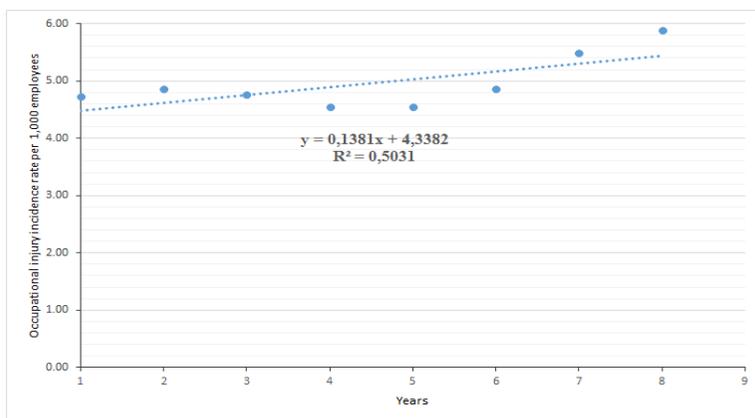


Fig. 2. Trend of injury incidence rate per 1000 employees in RS for the period 2011-2018

<sup>3</sup>Source: The Labour Inspection Service of Montenegro, Pension and Disability Insurance Fund of Montenegro, Republic of Serbia Labour Inspectorate, Republic Institute of Statistics, Republic of Serbia, <http://hzzsr.hr> and Eurostat.

The average annual rate of the trend change by 2.8%, shows that in the observed period the number of injuries per 1000 employees increased annually on average by  $\approx 3\%$ . The linear trend model is more representative if the coefficient of determination ( $0 \leq R^2 \leq 1$ ) is closer one [8]. The coefficient of determination (Figure 2)  $R^2 = 0.5031$ , shows that 50% of the change in the number of injuries per 1000 employees in the Republic of Srpska is explained by the presented linear trend model.

The main advantage of using the linear trend method is the ability to predict the value of the injury rate per 1000 employees in the future. According to the linear trend model, the predictions of the number of injuries per 1000 employees for 2021 and 2024 are:

$$(2021) = 0,14 \cdot 11 + 4,34 = 5,88 \text{ and } (2024) = 0,14 \cdot 14 + 4,34 = 6,3 \quad (3)$$

Production systems in which the injury trends per 1000 employees were observed are: in the field of mining the company AMP (engaged in the production and processing of iron ore), in the field of industry the company RNB (engaged in production and processing of oil and petroleum products) and in the field of forestry the company ŠRS (engaged in cultivation, exploitation and protection of forests).

In the studied production systems, determination of injury trends per 1000 employees was executed using the same methodological procedure. The data needed to calculate trends in production systems are shown in Table 4, and the resulting trends in Fig.3.

Table 4. Number of injuries in production systems for the period 2009–2018

Year	AMP			RNB			ŠRS		
	Number of injuries	Number of employees	N <sub>1000</sub>	Number of injuries	Number of employees	N <sub>1000</sub>	Number of injuries	Number of employees	N <sub>1000</sub>
2011	13	824	15.78	36	1549	23.24	133	4196	31.70
2012	11	843	13.05	19	1482	12.82	151	4361	34.63
2013	10	854	11.71	14	1337	10.47	160	4356	36.73
2014	13	854	15.22	11	1236	8.9	145	4515	32.12
2015	11	848	12.97	6	1079	5.56	168	4534	37.05
2016	11	813	13.53	7	980	7.41	152	4764	31.91
2017	10	803	12.45	6	953	6.3	171	4847	35.28
2018	24	788	30.46	16	923	17.33	137	4969	27.57

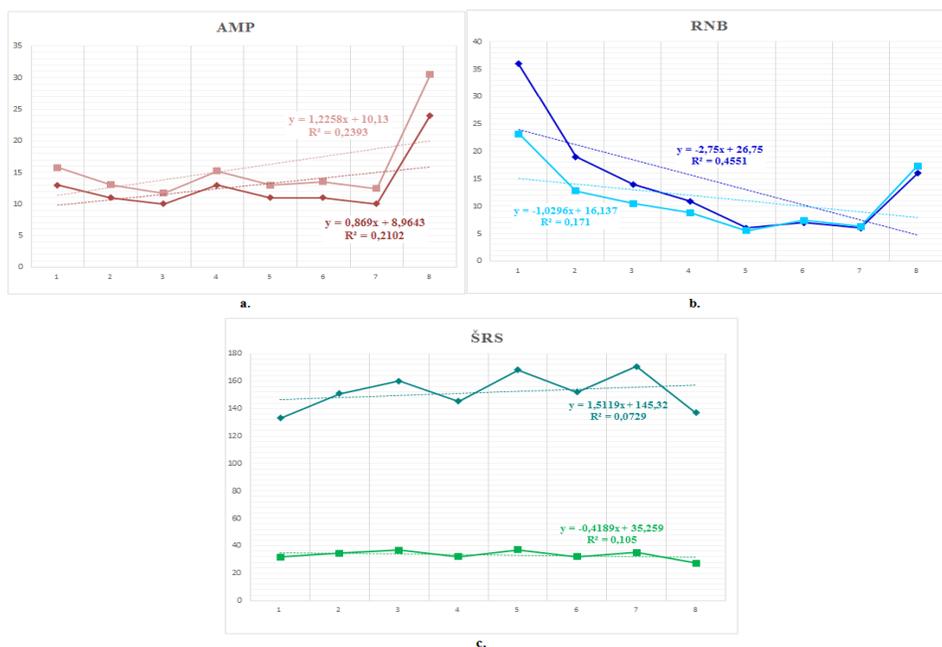


Fig. 3. Trends in the number of injuries and injury incidence rates per 1000 employees in production systems for the period 2011-2018

For the AMP company (Fig. 3.a.), based on the established trend model for the number of injuries  $y = 1.23x + 10.13$  and the average annual rate, we conclude that in the observed period the number of injuries on average increased by 7% annually. And based on the established trend model for the incidence rate of injuries per 1000 employees  $y = 0.87x + 8.96$  and the average annual rate, we conclude that in the observed period the number of injuries per 1000 employees on average increased by 8% annually.

For the RNB company (Fig. 3.b.), based on the established trend model for the number of injuries  $y = -2.75x + 26.75$  and the average annual rate, we conclude that in the observed period the number of injuries on average decreased by 19% annually. And based on the established trend model for the incidence rate of injuries per 1000 employees  $y = -1.03x + 16.14$  and the average annual rate, we conclude that in the observed period the number of injuries per 1000 employees on average decreased by 9% annually.

For the ŠRS company (Fig. 3.c.), based on the established trend model for the number of injuries  $y = 1.51x + 145.32$  and the average annual rate, we conclude that in the observed period the number of injuries on average increased by 1% annually. And based on the established trend model for the incidence rate of injuries per 1000 employees  $y = -0.42x + 32.26$  and the average annual rate, we conclude that in the observed period the number of injuries per 1000 employees on average decreased by 1% annually.

#### IV. CONCLUSION

The use of injury indicators and their trends as a tool of quality state control of occupational safety and health has, at the national level and in production systems, multiple benefits and application. Firstly, at the national level it allows comparing the occupational safety and health with the same in the countries in the region. Then in the company, it allows comparing the state of occupational safety and health in different periods of time and in companies from the same business or industry. Secondly, based on the monitoring of the state of occupational safety and health, it predicts the state of the occupational safety in the future. Thirdly, that in the case of an increasing trend, given that the basic indicator of the efficiency and occupational safety system quality is the number of injuries at work (more injuries represent lower efficiency and quality), they need to review and optimize existing measures of occupational safety and design new ones if needed. This requires a thorough analysis of the existing occupational safety and health system at both the national and the production systems level.

The research should be expanded to identify indicators of occupational injuries in a larger number of production systems from the same business or industry and make comparisons, primarily in the areas of high-risk industries such as civil engineering.

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# **SOCIAL DIALOGUE AND SOCIAL PARTNERSHIP AS AN INSTRUMENT TO IMPROVE THE OCCUPATIONAL HEALTH AND SAFETY SYSTEM**

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**Abstract** -The effective realization of the occupational health and safety objectives requires effective social dialogue on all issues related to health and safety of workers as well as understanding of the role and obligations of the employees' commissioners for OHS, authorized OHS officers, OHS specialists and shop stewards. Well-developed professional capacities of all parties involved in social dialogue are very important prerequisites for improving social dialogue in the domain of occupational health and safety. Based on results of the survey, which indicated the perception of respondents concerning the quality of social dialogue in the domain of occupational health and safety at work, it was concluded that it is necessary to conduct additional activities directed at education and informing to contribute to the strengthening and improvement of social dialogue both at the tripartite and bipartite levels.

**Key Words:** employees' commissioner for occupational health and safety, social dialogue, occupational health and safety at work

## **I. INTRODUCTION**

Social dialogue is defined by the International Labour Organization (hereafter: ILO) to include” all types of negotiation, consultation or simply exchange of information between, or among, representatives of governments, employers and workers or social partners themselves on all issues of common interest relating to economic and social policy. It can exist as a tripartite process, with the government as an official party to the dialogue or it may consist of bipartite relations only between labour and management (or trade unions and employers' organizations), with or without indirect government involvement. Processes relating to social dialogue can be informal or institutionalized, and often it is a combination of the two. It can take place at national, regional or company levels. It can also be inter-sectoral, sectoral or a combination of the two. “The most relevant ILO conventions and recommendations concerning social dialogue are the ILO Convention n. 144 concerning Tripartite Consultations together with the corresponding Recommendation n. 152 and the ILO Convention n. 87 concerning Freedom of Association and Protection of the Right to Organise. The key aspect of social dialogue is the approach based on social partnership starting from the presumption that trade unions and employers' organizations recognise the existence of a common problem while committing to joint actions aimed at finding a solution. In that way, social dialogue becomes a mechanism for finding a consensus as well as an instrument with which trade unions and employers' organizations can have an impact on the government's decisions, i.e. they can lobby for their own interests at the political level. No matter whether it takes a bipartite or a tripartite form, social dialogue presupposes a collaborative approach with the aim to achieve a common understanding of the problem and reach a

compromise or a solution acceptable to all parties. The existence of strong and representative trade unions and employers' organizations is an important prerequisite for successful negotiations in combination with shared interests and readiness of all stakeholders involved to enter such a collaborative form of constructive dialogue. Having in mind that very often parties do not share common objectives, it is very important to select the appropriate topic, or the issue that will be the subject to negotiations (Voss, Gospel, & Dornelas, 2013). Trade unions insisting on dialogue will not necessarily lead to success since it implies cooperating with the opposite side that is not ready to make a compromise but wants to fight for its own interests instead. To illustrate, it is most certainly better to initiate social dialogue about certain issues, which can lead to some degree of a consensus, or a small success. Some of the issues that might not be as problematic include topics like occupational health and safety, equal opportunities and non-discrimination or professional training and life-long learning. The correct way of ensuring the implementation of what has been agreed is another crucial and, in many cases, problematic aspect. The first key question that arises in that respect is: to which extent are the results of social dialogue binding for social partners?

Various functions of the dialogue can range from superficial information and communication without any obligation to adopt concrete policies to effective negotiations digging deep into the hearth of the matter, with legally binding or non-binding effects. The main potential benefit of social dialogue, as an instrument for managing the national system of industrial relations, is related to the fact that finding a compromise and joint solutions really can contribute to conflict resolution. Social dialogue opens space for interaction and a decision-making process involving all social partners whereas trade unions and employers' organisations have an opportunity to take up an active, institutionalised and recognized role within the policy-making process at the national level through autonomous agreements or tripartite dialogue about the government's social and labour market policies. National sectoral on the one hand and the inter-sectoral dialogue on the other play a very important role in collective bargaining as tools for determining minimal working and employment standards but also for preventing the fragmentation of labour force and competition arising from labour costs and working conditions (Kovač, 2016). Social partners can involve in social dialogue in three different ways (International Labour Organization, 2012). They can participate in policy-making processes, e.g. by giving advice and providing consultation in drafting laws proposed by the government or by publicizing joint bipartite positions and declarations of intent. Furthermore, they can participate in decision-making at the level of government policies or by preparing autonomous bipartite agreements and collective bargaining. Finally, social partners can play an important role in managing and supervising the implementation of the agreements and laws.

## II. SOCIAL DIALOGUE AND SOCIAL PARTNERSHIP IN THE PROTECTION OF HEALTH AND SAFETY AT WORK IN CROATIA

In addition to the national Economic and Social Council as a central tripartite body in charge of harmonizing economic and social interests in agreements reached by the Government and social partners as well as representatives of regional (local) self-government, cooperation is expanded to various other bodies of relevance for both workers and employers. Those bodies can be organized at different levels, ranging from the county to the national levels.

Starting from presumption that life, health and preservation of labour capacity are values of special social interest in the Republic of Croatia, the National Council for Occupational Health and Safety was established as an advisory body to the Croatian Government in the framework of which the Government consults representatives of employers and workers on the occupational health and safety policy with the aim to improve it.

Furthermore, the provisions of the Labour Code stipulate the foundations for the collaboration between social partners at the company level and at the level of institutions through activities of union officials, works' councils, employees' commissioners for occupational health and safety and workers' representatives in supervisory boards and governing councils.

The right to co-decision in workplace labour relations plays a crucial role in the protection of workers' fundamental interests. Rights and obligations under the competence of works' councils, employees' commissioners for occupational health and safety and workers' representatives in various bodies (supervisory board, management

board or another corresponding body) indicate their relevance not only in terms of representation and protection of workers' rights but also in terms of shaping industrial relations with the employer.

In the process of information, consultation and co-decision there is interdependent relationship between the works' council, trade union, employees' commissioner for occupational health and safety and the employer.

According to the ILO acts, which are in accordance with the Croatian Constitution part of the legal order in Croatia, the term «workers' representatives» covers trade union representatives and representatives freely elected by the workers of the undertaking in accordance with the provisions of national laws or regulations or collective agreements enjoying certain rights, obligations and protection.

The employer is obliged to inform and consult workers or their representatives on issues relating to occupational health and safety in accordance with the Occupational Health and Safety Act.

### III. SOCIAL DIALOGUE AND SOCIAL PARTNERSHIP AS AN INSTRUMENT TO IMPROVE THE OCCUPATIONAL HEALTH AND SAFETY SYSTEM IN CROATIA

Social partnership is of central importance in dealing with the challenges related to the improvement of the OHS system. Genuine social dialogue is founded on mutual trust between social partners (the Government, employers and trade unions) and their commitment to mutual goals. It is an incontestable mechanism for reaching quality solutions required for the improvement of the system of health protection and occupational health and safety.

Within the OHS system of rules, collective agreements play a very significant role because they are original autonomous legal acts agreed and signed by social partners. In addition to basic entitlements and obligations, collective agreements also comprise legal provisions that stipulate occupational health and safety and the conditions for the operation of workers' representatives. In that way, workers' representatives gain a prominent role and become active participants in the OHS system. In the context of the presumption that life, health and preservation of labour capacity are values of special social interest in the Republic of Croatia, the National Council for Occupational Health and Safety was established as an advisory body to the Croatian Government in the framework of which the Government consults representatives of employers and workers on the occupational health and safety policy with the aim to improve it (Učur M., 2007). The foundations for the collaboration between social partners at the level of companies and institutions through shop stewards, works councils, OHS commissioners and workers' representatives in supervisory and management boards are laid down in the provisions of the Labour Act. The right to co-decision also holds a very important place in ensuring the fundamental workers' interests.

Rights and obligations under the competence of works' councils, employees' commissioners for occupational health and safety and workers' representatives in various bodies (supervisory board, management board or another corresponding body) indicate their importance not only in terms of representation and protection of workers' rights but also in terms of shaping industrial relations with the employer. According to the ILO acts, which are in accordance with the Croatian Constitution part of the legal order in Croatia, the term «workers' representatives» covers trade union representatives and representatives freely elected by the workers of the undertaking in accordance with the provisions of national laws or regulations or collective agreements who enjoy certain rights, obligations and protection (International Labour Organization, 2012). In the process of information, consultation and co-decision there is interdependent relationship between the works' council, trade union, employees' commissioner for occupational health and safety and the employer.

Under the Occupational Health and Safety Act, the employer is obliged to inform and consult workers or their representatives on all issues related to occupational health and safety.

Rights and obligations under the competence of works councils indicate their importance not only in terms of protection of workers' rights but also in terms of shaping industrial relations with the employer.

Pursuant to the provisions of the Labour Act, the employer is obliged to inform the works council about the scope and reasons for introducing longer working hours, matters related to occupational health and safety, measures for the improvement of working conditions as well as about the results of inspections in employment and occupational health and safety at least once in every three months.

At the same time, the works council is obliged to regularly inform workers and trade unions about its work and receive their proposals and suggestions.

Under the Occupational Health and Safety Act, employees may elect an employees' commissioner for occupational health and safety from among themselves. A commissioner for occupational health and safety is employed with an employer to represent employees' interest in occupational health and safety. Where twenty or less employees work for an employer, a commissioner for occupational health and safety shall be elected in a direct and public vote by employees attending a meeting convened by the employer in accordance with labour law. Where more than 20 employees work for an employer, a commissioner for occupational health and safety shall be elected in accordance with labour law regulating the election of a works council. Where the employer has several elected commissioners, the elected commissioners shall choose a coordinator from among themselves.

For employees to receive timely and detailed information about all topics relating to occupational health and safety, their commissioner for occupational health and safety must enjoy trust, respect and recognition of the employer and his or her associates. The commissioner for occupational health and safety also must be qualified and focused on fulfilling his or her rights and obligations (Begović, 2016).

Under the Occupational Health and Safety Act, where more than 50 employees work for an employer, a Committee on Health and Safety shall be established as an advisory body to the employer with a task to improve occupational health and safety at work. The role and composition of the Committee is stipulated by the Law and tasks of the Committee may be expanded by a collective agreement or an agreement signed by the works council and the employer.

To have a systematically monitor the occupational health and safety in Croatia, the Croatia Government has established the National Council for Work Safety, which, in consultation with representatives of employers and employees identifies, proposes, implements and systematically reviews the policy of occupational health and safety and proposes amendments to the legislation in order to improve safety and protect health of employees.

According to the information provided by the Croatian Institute for Public Health, in 2018 there were 18.720 accidents at work reported whereas at the country level the average rate per 1000 workers amounted to 13.49.

In addition to accidents at work which could have been prevented with a more efficient implementation of the preventive measures in line with the OHS rules, problems and challenges we together with our partners face in our everyday work concern insufficient and very often inefficient social dialogue concerning all issues relevant for workers' health and safety at work as well as the lack of understanding of the role and obligations of OHS commissioners, authorised officers and shop stewards.

#### IV. CONCLUSION

An efficient realization of the objectives related to occupational health and safety requires an effective social dialogue on all issues concerning workers' health and safety at work as well as an understanding of the role and obligations of OHS commissioners, employer's authorized officers and shop stewards. One of the preconditions for the improvement of social dialogue in the domain of OHS is to have well-developed professional capacities of all stakeholders. On the basis of the results of this survey indicating the perception of the respondents about the quality of social dialogue in the domain of OHS, it is by all means necessary to undertake additional activities focused on education and information, which can contribute to the strengthening and improving of social dialogue at the level of trade unions and trade union confederations as well as at the level of individual companies. Risk prevention and promotion of safe and healthy working conditions at workplace are key not only to the improvement of the workplace quality and working conditions but also to the promotion of competitiveness. Focusing on workers' health has a direct and measurable positive effect on productivity and thus contributes to the improved sustainability of the social security system. Prevention of dangerous accidents, occupational diseases and work-related diseases together with promotion of health throughout working life, from the first employment onward, are key to a longer working life.

Furthermore, an efficient approach in the achievement of all objectives related to occupational health and safety requires an effective social dialogue on all issues related to workers' health and safety at work as well as a good understanding of the role and obligations of OHS commissioners, employer's authorized officers and shop stewards.

Risk prevention and promotion of safer and healthier working conditions is key not only to improving the quality of workplaces and working conditions but also to the promotion of competitiveness. Focusing on workers' health has a direct and measurable positive effect on productivity and thus contributes to the improved sustainability of the social security system. Prevention of dangerous accidents, occupational diseases and work-related diseases together with promotion of health throughout working life, from the first employment onward, are key to a longer working life.

Social partnership and social dialogue are extremely important for finding solutions to various challenges related to the improvement of the OHS system. Meaningful social dialogue founded on the principle of trust between social partners (the Government, employers and unions) and dedication to the achievement of common objectives are undisputable mechanisms that lead to quality solutions needed for the improvement of the OHS system.

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# COMPARATIVE OVERVIEW REGARDING INJURIES IN BITOLA AREA SPOTTED INTO A THREE YEAR PERIOD OF TIME AND USEFULL INFORMATION FROM THE SAME ONES

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**Abstract** - The major aim of this paper is to present only a small part from an extensive research conducted into the year frame 2010 – 2018 regarding the work injuries or injuries related to work activities in Bitola area, North Macedonia. The paper presents only the time frame 2015-2017, regarding the spotted injuries and the spotted deaths regarding work activities. But one of the main things presented into the paper is the consideration about the informations aimed from the research or the question that should be a thing to consider – Are this numbers only statistical information? This could be one of the main points that should be a part from future extensive researches created from companies rearding activities that could, should or must be done so that work conditions could be better and better.

**Key Words:** work injury, Bitola, OSHAS, health and safety

## I. INTRODUCTION

An Injury! Something that nobody wants to have, and no entity wont's to deal with such a situation. But, its a daily reality to actually every entity which has a daily work activities. And for the beggining of this paper there is also one of the main questions which are a thing to consider and which was a starting point for the extensive research – Are there exact numbers regarding work injuries in a area or regarding state numbers for year, or the years past as an official document in North Macedonia. So having in mind this question, while the research was done (and actually its an ongoing) some informations are avilable. But there is another question – Are these informations real, or to be more precise is every injury passed as an official document to the authority – the local health and safety inspectors. And actually while conducting this research we have considered that there are several key hypotesis that should have the dailight such as: the need of national instrument as a database regarding work injuries on a year level, lack of methods for risk assesment which will improve the risk assesments and will create a better work conditions, lack of spotted injuries (not every injury is spotted) etc. At this point we should start from the first and main point of view – the state law in North Macedonia regarding health and safety which has several key points regarding evidence (data and reports) and information – for workers, but also the time frame of 48 hours which is a law regulated frame in which every injury should be passed to the laboyr inspectors – health and safety ones, and also a report that should be done regarding the injury data (how, when, why, accident issues). This is

also one main point that should or could be considered from both sides – the health and safety professionals and also companies. At this stage, more than important to say is that still there are some injuries which aren't spotted, such as minor injuries or injuries that are not allowed to be aimed by the work givers (companies or company owners).

And considering the situation in North Macedonia there are also several key elements that should be mentioned, but also were a part of the extensive research such as: professional illness, illnesses regarding work activities, work accidents happened to and from the work place and also the dead cases. Talking about this issues there are several key questions and hypothesis which were a part of an extensive consideration, research and as well communication to relevant sources (health and safety inspectors, health workers, companies) such as:

- Is there an exact numbers regarding spotted injuries locally and nationally on a year base
- Are there some spotted professional illnesses and what is the real number of the same ones
- Do organizations have a real useful information regarding their spotted injuries or they only do this as a obligation
- Are there some useful past experiences from injuries into the past which could or are used to have a situation where the health and safety system is getting better and better.
- Is there a need for a national register of injured persons and spotted injuries divided to local areas
- Is there a need for a national register for spotted professional illnesses
- Is there a need for a database of past experiences which will help the companies to be better adapted into the future as a result of continuous improvements

So considering this several key hypothesis and questions the research was done as a live system (all the time new things were a key observation thing, and new results were used to get more and more better future research, but also to help some of the companies).

Finally as an introduction part, we must consider that this is only a beginning of an extensive paper publication process which will present a pull of data, informations, experiences gathered during the research period.

## II. PRESENTING THE DATA

At this stage we could consider that this period of research a quite a big one, and some papers were previously published, some will, and finally considering that this is an ongoing research some will be published. Even paper that will consider the gathered data and experience and will compare with some international experiences, countries and things done there. But the basic aim in every country, every company, every person in charge should and must be the same – to implement good practice and to have a healthier and safer work place. That means that some of the things should be changed, some processes should be changed as well, and also some work processes as well should be changed. And considering things as previously mentioned there are some negative points of views especially from the companies, because every change means money investment, but they should understand that this is in their best interest, considering that every injury cost as well.

And finally regarding the research, the same one was conducted and lots of informations were gathered for the Bitola area. But the main thing is that there was a strict divide of year and year and a strict overview to accompany by a company approach used. So the informations gathered were used as an informations that could and in some cases are used as a thing with a significant importance for the companies. It is not only a research that was used only to gather an data, or to publish paper. It is a new approach to things and a one that should be used so the companies could get an useful information that they could use in a matter of company improvements.

Regarding the data aimed they were also considered and divided in several categories such as:

- Age

- Gender
- Work experience of the injured person
- Time frame when the injury was spotted
- Day of the week in which the injury was spotted
- Lost work days as a result of the injury
- Body part injured
- Free days given by medical person as a result of spotted injury
- Type of the injury and source of the same one (mechanical, electrical...)

And considering this categories we could present several tables, but this paper is only aimed to present only a thing to consider and also to present the basic aim of the research, so that is the main reason why in addition we have only one tabular view. Into the same one we have the presented data from the years 2015, 2016 and 2017 regarding Bitola area, and also three mai criterias, such as: spotted injuries, dead cases regarding work activities, and actual total numbers regarding year rate. So the tabular view in addition is the best presentation of this three criterias.

**TABLE I**  
**SPOTTED INJURIES IN BITOLA AREA – YEAR FRAME 2015 - 2017**

YEAR	SPOTTED INJURIES	DEAD CASES	TOTAL
2015	310	1	311
2016	286	/	286
2017	264	1	265

Seeing the results presented into the tabular view, especially if we have in mind the total amount of employed persons (14.875) for the year 2017 and if we use that amount of people and compare to the numbers aimed as injured cases (265) we could conclude that the total range is 1.78 %. Further more if we compare the rate from the year 2017 where the rate is 2.05% we could conclude that the nubers are incoriging that the things are in good way. But still we should have in mind that there are still thing to be done, and there are still injuries that aren't spotted.

### III. CONCLUSION

Finally this paper presents only a small but significant part from an extensive research conducted in a long period of time. The basic aim was that we could at first have the communication and cooperation with companies, so that we could spot every injury, but then the research went to a different way – an applicative one. The same one was in a mater that we could provide the companies a data regarding spotted injuries, but together we could analyze the same ones, we could create measures, we could improve things and we could go to a way where we can get 0 injuries per year in the same entity. And we got there with some entities. With some we didn't.

But there are still things to be done, and thing to be improved regarding health and safety. So at the end this paper is only a small part from future publications.

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