



ANALYSIS OF THE WORKING CONDITIONS WITH CONSIDERATION-HAZARD POTENTIAL HEALTH AND SAFETY OF EMPLOYEES IN TEXTILE INDUSTRY

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Abstract: *Safety and health measures have a very important role in any kind of industry, especially in the textile, which emit a wide range of pollutants at all stages of processing fibers into textile materials. Most processes have a negative impact on the living and working environment. However, their health and their safety at work are exposed almost daily dangers, depending on the nature of work and the conditions under which the work takes place. Therefore, the modern organization requires to create a safe and harmless working conditions, in order to adequate protection of their health and their safety. This paper will analyze the work environment in three textile factories involved in the production and processing with consideration of end jobs where there are potential threats to the health and safety of employees. An effective and powerful system of managing the health and safety of employees at work can help to translate the uncontrolled hazards controlled risk and thus better protect the welfare of employees and companies.*

Key words: *textile industry, working conditions, safety, health, employees*

1. INTRODUCTION

From contemporary organizations required to create a safe and harmless working conditions, in order to adequate protection of their health and their safety. Among other things, for them to undertake the imperative legal norms inherent in every modern country. Such norms are contained in the applicable legislation of the Republic of Serbia. Frequent injuries and accidents at work, an increasing number of disabled workers and occupational diseases and other reasons contributed to the observance of laws and other regulations on safety and health at work and regulations on so-called special protection. vulnerable categories of employees.

The system of health and safety at work involves the interplay of different factors such as legislation, inspection, insurance, technical knowledge and solutions, occupational health services, health, information, education, research and others. All factors that occur in the work process in the workplace and in the working environment, which may cause or lead to an occupational injury or damage to health or illness of the employee are dangers in terms of regulations on safety and health at work. Poor working conditions, and the irresponsible attitude of the management towards achieving the general welfare of employees has resulted in the emergence of a high level of



absenteeism. Due to injuries and occupational diseases today are losing huge financial resources for treatment, rehabilitation, compensation for absence from work in case of disability insurance, and other, which results in a reduction of the profit organization and change its competitive position.

The consequences of inadequate exposure values microclimate, lighting, noise and vibration, biological and chemical factors do not pose a direct threat to the life of an employee, or excessive and prolonged exposure to unsuitable values of these parameters leads to damage in the body and affects the health of workers.

Employees are fully aware of the importance of health, safety and well-being, because it is their life and future [1]. All measures are aimed at primary goal - an employee who is satisfied with giving higher productivity at work. Adequate working environment ensures the well-being of employees who will always allow you to carry out their roles with all the fervor that can provide higher productivity [2]. It can also be concluded that the work environment affects job satisfaction and achievement of the objectives of the organization [3]. Daud [4] in their study shows that the quality of working life of employees is an important factor for employers who are interested in improving employee satisfaction with work and their dedication.

Identifying hazards, assessing risks of injury and identifying measures to eliminate or reduce risk in the workplace is an extremely complex and highly responsible job persons responsible for the safety and preservation of health. It is therefore necessary to define guidelines that can assist organizations in formulating krtierijuma to take risks for professional environments [5].

Analysis of the working environment and working conditions was performed in textile organizations engaged in the production and processing of yarn. On the basis of data obtained from several textile organization, analyzed the conditions of the working environment, obtained by measuring microclimate parameters: temperature, relative humidity, air speed and comfort zone in winter, as well as the presence of chemical origin identification, noise, vibration and the presence of light levels on workplace which are also set out in the winter.

2. ANALYSIS OF WORK ENVIRONMENT AND WORKING CONDITIONS IN TEXTILE ORGANISATIONS

The analysis was conducted based on the data of the measured values of the parameters of the working environment, for the winter period, as determined by an authorized organization, the workplace when applicable safety and health at work. In the analysis were considered Param: air temperature and comfort zones in winter (microclimate), the presence of chemical origin identification and hazards that occur using work equipment, noise, vibration and the presence of light levels in the workplace. In analyzing the parameters of a comparison of values obtained by measuring sixteen jobs and making comparisons with the maximum allowable values.

Based on these data, by the person in charge of safety at work, established the division of the impact of these factors on the safety of employees in the manufacturing process, where the parameters of quality were awarded to: Increased risk allowable level, moderate, and negligible level where no there are harmful effects. The same data were used in the next phase of research.

Testing of the working environment shall be conducted in these organizations in accordance with legal regulations, periodically during the summer when the temperature is above 15° C and in winter when the temperature is below 5°C. The law establishes the duty of every employer to carry out these periodic tests at every workplace in the working environment within three years from the date of the previous tests.

The temperature, velocity and relative humidity are the parameters of the microclimate, whose trial is conducted in workplaces in the working environment in which takes place the process of work, or in places where employees move or retain more than two hours during working hours.



Lighting is very important for the conduct of business and significantly affects the quality of work of workers [6]. Required illumination in the workplace is determined by the standard: daylight and electrical lighting rooms in buildings SRPS U. C9. 100/62 and in accordance with the same in these organizations control measurements were carried out in all workplaces, and the results thereof are shown in Table 1.

Testing of physical harmfulness of noise and vibration is performed in the workplace where the work process of the same occur. Test noise [7] and vibration [8] is achieved by measuring, analyzing and comparing them with the standard values. Increase the value of certain significant influence on the health of workers [9]. The noise level was found in the work of machines in the production process for each position in the drive, the organizations in which the survey was conducted. The allowed noise level is defined with respect to the type of activity and the exposure of workers to noise than 8 hours and determined the ordinance on measures and norms of protection at work against noise in work areas (Official Gazete of RS, No.101/05). The level of vibrations is determined as the impact of vibration on the whole body, a limit of daily exposure in the workplace in accordance with the time of exposure is 1.15m/s^2 .

Determining the origin of chemical identification is carried out by taking at least one sample to the nearest source of workplace *šetnosti*. *Vrednosti* maximum allowable concentration exposure limits (WEL) are determined standards: SRPS Z.B0.001/91, or by measuring the maximum permissible concentrations of harmful gases, vapors and aerosols in atmosphere of working premises (JUS Z.BO 001 of 1991) and the Regulations on preventive measures for safe and healthy work when exposed to chemical substances (Official Gazette of RS, No. 106/09).

After examining the expert findings made by authorized organizations - institutes, we found that the organizations of the textile industry, in which the survey was conducted, there are jobs in which the parameter values due to increased working environment, in excess of the health and safety of workers at risk. Based on research in Table 1 and Figure 1 shows the values of the six parameters of the working environment, determined to sixteen different production sites in textile factories (measured at the time of controls), which are used in the further study of the working conditions. Measurements were carried out during the work and values are shown in black, and the maximum permissible value expressed in red.

Table 1: The values of parameters of the textile organizations dealing with production and processing of Yarns

No	Workplace	Microclimate T (C ⁰)	Physical hazards		Chemical harmfulness mg/m ³	The lighting Lx	Dangers that occur using work equipment
			Noise dB	Vibration m/s ²			
a1	knitter in a knitting unit (smooth and rough knitting unit)	25,1 (28)	71 (85)	0 (1,15)	a) 1,4 (2) b) 2,04 (5)	145 (80-150)	5 (10)
a2	rough socks production	25,1 (28)	80 (85)	0,6 (1,15)	a) 0,4 (2) b) 4,07 (5)	104 (80-150)	10 (10)
a3	fine tighs production (tighs sewing machine)	23,9 (28)	87 (85)	0,51 (1,15)	a) 0,4 (2) b) 4,03 (5)	105 (80-150)	10 (10)



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a4	tighs shaping (hand-fixing of tighs)	25,5 (28)	79 (85)	0,51 (1,15)	a) 0,3 (2) b) 4,05 (5)	104 (80-150)	5 (10)
a5	dyer (textile dyeing tub - open machine)	25,5 (28)	83 (85)	0,51 (1,15)	a) 1,7 (2) b) 4,01 (5)	102 (80-150)	5 (10)
a6	fibre – production	23,9 (28)	77 (85)	0 (1,15)	a) 1,0 (2) b) 4,05 (5)	105 (80-150)	5 (10)
a7	finishing and packaging	24,2 (28)	75 (85)	0 (1,15)	a) 0,3 (2) b) 4,01 (5)	103 (80-150)	5 (10)
a8	tighs fixing-ironig	25,0 (28)	93 (85)	0,6 (1,15)	a) 0,5 (2) b) 4,01 (5)	104 (80-150)	5 (10)
a9	bowe machine operator (dyeing textile machine)	25,5 (28)	70 (85)	0 (1,15)	a) 2,1 (2) b) 1,4 (5)	147 (80-150)	7 (10)
a10	thread net making	25,0 (28)	77 (85)	0 (1,15)	a) 0,7 (2) b) 4,01 (5)	104 (80-150)	5 (10)
a11	nitiworker winding rubber thread	25,0 (28)	98 (85)	0 (1,15)	a) 0,9 (2) b) 4,02 (5)	103 (80-150)	5 (10)
a12	dyeing-rewinding	25,5 (28)	81 (85)	0 (1,15)	a) 1,7 (2) b) 4,03 (5)	103 (80-150)	5 (10)
a13	the head of dyeing unit	25,3 (28)	83 (85)	0 (1,15)	a) 2,03 (2) b) 1,4 (5)	146 (80-150)	7 (10)
a14	laboratory worker	25,5 (28)	77 (85)	0 (1,15)	a) 2,52 (2) b) 0,3 (5)	145 (80-150)	1 (10)
a15	worker at dyeing and mercerising	25,5 (28)	76 (85)	0 (1,15)	a) 2,03 (2) b) 4,1 (5)	13 (80-150)	1 (10)
a16	laboratory technician	25,5 (28)	70 (85)	0 (1,15)	a) 2,33 (2) b) 0,4 (5)	147 (80-150)	10 (10)

Based on the value of the microclimate and insight into professional findings we found that the temperature in all production plants, or in the workplace, in the winter in a comfort zone. The figure can be determined that the level of noise in the workplace fixing-board socks and wrap the rubber worker threads, the sign of the measured values at the time of control, exceeding the legally prescribed value, and the same can adversely affect the health of employees. It can be seen that the measured mechanical vibration, expressed as the impact of vibration on the whole body, as a potential threat to the health of employees do not exceed the standards established values, and emerge as a result of the work machine.

From enclosed can see that they are employed in the laboratory exposed to the harmful effects of substances used during the processing of the fabric and that the employees at the site operator Bowe machine (machine for dyeing fabrics - closed machines), in that part of the drive is exposed to higher concentrations chemical substances, due to the fumes, which can significantly affect their health by prolonged exposure of workers to harmful effects of this.

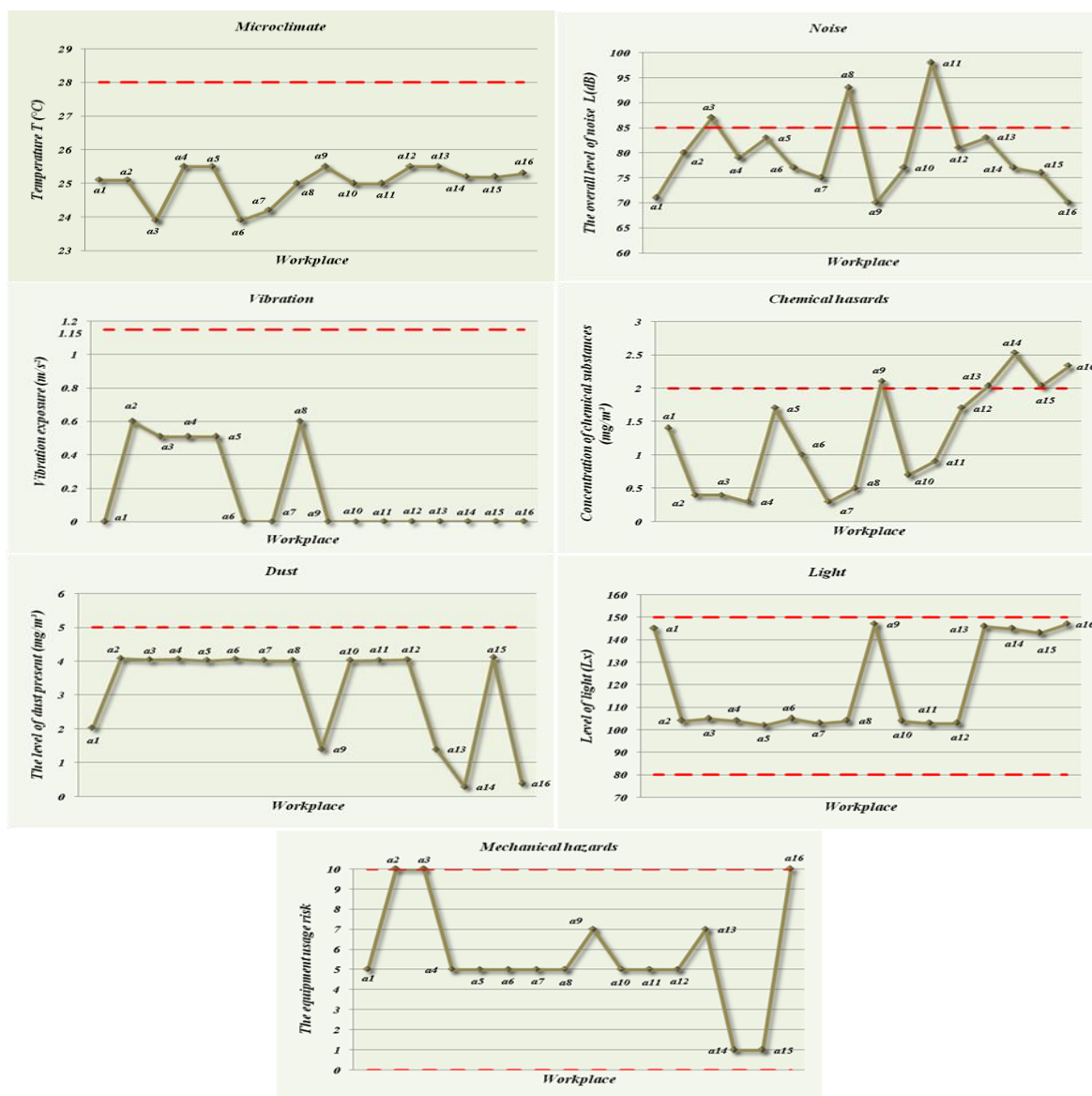


Fig. 1: The values of the parameters of the working environment for the observed workplaces

Values Measured light levels are shown in figure 1, the average value expressed in the unit Lx, and compared with the average values per standard requirements Repbulike Serbia. It can be seen that all the measured values are in the range 80-150 Lx. Based on practical research and explanations given by the persons responsible for safety and health at work, we have found that this is an important parameter of a healthy and normal functioning of the labor employed, and the removal of the measured values of the border is not favorable to the health of employees. In the manufacturing process of the textile industry due to the use of work equipment, complex production process and inappropriate or maladaptive methods can identify the mechanical hazards that occur in conjunction job characteristics [10]. The level of mechanical hazard is defined in the range of 0 to 10, and the table is displayed in red the maximum risk and severity of consequences for the employee. From enclosed can be determined that due to the lack of security due to the presence of



rotating or moving parts on the machine knitting confection fine and rough socks because "first flight" parts as well as free movement of parts or materials can be injured employee, and it can cause very serious consequences per employee. The level of serious consequences for the employee expressed an on-site technical laboratory to the realization of activities, performs the transfer of colors and products, but also to use complicated technical means, so that when the work may be falling objects.

3. CONCLUSIONS

In the manufacturing process of the textile industry due to the use of work equipment, complex production process and inappropriate or maladaptive methods can identify the mechanical hazards that occur in conjunction job characteristics. After examining the expert findings made by authorized organization - the Institute, it was found that the organizations of the textile industry in which the survey was conducted, there are jobs in which they are due to increased values of parameters of the working environment, in excess of the health and safety of workers at risk. From all the above it can be established that the individual workplaces values of parameters of the working environment exceed the maximum permitted legally prescribed value, and increased the value of the parameters can have negative consequences on the health and safety of employees in textile organizations. The data obtained will serve to further research to capture the jobs in textile factories in which there are potential threats to the health and safety of employees. The significance of these analyzes is a big primarily aimed at improving the working conditions, the preservation of the health of workers, increasing employee satisfaction and achieving better performance.

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