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DIVERSIFICATION OF SAFETY CULTURE ELEMENTS IN VARIOUS PROFESSIONAL GROUPS

The article presents a survey conducted in one of the branches of ZG Rudna and in Fabryka Maszyn i Urządzeń Gastronomicznych (Machinery and Catering Appliances Plant) "Kromet." The questionnaires were conducted with the use of the author's survey. The level of safety culture in two different industrial plants was compared. The comparison of questionnaire results regarding the safety climate allows to assess whether any general tendencies and regularities exist in the reception of various forms of safety management. Two categories were chosen for the comparison: education and professional experience in the workplace. The level of safety culture in both workplaces is comparable, despite utterly different production profiles and employment structures. It can be assumed that cultural and social matters have an effect on the level of safety.

Key words: safety culture, questionnaire, cultural and social matters.

1. INTRODUCTION

The increasingly common approach to providing a high level of employee safety in the workplace states that safety depends on employees' safe behaviour, and not on investment in new and expensive plants and machinery. Hidden values and beliefs of employees are one of the foundations of safe work. When establishing the safety attitude in the company, special attention must be paid to employees' behaviour during work and contact with co-workers, along with their knowledge and views regarding safety in the workplace (Fig. 1).

The norm PN-N-18001: 2004 defines safety at work and the hygiene management system as a "state of conditions and work organisation, along with employee behaviour, that provide the required level of protection to health and life against hazards in the work environment" [6]. The aim of implementing the norm is to manage all actions leading to the improvement of industrial safety of employees,

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along with other people present at the workplace facility [5]. The most important goal of industrial safety management in a company should be the achievement of:
– a lack of common acceptance in society of accidents in which people die or sustain serious injuries,
– requiring society to make every effort to provide safe working conditions and taking care of the natural environment,
– aiming at integrating safety management and taking actions providing productive efficiency [3].

SAFETY		
Safety factors that are easy-to-measure and present quantitatively		
LEGAL ASPECTS (Norms, procedures, directives, etc.)	**TECHNICAL ASPECTS** (Equipment, tools, personal and group restraint equipment etc.)	**PSYCHOSOCIAL ASPECTS** (age, sex, education, working experience etc.)
Safety factors that are difficult to determine quantitatively, many times skipped in the company safety policy		
– legal knowledge – understanding and proper interpretation	– choice of the equipment depending on danger – using skill	– suitable work culture – organisational determinants – cultural determinants – values, beliefs, views etc.

Fig. 1. Qualitative and quantitative aspects of work safety (own work)

According to the hierarchy model created by Abraham Maslow, safety is the most rudimentary need, right after the satisfaction of physiological needs that belong to lower level needs. Through satisfying needs, the conditions of human life, way of living, value systems and relations with others are shaped. Maslow's pyramid of needs is an idea explaining how the mechanism of the human motivational system works, together with needs that are fulfilled gradually. In order to achieve the set goal, one needs to look at the company from a broader perspective [3].

The overall aspect of analysis, in this case the company, is examined in a broader sense, with respect to the general theory of systems. Systems theory is the interdisciplinary study of systems in general, with the goal of elucidating principles that can be applied to all types of systems at all nesting levels in all fields of research. Its aim is to acquire a better understanding and harmonious shaping of the surrounding reality. Theory of systems is also a discipline, which

regards the holistic approach and logical-mathematical thinking as just, and examines the human's (employee's) choices happening between the mind, and the available information and energy. The main advantage of developing the theory of systems is to create the perspective of science allowing to connect ostensibly unconnected phenomena and understand the way they correlate [1].

Thanks to a competent connection of components of the whole (gaining redoubled benefits), the next aspect of the overall analysis is undertaken, referred to as the synergy effect. This term is used in various fields i.e. psychology, pharmacology, information theory or economics. In the case of safety management in the workplace, it is visible that the joint engagement of people in improving safety is more beneficial when acting together [2]. In the case of the company and individuals acting within it, the forms of synergy are collaboration and cooperation. It provides the ability to decrease the costs of conducting business activity and to increase market expansion [2]. Activities concerning industrial safety (BHP) require a systemic approach, understood as a set of elements, correlated in a way to create the new whole, standing out in the specific environment.

2. STUDIES ON SAFETY CULTURE

Presently, with rocketing technological development, along with the development of industrial, political and social processes, one can observe the increasing meaning of the widely understood workplace environment. A substantial impact on the interest in work safety is made by the increased number of hazards in the workplace, along with the changing rate of already existing ones. Appropriate identification of new hazards in the workplace and knowledge of what their development will look like, is the key element in planning and taking efficient, preventive measures [4].

The aim of potential preventive measures is to adjust to the norms in western countries. OHSAS 18001 is an international norm referring to management of industrial safety. Its Polish equivalent is the norm PN-N-18001:2004. It determines the requirements of the industrial safety management system, allowing any company to establish policy and goals regarding industrial safety and efficient realisation of this policy by achieving the set goals. This norm is assigned for companies interested in taking up regular actions intended to improve industrial safety. It can be used by various organisations, regardless of their activity and size. In theory, implementing the above-mentioned norm should result in decreasing the number of injuries and potentially accidental events, reducing costs and losses related to accidents at work, as well as increasing comfort at work and employee morale [5].

While creating and applying the procedures of safety management, apart from the technical aspect, of great importance is proper organisation of professional selection, conducting training, advancing professional qualifications of employees,

together with appropriate motivation for their safe behaviour. As a consequence, such actions are to force the employee to change their attitude towards a hazard in the workplace, teach proper behaviour in accordance with the rules of industrial safety, and make them aware of hazardous behaviour and their negative evaluation [7].

Planned actions were not reflected in the everyday functioning of companies. They were not efficient enough and convincing enough to implement the change of attitude and behaviour in most of the employees. This individual part of employees' awareness, in the 90s was called safety culture. The company's achievement of the desired, suitable safety culture is currently treated as a main task of safety management.

3. SURVEY METHOD

The survey was conducted in one of the branches in ZG Rudna and in Fabryka Maszyn i Urządzeń Gastronomicznych (Machinery and Catering Appliances Plant) "Kromet". The surveys were conducted with the use of author's survey, drawn up by dr inż. Izabela Gabryelewicz and prof. Edward Kowal from University of Zielona Góra (Faculty of Mechanical Engineering). The questionnaire was drawn up on the basis of many other questionnaires, used for examining the level of safety culture, but was adjusted to the study group. Seven thematic groups were taken into consideration: I. Values and beliefs, II. Communication in industrial safety, III. Motivation for safe behaviour, VI. My impact on safety at work, V. Attitude toward industrial safety services, VI. Superiors' attitude toward safety, VII. Attitude toward industrial safety training.

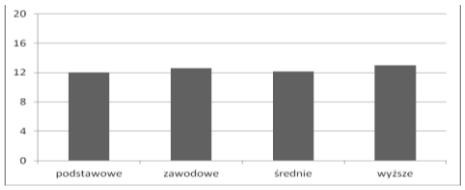
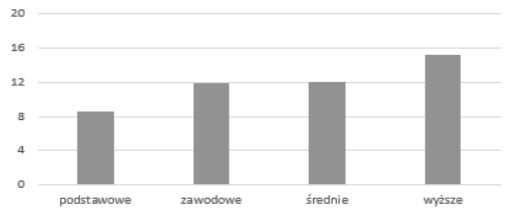
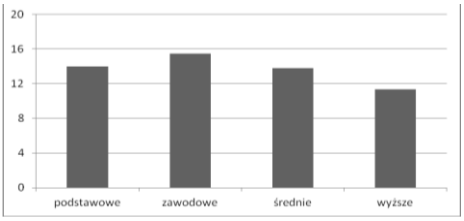
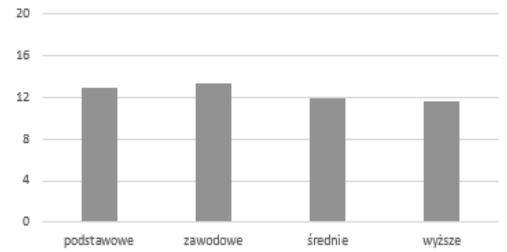
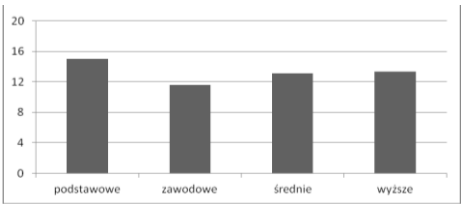
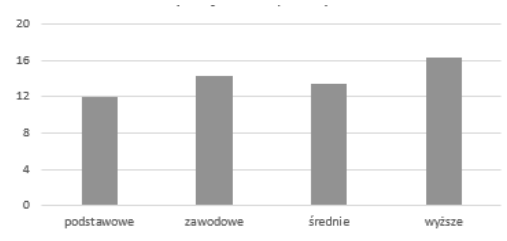
In each thematic group there are five specific questions referring to a specific issue. Likert five-point scale was used to assess the survey form. The following possible answers were applied: definitely yes, rather yes, I don't know, rather no, definitely no. Using the answer "I don't know" allows the respondent to skip a question if it is incomprehensible, or one has no opinion regarding the matter. This answer in all cases grants zero points. It was agreed that such an answer can be at the same time regarded as no answer given, which means that the employee failed to engage in the research process.

The remaining questions are scored from 1 to 4 points, depending on the form of the question. The changing score in specific thematic groups, even in the same group, was to eliminate mechanical (mindless) filling out of the questionnaire, and at the same time, possible elimination of the questionnaires which resulted in being not credible. The respondent, in order to simplify the manner of filling out the form, marks only the answer chosen by him/her, with the use of Likert five-point scale; however, points are scored by the people analysing the questionnaire.

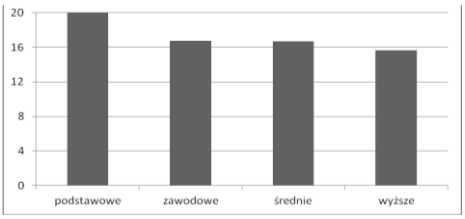
4. SAFETY CLIMATE LEVEL DEPENDING ON THE FEATURES OF THE OCCUPATIONAL GROUP

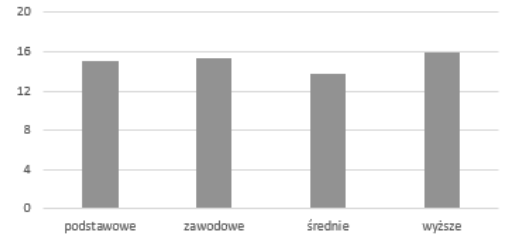
The level of safety culture in two different industrial plants has been compared below. The comparison of the questionnaire results regarding the safety climate allows to assess, if any general tendencies and regularities exist in the reception of various forms of safety management. At this very moment, the survey covers two workplaces only. It can be said that these are pilot studies and at the same time are preliminary. They were conducted on a substantial amount of employees, which allows to treat the research as valid and objective. Two categories were chosen as a comparison: education and professional experience in the workplace. Table 1 shows the comparison of 7 categories determining the level of safety climate, depending on education. Table 2; however, shows the comparison of safety climate depending on professional experience in the workplace.

Table 1. The level of safety climate depending on education*.

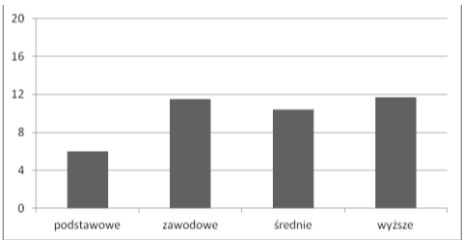
ZG Rudna	"Kromet"
I. Values and beliefs 	
II. Communication in industrial safety 	
III. Motivation for safe behaviour 	

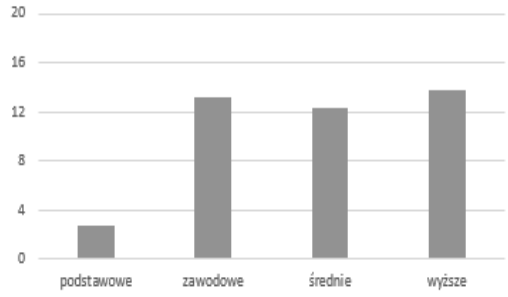
IV. My impact on safety at work



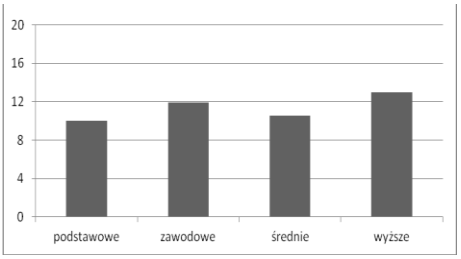


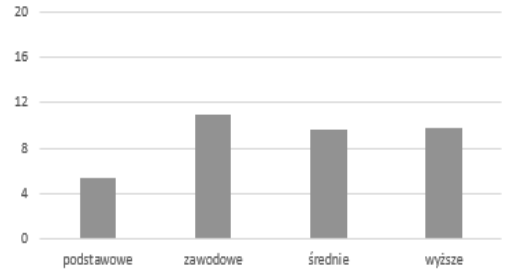
V. Attitude toward industrial safety services



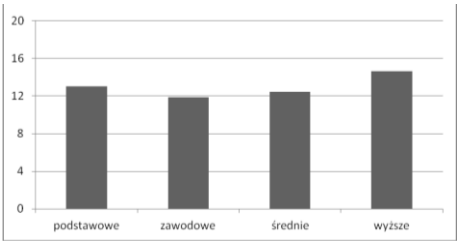


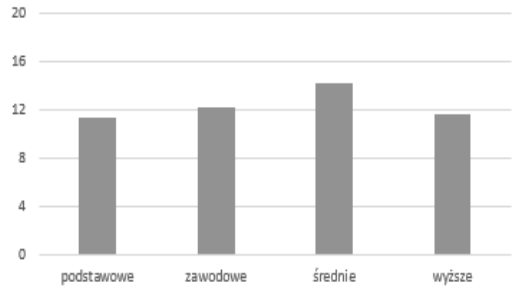
VI. Superiors' attitude toward safety





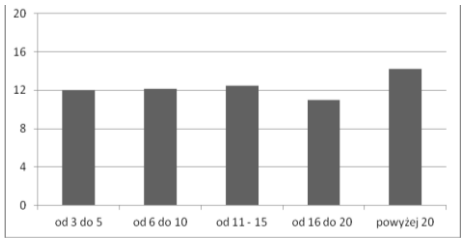
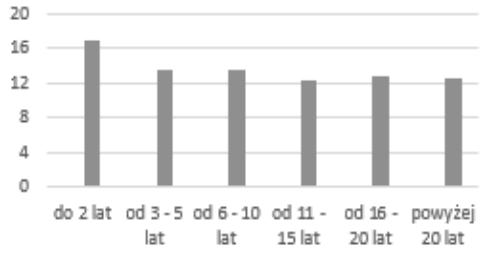
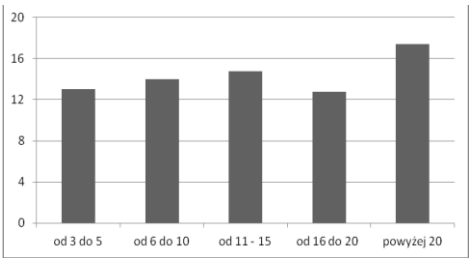
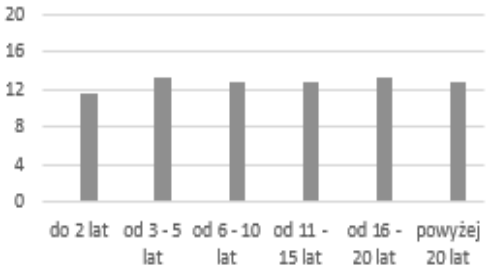
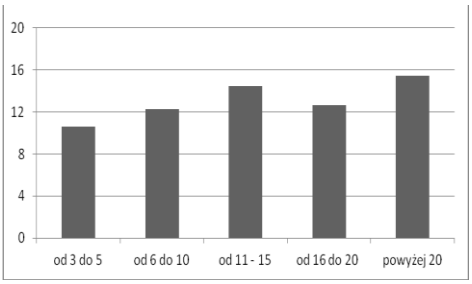
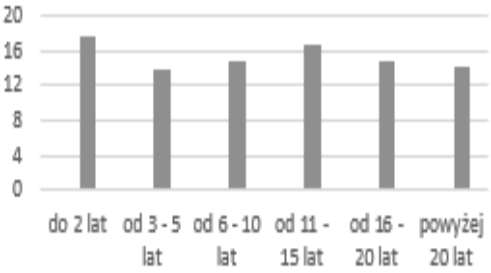
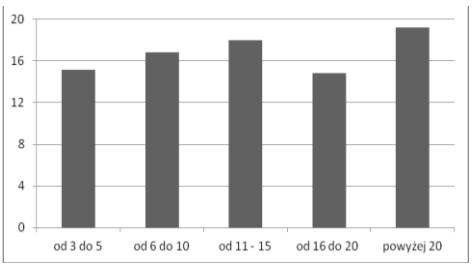
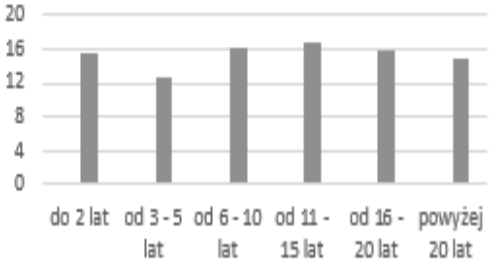
VII. Attitude toward industrial safety training



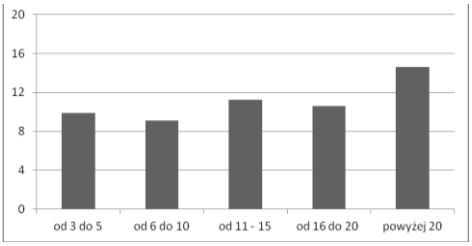


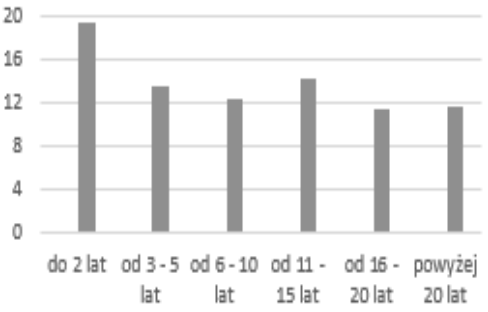
*****levels of education from the left: elementary, vocational, secondary, higher.

Table 2. The level of safety climate depending on the professional experience in the workplace.

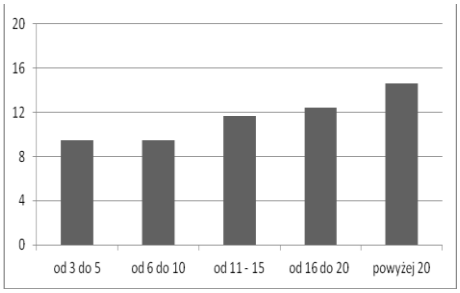
ZG Rudna*	"Kromet"**
I. Values and beliefs 	
II. Communication in industrial safety 	
III. Motivation for safe behaviour 	
IV. My impact on safety at work 	

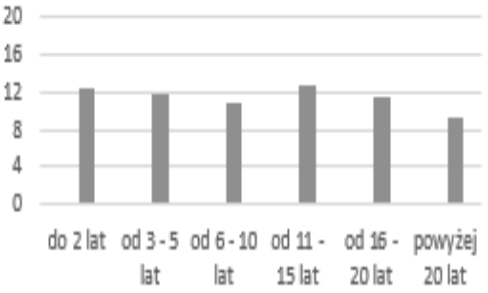
V. Attitude toward industrial safety services



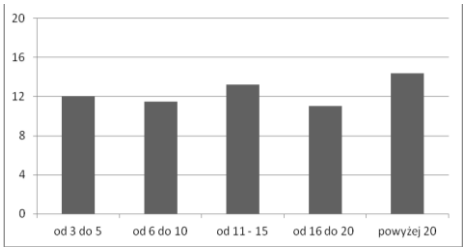


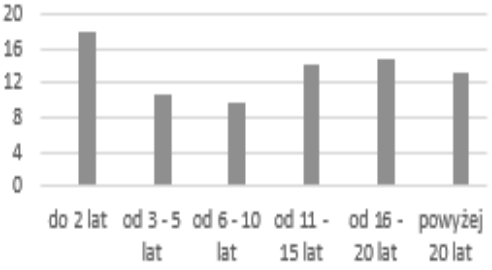
VI. Superiors' attitude toward safety





VII. Attitude toward industrial safety training





*years of professional experience: 3-5; 6-10; 11-15; 16-20; 20+
**years of professional experience: up to 2; 3-5; 6-10; 11-15; 16-20; 20+

5. RESEARCH SUMMARY

As can be seen in Fig. 2, on the Safety Culture Grid [8], the level of safety culture in both workplaces is comparable, despite utterly different production profiles and structures of employment. It can be assumed that cultural and social matters have an effect on the level of safety.

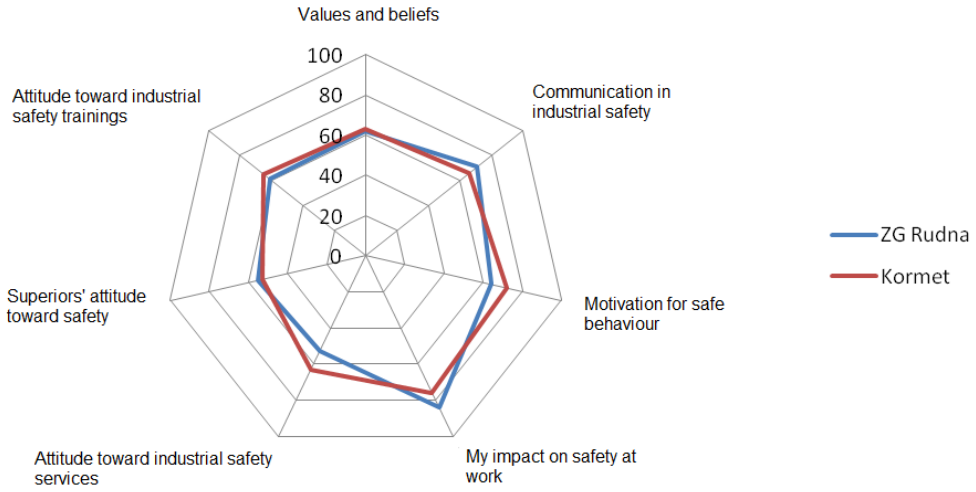


Fig. 2. The general state of the level of safety climate in the company (expressed as a percentage)

Figure 2, a percentage diagram, presents the general level of safety climate in the production plant. The diagram was created on the basis of a heptagon, of which each arm describes one category of questions from the questionnaire form.

The first category of questions, regarding values and beliefs, was established at a level of 62% in ZG Rudna and 63% in "Kromet". It means that in this respect the safety climate is at an average position. Questions in this category referred to the impact of salary or enhancing qualifications on the frequency of accidents and general rules of industrial safety.

Communication in industrial safety is the second arm of the described polygon. The level of safety climate was established at a level of 71% in ZG Rudna and 66% in "Kromet". It is also at an average position. This means that information regarding hazards is not always given on an ongoing basis; what is more, accidents are not discussed during meetings of various kind, where an employee could submit his/her remarks regarding the state of industrial safety.

The third category refers to the motivation for safe behaviour of employees at work. The studies show that this element of safety climate is in the workplace at

a moderately high level (64% ZG Rudna and 72% “Kromet”). Members of the organisation do not have reasons to believe that hazardous behaviour pays off; moreover, they do not feel the need to show off in front of other employees with hazardous behaviour. In “Kromet” there were no occurrences of punishing safe behaviour and awarding the hazardous one. In ZG Rudna such cases took place, reported the respondents.

The fourth category, regarding the subjective opinion on impact on safety at work, is at a high position with 84% in ZG Rudna and 76% in "Kromet." It suggests that the employees feel their own impact on safety and responsibility for accidents at work. They also find it sensible to alert co-workers of dangers and hazardous behaviour of other employees.

The fifth category refers to the attitude toward industrial safety service. A low level was obtained, at 53% in ZG Rudna and 63% in “Kromet”. It indicates that the employees’ approach toward the industrial safety worker is neutral. It also shows that some employees see the industrial safety services as an unnecessary expenditure for the company, and their task is referred to as dealing with minor issues, which are not solving the problems of industrial safety. The recommendations regarding the improvement of safety are only fiction on paper.

The sixth category of questions regarded superiors' attitude toward safety and was determined to be at a low level (55% ZG Rudna and 52% “Kromet”). Employees, through the questionnaire, are trying to alert that their superiors do not promote safe behaviour to their satisfaction. There are no tangible benefits, no so-called motivational system, toward safe behaviour for employees behaving appropriately, without putting in danger their and their co-workers' lives. It happens that superiors urge their employees to hazardous behaviour, in order to fulfil a quota.

The employees’ attitude toward industrial safety training is the seventh category of questions. It was calculated that the average of points in this category was 61% for ZG Rudna and 65% for “Kromet”. This indicates that, according to employees, training courses are not interesting, do not teach safe behaviours at work and their impact on improving safety in the workplace is minimal.

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ZRÓŻNICOWANIE ELEMENTÓW KULTURY BEZPIECZEŃSTWA W RÓŻNYCH GRUPACH ZAWODOWYCH

Streszczenie

W artykule przedstawiono badania ankietowe przeprowadzone na jednym z oddziałów w ZG Rudna oraz w Fabryce Maszyn i Urządzeń Gastronomicznych „Kromet" Badania przeprowadzono za pomocą autorskiego kwestionariusza ankietowego. Porównano poziom kultury bezpieczeństwa w dwóch różnych zakładach przemysłowych. Porównanie wyników ankiety dotyczącej klimatu bezpieczeństwa pozwoliło ocenić, czy istnieją jakieś ogólne tendencje (prawidłowości) w odbiorze różnych form zarządzania bezpieczeństwem. Do porównania wybrano dwie kategorie: wykształcenie i staż pracy w danym zakładzie pracy. Poziom kultury bezpieczeństwa w obu zakładach pracy jest bardzo do siebie zbliżony, pomimo zupełnie odmiennego profilu produkcji i struktury zatrudnienia. Można przypuszczać, że wpływ na poziom bezpieczeństwa mają kwestie kulturowe lub społeczne.