8   INFLUENCE OF EMPLOYEES' ATTITUDES AND BEHAVIOUR ON SAFETY CULTURE IN COMPANY

8.1   Introduction

Statistical data of work accidents provides evidence that human being has always been and remains the weakest link in the sociotechnical system, and that the up to now, technically-oriented methods of safety planning and organizing are not sufficiently effective.

People, their behaviour and attitude decisively influence the safety level, as much in the working environment as outside it. No technical and organizational means will secure safe conditions if somebody is not willing to work in a safe manner.

The research on the human factor influence in the prevention of accidents at work have proved that the technical condition of the equipment and the working environment conditions are important for the work safety, however, this is the employees, their behaviour and attitude towards safety and risk that decisively influence the accident incidence [18, 21].

Hence the importance of developing safe behaviour and influencing the employees' attitudes.

The process of creation and implementation of safety management procedures requires, apart from technical actions, that significant attention is given to the organization of profession selection, training schedule, improving professional skills, communication and motivation to safe conduct. However, these actions will not succeed, if they do not change the employees' attitude towards risk and do not teach them how to behave safely [19, 20].

The paper presents the fundamental questions relating to the safety culture. It explains the ideas such as "culture" and "organizational culture", which safety culture makes a part of. It contains also the information about the factors defining desired and undesired, good and bad safety culture and introduces a model of safety culture development. The empirical part presents the study of the influence of employees' attitudes and behaviour on safety culture development, based on the model of safety culture development. The model elements studied are: environment and conditions of work and employees' behaviour and attitudes, the research tools being: an interview, analysis of the relevant documentation and anonymous survey carried out among employees of an enterprise.

The main goal of the study is to analyse employees' attitudes and behaviour together with their influence on safety culture development in an enterprise. The cognitive purpose assumed is getting to know the employees' opinion regarding the work safety culture in the enterprise studied. The utilitarian purpose is to draw attention to the necessity of taking action to influence the employees attitudes and behaviour with regard to development of the work safety culture areas, with aim to improve the safety in an enterprise.

8.2   The fundamental issues of organizational culture

To get to know and understand the essence of safety culture we need first to get to know the idea of culture and organizational culture.

The study of company's organizational culture, which commenced in the beginning of 80s, constitute the foundation of the safety culture theory [10, 11].

Changes happening worldwide impose on organizations the necessity to implement organizational culture. This culture should be flexible and sensitive to cultural difference which members of an organization encounter within a given society and among various societies. Everybody have their own, separate, culture generated at their home and society where they were brought up. Becoming a member of an organization they have to learn its culture, which can be realized by means of, among others, training and communication with the superiors and co-workers.

Belonging to an organizations entails being a part of its culture. The manner of working within a given organization has an enormous effect on its effectiveness. The basic assumptions accepted by the members of an organization and their interaction make up a part of organizational culture [14, 21].

The very concept of organizational culture has originated by analogy with national culture. The assumption that various nations and/or ethnic groups have various cultures has been accepted long time ago. Various organizations have various cultures as well, and the term organizational culture itself is defined in many ways. However, the most often organizational culture is described as "set of values, behaviour patterns, specific communication forms and multiple other elements which consolidate the community spirit among the organization members"[15, 16]. The organizational culture can manifest itself in the dominating habits or habit patterns. Particularly it will manifest itself in the method of management (employees' assessment, building their career paths). Among the functions that it is performing are creation of the image within an organization, building of its goals awareness among the employees and inspiring their commitment to the goals accomplishment. The culture is formed by all the members of an organization and it manifests itself in behaviour, attitude, observed values and assumptions.

Most of the researchers who tackle the organizational culture perceive it as composed of a certain number of elements, existing at different levels of consciousness [5, 7, 8, 13].

8.3   Safety culture at work

Safety culture determines the attitude of people towards risk and safety. It formulates the rules of conduct and the values recognized by members of a given group.

When discussing safety culture we must bear in mind three main areas of management: people, information and organization. This is due to the fact that people are the subject of all managerial activities, because it is up to them whether safety management should be effective. Lack of understanding and acceptance of any changes may result in rather unproductive management and will not give any effects. Cooperation between employees and employers is of vital importance, because communication based on mutual trust is an essential feature of high safety culture. The employer is responsible for the safety and hygienic conditions of work and the life and health of his/her subordinates. However, the actions taken by the management will not suffice on their own, because this is mainly the employees, through their behaviour, sometimes risky and hazardous, who influence the safety level in

workplace. Hence the importance of cooperation between the workers and employer [1, 2, 4, 6].

Safety culture, however, refers not only to organizations but also a society, a group of people and individuals. Desired and undesired safety culture can be identified with regard to safety culture of an organization, a group of people, as well as individuals.

Each organization has got its own unique safety culture, therefore, organizations can be differentiated with respect to their safety culture.

In this context we can differentiate between desired or undesired and good or bad safety culture. Organization abilities to generate decisions, attitudes and behaviour, organizational, technical, training and motivational achievements, these abilities which bring the organization closer to the absolute safety criterion define the extent to which its safety culture is desired or good.

After Pidgeon, the desired safety culture is characterised by:

- High value given to life and health,
- Lack of acceptance for hazardous behaviour and risk-takers,
- Disposition to eliminate any hazards,
- Need to clarify the reasons behind accidents that have happened [17, 22].

High safety culture is also related to each member personal sense of responsibility for the safety issues, which is manifested in everyday life. Such behaviour should be formed and continuously strengthen as it does not always agree with "the human nature" [3, 6].

The most often mentioned features which characterize high safety culture are: safety treated as a fundamental value, senior management commitment and leadership, employees commitment – participation and power transfer, the sense of personal responsibility of each employee for safety issues, free and open communication, OHS (Occupational Health and Safety) trainings adapted to the work specifics and employees' needs.

Additionally, the employees:

- Reach out beyond their duties with regard to hazards and risky behaviour identification and taking the corrective actions,
- Show a proactive stance and constant care for their own and others safety.

Low safety culture will be characterized, among others, by superiors showing no interest for safety issues, no need to comply with legal regulations and regarding them as useless, low standing of OHS issues in the value system of company's community, supporting risky behaviour, not using safety devices and personal protection equipment [9, 22].

Low safety culture may as well originate from lack of sufficient knowledge with regard to safety and work organization demonstrated by both the employers and medium level supervisors, employers' insufficient economic motivation to ensure safe work conditions, lack of motivation among the employees to perform their tasks in a safe manner.

The safety culture status – desired or undesired – in an organization depends on its all members: on senior management, who set the safety goals, rules and plans, as well as on employees who shape the safety culture with their conduct and attitudes. It is important that high level of safety culture characterizes all elements of human activity. Safety culture

in an enterprise premises must involve employees' personal culture and their behaviour. It should be shaped at all stages of human life, because an employee of low personal safety culture will not demonstrate high safety culture in his/her workplace. Therefore, development of desired safety culture should be initiated already in the school education phase [12, 13].

Safety culture should be continually developed to maintain its high level and to further improve it.

Safety culture development must be a continuous process, because the actual culture shift is difficult and time-demanding. One-off actions to improve safety culture will bring only seeming effects, as they will reach only the most superficial culture stratum, termed "artefact" by Schein [13, 21]. To maintain a high level of safety culture we also need to reach deeper culture strata, i.e. the recognized values and fundamental assumptions.

During safety culture development three elements should be given special attention:

- The physical work environment (tools, machinery, workplace organization),
- Employees' behaviour (complying with OHS regulations, information forwarding and cooperation, showing care for safety that reaches beyond standard duties),
- Employees' intrinsic features (knowledge, skills, motivation).

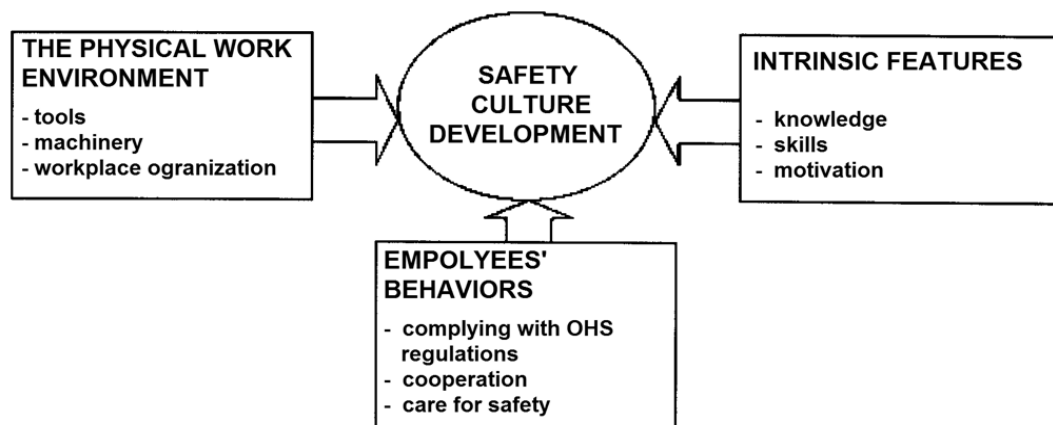The safety culture development model, shown in fig. 8.1 below, illustrates these three elements:

Fig. 8.1 Safety culture development

Reference: D. Podgórski, Z. Pawłowska, Podstawy systemowego zarządzania bezpieczeństwem i higieną pracy, Wydawnictwo CIOP-PIB, Warszawa 2004 [13]

The above model shows that the effective development of high safety culture is influenced not only by work physical environment, but also by employees' behaviour and their individual features. That is why, in order to achieve the desired level of safety culture it is necessary to ensure safe work conditions (machines and devices in working order, safe organization of workplace, etc.), to develop safe behaviour of employees (complying with OHS regulations, cooperation among employees and between employees and superiors, etc.) and to focus on employees' individual features (trainings, relevant motivation to behave safely, etc.)

Development of effective safety culture depends also on:

- Open and frank communication related to advising the employees about hazards and risks
- Management commitment, expressing personal concern and care for employees safety, complying with OHS regulations and handling the safety issues on equal terms with production issues.
- Employees participation, for example participation in developing of in-house standards and documentation related to OHS, in activities and decision-making in company
- OHS education, corresponding to the job performed and employees' needs
- Accident analysis, reporting and analyzing of incident and potential incidents that occurred in the workplace, identification of causes and taking preventive measures
- Motivation and support awarded to safe behaviour, expressing the approval and recognition for employees who act safely and who engage in actions aiming at improvement of safety in the workplace
- Cooperation among the employees and the atmosphere of understanding and trust between the management and employees and between employees of various departments and organizational levels.

Additional factors that are conducive for development of safety culture:
- Reinforcing the sense of community and developing work-related sense of pride among the employees,
- Enabling the professional development and fulfilment of their own occupational ambition within company,
- Stress management through, among others, stress level assessment and monitoring among the employees , work satisfaction and pro-health prophylactic,
- Promoting safe behaviour outside the workplace (on the way home, at home, during leisure) [2, 6, 8, 13, 14, 18].

All these actions help to develop safety culture on a high level, however, these cannot be one-off events, otherwise their effect will be short-lived. Safety culture requires constant perfecting.

Modification of technology, organization and process engineering with the aim to improve the safety level, which is not accompanied by changes in cultural conditioning of conduct, most of the time will not give requested results, because the beneficial effect of changes in technology is blighted by taking up risky behaviours. The level of safety culture influences directly the employees' attitudes relating to safety. Development of the desired safety culture, through changes in value system and employees' attitudes, helps toward improving the OHS conditions in an enterprise and amplifies employees' motivation and commitment and their job satisfaction. Following this, the employees will comply with OHS regulations, hence the number of accidents will decrease. Developing the desired safety culture is fundamental to ensure the work safety and to decrease the number of accidents. It is important to give special attention to work environment, behaviour and individual characteristics of employees.

Developing safety culture requires constant studies of this culture, which will allow to evaluate its level. Thanks to such studies, it is possible to determine what elements of culture require improvement, what steps should be taken to reach its high level [8, 11, 13].

8.4   Subject, method and results of studies

The object of the study described in this paper is a water and sewage company. However, its name will not be exposed as it was not agreed as well as to permit the employees to give the reliable answer, and this was distinctly stressed during the briefing before the study proceeded.

The company's Mission is to meet the dwellers and industry demand in the above mentioned area with regard to uninterrupted delivery of water and continuous collection of sewage.

The study consisted in analysis of the influence that employees' attitudes and behaviour have on work safety culture in the enterprise studied. The object of the study were 140 randomly selected persons, holding different positions; 134 surveys were suitable for further processing.

The analysis of the influence that employees' attitudes and behaviour have on work safety culture in the enterprise was carried out on the principle of safety culture development model, which comprises elements such as: work physical environment, employees' individual features and behaviour.

To obtain the necessary information the following study methods were used:

- Survey,
- Interview,
- analysis of documentation.

The analysis of the employees' attitudes and behaviour was carried out on the basis of the survey which consisted of 21 closed questions. The employees had to chose one from the answers listed.

8.5   Analysis of the study of work material environment and work conditions in the enterprise

The work environment is one of the elements that influence development of the safety culture in an enterprise and its investigation is a legal obligation. Work environment comprises the total of material and social factors, which employees encounter when working and which can constitute a safety or even life hazard. The material factors in work environment include, among others: plant premises, machinery, tools, equipment, buildings, rooms and other factors of physical and chemical nature, for example: meteorological conditions (microclimate) and lighting, acoustic and mechanical vibrations (noise, vibrations, shocks), chemical substances, industrial metals, gases, greases, oils. Social work conditions comprise interpersonal relations, social living conditions and employees' participation in the organization activities. Study methods such as interview and the analysis of documentation were applied to obtain information needed to assess the work environment in the studied enterprise.

The enterprise carries out the OHS controls and the measurements of harmful factors, i.e. dust, harmful chemical substances and noise. All hazards are identified and documented

and the occupational hazards are assessed. Additionally, other instructions list the jobs done at heights and jobs that must be done by two people. OHS as well as fire-protection controls are regularly carried out by OHS inspector and results of each control are documented in the relevant inspection diary in a form of a report. The report if forwarded further to the Board of Directors and the irregularities recorded are corrected. In addition, once a year complex OHS inspections are carried out in each of company's facilities, with the participation of a special OHS commission. The results of such an inspection are passed on to the Board, and the identified faults and shortcomings are removed or, if difficult to eliminate, they are included in the renovation schedule for next year.

The analysis of the report of the environmental study that was carried out in the enterprise shows that the harmful factors do not exceed the standards allowed. Work conditions are in accordance with requirements.

Interview with the OHS Inspector and the analysis of documentation prove that the work environment and OHS conditions are in accordance with standards and are continually improving and the workplace hazards are being successively eliminated within bounds of possibility. The company do cares for its employees and the natural environment.

8.6   The analysis of accident rate

The statistical accident files of the years: 2006 – 2010 were studied to analyse the structure of accidents at work in the enterprise. The following criteria were considered: sex, birth year, work experience in years, profession performed, days of incapacity for work after an accident, place of accident, type of injury, cause of accident. The causes were classified in accordance with the list of accident causes which is in force when the statistical accident files are compiled.

The analysis of the above data for accident types and causes in years 2006-2010 shows that:

- 16 accidents happened in the enterprise in the years 2006-2010.
- 6 women and 10 men were subject to accidents
- The average period of work in this enterprise among the injured was 9 years and 6 months.
- With respect to their results all the accidents were classified as minor accidents,
- The persons who were injured the most often held posts:
    - o   Water and sewage system plumbing and maintenance fitter, plumbing and maintenance fitter (1 time), sewage treatment plant fitter, electricity fitter – this position entails use of various manual and electric tools which escalates the accident risk
    - o   Electrician – this position entails increased risk of electric shock.
- The total of "incapacity for work" days related to the accidents at work in the studied period amounted to 272 days. The most frequent injuries caused by accidents at work were sprain and dislocation of joints of upper and lower limbs, thigh injury and eyes injury.
- The most frequent causes of accident were:
    - o   Surprise at unexpected event,

o   Incorrect organization of workplace,
o   Ignorance about hazards,
o   Wrong work speed,
o   Insufficient concentration on the performed action,
o   Lack of supervision,
o   Organizational shortcomings,
o   Incorrect use of material factor.

- The average number of accidents in the studied period of time amounted to just over 3,2 accidents per year. In relation to the number of people employed – 315 persons – it can be assumed that annually 1% of the employees are subject to accidents. This fact proves that the accident rate in the company is very low. Since all the accidents are classified as minor, it can be stated that work safety in the company presents good level.

8.7   Results of studies relating to employees' attitudes and behaviour

The results obtained in the study show the influence of employees attitudes and behaviour on development of safety culture in the enterprise. 56% of the employees surveyed claim to be motivated to secure working through posters, 52% consider that their superiors appreciate these employees who act in accordance with the regulations and who respect OHS issues, 8% actively submit their comments and concepts regarding OHS improvement.

58% of employees surveyed reproach employees who do not comply with OHS regulations, whereas 23% report this problem to a superior, what attests to understanding of importance of work safety issues and hazards. 42% affirm that the employees participate in hazard identification and risk assessment at their workplace.

The study shows that as many as 63% of persons surveyed think that all employees have an effect on creating safe work conditions in the enterprise. 84% consider OHS regulations as the principles protecting from accidents, whereas 62% feel responsible for the safety of their co-workers. 84% of employees know the hazards related to their workplace. Facing hazard at workplace 86% will report it to their superior, 46% will not take any risky actions during their work, whereas 52% will refuse to work if the workplace does not meet OHS requirements. 46% consider incorrect employees behaviour to be the most frequent accident cause.

46% of the persons surveyed think that OHS training is necessary to work in safe conditions, 56% claim that all accidents which happen in the enterprise are discussed at trainings, 28% confirm that the consequences of accidents at work are discussed and 16% that employees' propositions and comments concerning improvement of OHS are discussed at the trainings. This demonstrates that the incidents occurring in the enterprise are discussed completely and that the employees can make their propositions and comments aiming at raising the safety level.

In the opinion of 22% of the employees the relations among the employees in the company's facilities are good, there is an open and frank communication and cooperation, whereas 34% of the surveyed think that the atmosphere in the enterprise is favourable for open and frank discussions about the safety at work.

8.8   Final conclusions

The accomplishment of this paper goals required the analysis of literature, analysis of documentation in the studied enterprise, as well as interviews and anonymous survey among the employees. The influence of employees attitudes and behaviour on safety culture development in the enterprise was studied on the basis of safety culture development model including the elements such as: physical work environment and employees behaviour, attitudes and individual characteristics. The results of the conducted studies affirm that the safety culture in an enterprise is affected not only by the work environment but also by the employees attitudes and behaviour.

The assumptions of indirect safety culture diagnosis say that if the work conditions are in accordance with the requirements, the accidents happen rarely and the employees only sporadically break the OHS regulations, then this status represents a desired safety culture.

The studies prove that most of the employees obey the regulations and try not to take any risky actions; they also feel responsible for their own and co-workers' safety; the environment and work conditions are in accordance with legal requirements and the accidents happen rarely.

In the enterprise studied the safety culture is high, the evidence of which is given by qualities which are most often listed as characteristic of high safety culture in an enterprise, such as: sense of personal responsibility of every employee for safety matters, lack of approval for risk-takers, obeying the safety and health regulations and recognizing their importance.

The safety culture in an enterprise is affected by all its employees. Development of safe work conditions, including correct work organization and material and social work environment is a challenge that modern employer faces. However, as the statistics of causes of work accidents show, the employees also face this challenge being on one hand an object of employer's actions and on the other affecting the work conditions development in active manner through their attitudes and behaviour.

REFERENCES

[1]   Bugajska J., Konarska M., Kurkus-Rozowska B., Łuczak A.: Psychofizjologiczne problemy człowieka w środowisku pracy, CIOP 1998.

[2]   Cheszel-Zgorzelska K., Lewkowicz B.: Psychofizyczne właściwości człowieka a wykonywanie pracy, ODDK, Gdańsk 1999.

[3]   Bird F.E., Germain G.L.: Damage Control. A New Horizon in Accident Prevention and Cost Improvement, American Management Association, New York 1996.

[4]   Gembalska – Kwiecień A. Czynnik ludzki w powodowaniu błędów podczas pracy, w: „Praca Zdrowie Bezpieczeństwo", Katowice nr 1/2005.

[5]   Gembalska – Kwiecień A., Kurek A. Kultura bezpieczeństwa pracy w hutnictwie w oparciu o przeprowadzone badania empiryczne, w: „Praca Zdrowie Bezpieczeństwo", Katowice nr 4/2005.

[6]   Gembalska – Kwiecień A., Kółkowska B. Badanie wpływu wybranych cech osobowości na bezpieczne wykonywanie pracy, w: Zeszyty Naukowe Politechniki Śląskiej, „Zarządzanie" zeszyt 33, Gliwice 2005.

[7]   Gembalska – Kwiecień A., Kurek A. Wpływ kultury bezpieczeństwa pracy na powsta-wanie wypadków przy pracy w hutnictwie, w: Zeszyty Naukowe Politechniki Śląskiej, „Zarządzanie" z. 33, Gliwice 2005.

[8]   Lewandowski J.: Zarządzanie bezpieczeństwem pracy w przedsiębiorstwie, Wydawnic-two Politechniki Łódzkiej, 2000r.

[9]   Makin P., Cooper C.L., Cox Ch.J.: Organizacja a kontrakt psychologiczny, Wydawnic-two PWN, Warszawa 2000r.

[10] Milczarek M.: Kultura bezpieczeństwa w przedsiębiorstwie - nowe spojrzenie na za-gadnienia bezpieczeństwa pracy, Bezpieczeństwo Pracy- nauka i praktyka, nr 10/2000 Milczarek M.: Kultura bezpieczeństwa pracy. CIOP, Warszawa 2002.

[11] Milczarek M.: Ocena poziomu kultury bezpieczeństwa w przedsiębiorstwie, Bezpie-czeństwo Pracy- nauka i praktyka, nr 5/2001.

[12] Najmiec A., Milczarek M.: Indywidualne uwarunkowania bezpiecznych zachowań pra-cowników, Bezpieczeństwo pracy – nauka i praktyka, nr 6/2003.

[13] Podgórski D., Pawłowska Z.: Podstawy systemowego zarządzania bezpieczeństwem i higieną pracy, Wydawnictwo CIOP-PIB, Warszawa 2004r.

[14] Pracownia Psychologii Pracy Centralnego Instytutu Ochrony Pracy, http://www.stres.edu.pl/kultura.htm, dnia 24.11.2005.

[15] Słownik wyrazów obcych pod redakcją prof. dr Jana Tokarskiego, Wydawnictwo PWN, Warszawa 1980r.

[16] Słownik współczesnego języka polskiego, Wydawca Reader's Digest Przegląd Sp. z o.o., Warszawa 1998r., s. 441.

[17] Stoner A.F., Freeman R. E., Gilbert D. R.: Kierowanie, Wydawnictwo PWE, Warszawa 2001r.

[18] Studenski R.: Organizacja bezpiecznej pracy w przedsiębiorstwie, Wydawnictwo Poli-techniki Śląskiej, Gliwice 1996r.

[19] Studenski R.: Kierowanie firmą bez wypadków i chorób zawodowych, Wydawnictwo Tarbonus, Tarnobrzeg 2000r.

[20] Studenski R.: Technika, człowiek czy skłonność do ryzyka, Atest: nr 11/2003

[21] Studenski R.: Kultura bezpieczeństwa pracy w przedsiębiorstwie, Bezpieczeństwo Pra-cy- nauka i praktyka, nr 9/2000.

[22] Studenski R.: Techniczne, organizacyjne i psychologiczne uwarunkowania przyczyno-wości wypadkowej, Wyższa Szkoła Zarządzania Ochroną Pracy w Katowicach, I Kon-ferencja Naukowa Bezpieczeństwo Pracy – Edukacja – Środowisko: 05.01.2007r.