The Importance to Evaluate Risk of Occupational Health and Safety

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Abstract: - This paper contains the elements of occupational health and safety management system and a case study regarding risk assessment of accidents and occupational health at workplaces. Evaluation results are presented in the paper using the method of formalized instruments. Schedules have been identified for assessment of job descriptions and proposed measures for the factors to which the risk exceeds the part of acceptability for the workplace. Also, it was identified a hierarchical order of preventive measures.

Key-Words: - quality, risk factors, risk management, assessment, health and safety management system.

1 Introduction

In the changing environment, organizations are becoming more and more aware of the need for implementing a health and safety management system. Trained and experienced consultants of advance provide specialized assistance and guidance for the implementation of occupational health and safety management system (OHSAS) in any organization. Advance has assisted number of organizations in this endeavor and has been able to install a robust OHSAS [1], [2].

Management system of safety and health at work is a component of general management.

This system aims to:

• Awareness and knowledge of employees in compliance with norms and standards of safety and health at work;

• Elimination or reduction of risk factors for injury and / or professional disease;

• Getting to the performance of state employees by providing good job;

• Favorable perception by providers, beneficiaries and society in general.

Implementation and certification of a management system of safety and health (occupational) is an effective tool for organizing and focusing an organization to better management of occupational risks (accidents, incidents, occupational diseases) and improve performance considerably professional.

The objective is to help an organization to understand the hazards and risks which can be minimized or removed to assure its employees and other interested parties that they are practicing a hazardless process in meeting the product requirements of their customers.

The road map for OH&S is illustrated in figure 1.

Fig. 1 The road map for OH&S

2 Occupational Health and Safety Management System

Development and implementation of occupational health and safety management system in an organization is justified by the following considerations:

- a desire to create a unified framework for OH&S management activities;
- implementing the principles and methods of improving the performance of OH&S;
- protecting employees by reducing / eliminating the dangers of accidents and professional illness;
- limiting the civil and criminal liability by satisfying the legal regulations on OH&S and other requirements applicable;
- raising staff consciousness and responsibility towards the health and safety;
- increase customer confidence;
- improving management practices;
- improving the image of the organization, by satisfying the requirements relating to OH&S.

OH&S management system model is presented in figure 2.

The activities in a professional work environment that does not endanger the safety or health worker personnel represents a priority of any organization, in this respect are applied the principle of identification, evaluation, avoidance, and control risk of injury and illness associated professional activities the organization.

Assessing the level of security is a systematic examination of all aspects of work undertaken to determine the sources that may cause bodily harm, constituting the basis for substantiation of preventive measures and control risks. The risk assessment work to be initiated by the legal name of the person, in consultation with all those involved in the work.

Assessment should be structured so as to cover all relevant hazards and risks.

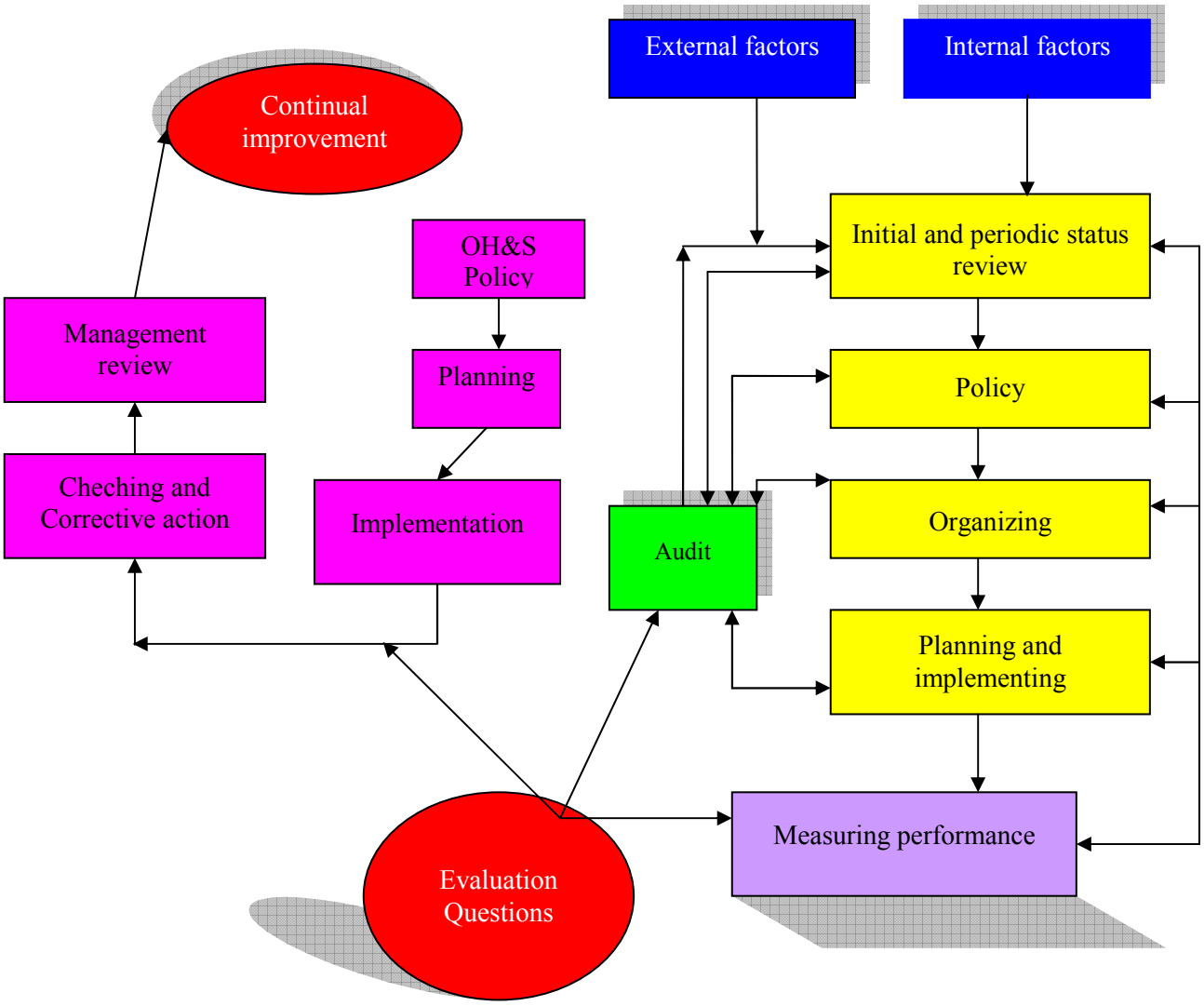

Fig. 2 OH&S management system model

3 Risk Management Process

Risk management is activity directed towards the assessing, mitigating to an acceptable level and monitoring of risks. In some cases the acceptable risk may be near zero. Risks can come from accidents, natural causes and disasters as well as deliberate attacks from an adversary [1], [5].

When a risk is identified, begin by evaluating research primarily the possibility of eliminating it at source.

The procedure of risk assessment and management consist of:

1. Establish plan for occupational risk assessment ;
2. Structuring evaluation: addressing the decision on how to approach (geographical, functional / process oriented / focused on the flow);
3. Collecting information: environment / tasks of working / exposed person / experience;
4. Identify hazards;
5. Identification of exposed persons;
6. Identifying types of exposure;
7. Risk assessment: occurrence probability / severity of consequences, in real terms;
8. Possible stage to eliminate or control risks;
9. Setting priorities for action and adoption of security measures;
10. Implementation and enforcement of security measures;
11. Registration of the assessment;
12. Measurement (assessment) effectiveness;
13. Control (regular or in case of changes in the system):

- The validity of their assessment;
- Review is required.

4 Risk Assessment of Accidents and Occupational Health at Workplaces

Risk assessment of accidents and occupational health at workplaces is a method that aims to determine the quantitative level of risk job, based on systemic analysis and risk assessment.

The essence of the method consists in identification of all risk factors examined at the workplace based on checklists and quantifying size default risk based on the combination of severity and maximum frequency of predictable consequences.

Security level for a workplace is inversely proportional to the level of risk.

Method can be used during the design phase, as well as the operational phase. But its application requires complex formed team of people specialized in safety and technology analysis (evaluators and technologists).

The method includes the following mandatory steps:

- The evaluation team;
- The definition of analysis (workplace);
- Identification of risk factors in the system;
- Assessing the risks of accidents and occupational health;
- Prioritize risks and establish priorities for prevention;
- Proposal of preventive measures.

There are several variations on this matrix that can be found in the literature [3], [4].

The scale of risk assessment (risk matrix) combination of severity of consequences and probability of occurrence is presented in table 1. The following risk matrix is used in this case study.

Table 1 The risk matrix

		PROBABILITY					
		1	2	3	4	5	6
		EXTREMELY RARE	IMPROBABLE	RARELY	OCCASIONAL	PROBABLE	FREQUENT
SEVERITY	CONSEQUENCE	$P>10^{-1}$/ year	$P > 10^{-1}$/ year $P < 5^{-1}$/ year	$P > 5^{-1}$/ year $P < 2^{-1}$/ year	$P > 2^{-1}$/ year $P < 1^{-1}$/ year	$P > 1^{-1}$/year $P < 1^{-1}$/month	$P > 1^{-1}$/ month
7	HAZARD	(7,1)	(7,2)	(7,3)	(7,4)	(7,5)	(7,6)
6	CATASTROPHIC	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)
5	CRITICAL	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
4	HIGH	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
3	MEDIUM	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
2	LOW	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
1	NEGLIJABLE	(1,1)	(1,2)	(1,3)	1,4)	(1,5)	(1,6)

Steps necessary to assess the safety work in a system described above is performed using the following work tools:

- List of identification of risk factors;
- List of possible consequences of the risk factors on the human body;
- Scale quotation seriousness and potential consequences;
- The scale of risk assessment;
- Scale of employment levels of risk and levels of security;
- Summary of proposed measures.

There are identified the risk factors.
a. Risk factors of production system:
- Risk factors engineer;
- Risk factors heat;
- Risk factors electric;
- Risk factors chemical;

b. Risk factors of work environment:
- Physical risk factors;
- Risk factors chemical;

c. Risk factors for pregnancy own work:
- Over-physical;
- Over mental;

d. Risk factors of own performer:
- Actions wrong;
- Failure.

The percentage of identified risk factors to the work system elements is illustrated in figure 3.

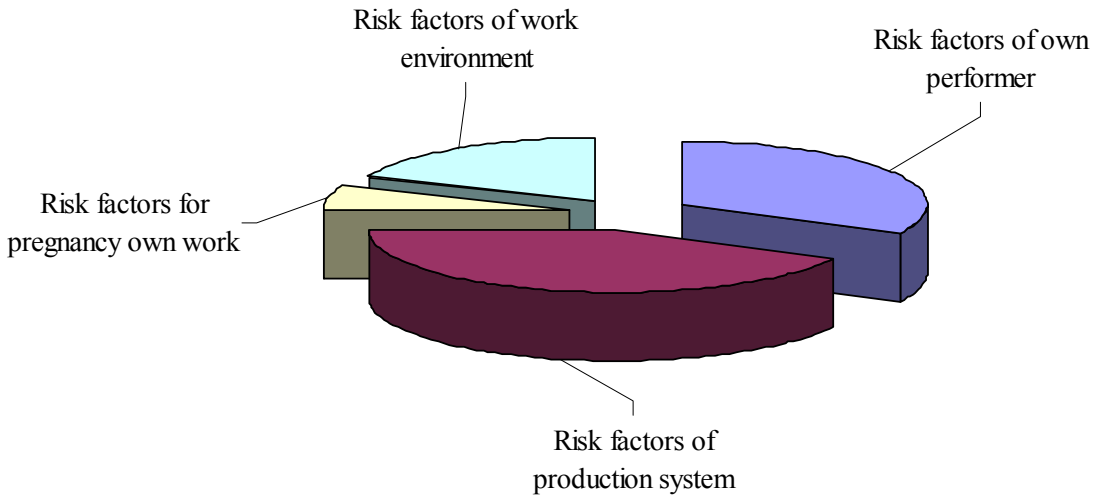

Fig. 3 The percentage of identified risk factors

5 Conclusions

OHSAS 18001:2007 standard is not the solution to all problems of security and health at work of an organization, but offers a practical way to achieve a healthier work and more secure, and continuously improve performance through a comprehensive management.

Summary of main changes:
- "health" is given greater importance to be in equilibrium with "security";
- concern is the occupational safety, less damage on material parts;
- the term "incident" is used instead of "accident";
- incorporate the behavior, capacities and other human factors as important elements in hazard identification, risk assessment and establish corrective measures / preventive;
- have been introduced new requirements delegating control, as part of the OH&S plan
- for participation, consultation, investigation of incidents;
- have added new definitions for "incident", "risk", "risk assessment" and revised existing definitions.

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