

ASSESSING THE OCCUPATIONAL HEALTH RISK IN A METALLIC CONFECTIONS UNIT OF THE COUNTY OF SIBIU – PERSONAL RESEARCH

CARMEN VONICA

Territorial Labour Inspectorate Sibiu

Abstract: The purpose of this study aims at the quantitative assessment of the risk level regarding the occupational health within a unit of metallic confections of the county of Sibiu. The new consists in approaching a mathematical method for estimating the risk level of the occupational health for each workplace, the possibility of evaluating the unit according to the estimated risk level and the possibility of the employer to adopt the proper prevention/protection measures.

Keywords: health risk

Rezumat: lucrarea are ca scop evaluarea cantitativă a nivelului de risc pe linie de sănătate ocupațională la o unitate de confecții metalice din județul Sibiu. Noutatea constă în abordarea unei metode matematice de calculare a nivelului de risc al sănătății ocupaționale pentru fiecare loc de muncă, posibilitatea încadrării unității în funcție de nivelul de risc calculat și permite angajatorului adoptarea măsurilor de prevenire/protecție adecvate
Cuvinte cheie risc de sănătate

PURPOSE OF RESEARCH

This personal research aims at the quantitative assessment of the risk level regarding the occupational health within a unit of metallic confections of the county of Sibiu.

The evaluation of the risk level will be made by transposing the estimation pattern of the labour safety risk level within the occupational health.

What news does this study bring?

1. – it represents a *mathematical approach* for estimating the risk level of the occupational health for *each workplace*.
2. – it assesses the *risk level* at unit level, regarding the occupational health.
3. – finally, it assesses the *global risk level* (weighted average of the occupational health and safety risk level).
4. –unit evaluation according to the estimated risk level (within the field with acceptable or unacceptable risk).
5. – gives the employer the possibility to adopt proper protection/prevention measures.

MATERIAL AND METHOD

The study starts from:

- a. The assessment method of the risk level in terms of labour safety, a new method applied by the National Institute of Research in the Field of Labour Protection (Institutul Național de Cercetări în Domeniul Protecției Muncii-INDCPM).
- b. **Annexe issued by the Ministry of Health and Ministry of Labour, Social Solidarity and Family with Possible Consequences of the Action of the Risk Factors on the organism.**
- c. („a priori”) evaluation of pre-accident/occupational disease is based on the risk analyses before being materialized in accidents and occupational diseases.
- d. Evaluation criteria of the risk levels.
- e. Effect towards cause, the approach being - *deductive (indirect)*
- f. Formula of *the global risk level*

$$N_r = \frac{\sum_{i=1}^n r_i \cdot R_i}{\sum_{i=1}^n r_i}$$

N_r = the global risk level per workplace;

r_i = order of the risk factor-"i";

R_i = risk level for the risk factor-"i";

n = number of risk factors identified in the workplace

GENERAL DATA ABOUT THE FACTORY TAKEN INTO CONSIDERATION - SNR RULMENȚI:

- It is a company with entire foreign private social capital;
- Has as its main object of activity – the production of ball bearings and conic roller bearings;
- The activity is developed in working halls specially designed;

CLINICAL ASPECTS

- The finished products are exclusively meant for exportation;
- The produced goods are used in the main sectors of industry: automotive, air-spatial, other industry sectors;
- It has 12 subsidiaries on five continents;
- It is present in Sibiu since April 2003;
- It is present in Sibiu since April 2003;

PERSONNEL STRUCTURE

Se prezintă astfel:

Total personnel	356
* Productive direct workers	209
* Indirect productive workers	96
* TESA	51

There were also taken into consideration aspects related to:

- Medical assistance of the employees' labour medicine
- Working conditions
- Existing noxious substances
- Other aspects

RESULTS AND DISCUSSIONS

PRESENTATION OF THE WORKPLACE UNDER EVALUATION REGARDING THE SAFETY AND HEALTH RISKS

BEARINGS RECTIFICATION LINES (ball bearings, conic roller bearings, diameters faces)

I. PRESENTATION OF THE WORKING SYSTEM:

1. Working means:
2. Performer-Positions/work posts:
3. Work duty-Operations specific for: bearings production line operator, reglor, engineer, tutor
4. Working environment – working conditions, noxious substances, microclimate

II. SAFETY RISKS EVALUATION FOR OCCUPATIONAL ACCIDENTS AND DISEASES.

Risk level of work place safety is:

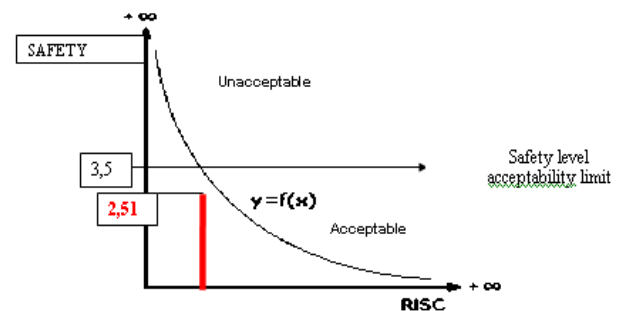
$$HRG_{1,3} = \frac{\sum_{i=1}^{20} R_{i1}}{20} = \frac{1(4 \times 4) + 5(3 \times 3) + 9(2 \times 2) + 5(1 \times 1)}{1 \times 4 + 5 \times 3 + 9 \times 2 + 5 \times 1} = 2,42$$

III. HEALTH RISKS EVALUATIONS PER WORKPLACES by using

- GRAVITY/PROBABILITY grid
- ANNEXE WITH THE POSSIBLE CONSEQUENCES LIST OF THE RISK FACTORS ACTION ON THE HUMAN BODY (issued by the Ministry of Health and Labour, Social Solidarity and Family).

- The risk level estimated for the occupational health at the workplace – ball bearings assembly line – is equal to 2,51, value that makes it to be a low towards medium risk, not exceeding the acceptable maximum limit of (3,5), according to the norm.
- The analysis of the data comprised in the „Annexe with the possible consequences of the risk factors on the human body" suggests that out of a total of 34 possible affections consequences (affections general class) a total number of **26** affections were identified.
- Different aspects were analysed related to the type of affection that may occur, incidence, risk level and gravity.
- In the end, the technical, organizational and sanitary measures that should be taken into account were established, as well as the conclusions of this study.

Fig.1. Limit between acceptability/unacceptability of the risk level.



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LIST OF THE RISK FACTORS ACTION ON THE HUMAN BODY

No.	POSSIBLE CONSEQUENCES	CONSEQUENCES LOCALIZATION																					
		Osteoarticular system											Muscle system			Senses organs							
		Cranium	Thorax cavity	Abdomen	Legument	Respiratory apparatus	Cardiovascular apparatus	Digestive apparatus	Renal apparatus	Vertebral column	Upper limb			Lower limb			Eyes	Nose	Internal Ear	External Ear	Nervous system	Multiple	
Arm Forearm	D										S	Palm Fingers	Hand	Wrist	Foot								
O/MP No. 1.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1.	Wound: - cut - sting	7	3	7	2	2	2	2	2	5	5	5	4	4	4	4	4	6	2	2	2	5	2
4,72	Partial risk level	7	4	7	3	2	2	2	2	6	5	5	5	5	5	5	5	4	2	1	2	4	2
2.	Contusion	2	2	2	1	-	-	-	2	3	2	2	2	2	2	2	2	2	1	-	-	-	2
2,66	Partial risk level	2	2	2	1	-	-	-	2	3	3	3	3	3	3	3	3	3	1	-	-	-	3
3.	Twist	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	-	-	-	-	-	-
2,23	Partial risk level	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	-	-	-	-	-	-
4.	Crush	7	7	7	2	7	7	7	3	6	4	4	4	4	4	4	3	5	2	4	2	2	2
3,45	Partial risk level	3	3	3	5	3	3	3	2	3	4	3	4	4	3	4	4	5	1	2	2	2	2
5.	Fracture	7	3	-	-	-	-	-	-	6	2	2	2	2	3	2	2	-	2	-	-	-	3
3	Partial risk level	4	2	-	-	-	-	-	-	4	2	2	3	3	3	3	3	-	2	-	-	-	3
6.	Burn: - thermal - chemical	2	3	3	3	2	-	-	-	-	3	3	3	3	2	2	3	5	2	3	2	2	3
2,29	Partial risk level	1	2	2	3	1	-	-	-	-	3	3	3	3	2	2	2	1	1	1	2	1	1
7.	Amputation	-	-	-	-	-	-	-	-	-	5	4	4	4	4	3	4	5	3	-	3	-	4
3,18	Partial risk level	-	-	-	-	-	-	-	-	-	4	4	3	3	2	2	2	4	4	2	-	2	-
8.	Lesions of the internal organs	-	-	-	-	2	2	1	2	-	-	-	-	-	-	-	-	-	-	2	-	2	2
2,14	Partial risk level	-	-	-	-	3	2	1	2	-	-	-	-	-	-	-	-	-	-	2	-	2	2
9.	Electrical shock	-	-	-	3	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
4,38	Partial risk level	-	-	-	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
10.	Asphyxia	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Partial risk level	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.	Intoxication - acute - chronic	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

