

Importance of Occupational Health and Safety Management System Implementation

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Abstract: *Many workplaces have hazards. Hazards can cause harm or injury. Occupational health and safety is crucial part of every workplace and in the most cases employees' lives depend on it. This fact is sustainable, because every human has natural necessity to take care of his health and safety, Also, state and especially employers need to take care of theirs' employees because only employees who have excellent health and safety care are good quality and productive employees. Industry and society development depend on healthy employees. In the future, employees are the only one who will be able to contribute in overall growth of GDP (Gross Domestic Product). Based on that, today there are a number of international and national standards and laws that governing health and safety area.*

Keywords: *OHSMS, safety, risk, management system, software*

1. INTRODUCTION

A very important fact is that existing laws and regulations in Serbia from year 2005 needed changing. Regulation like that was the way behind EU established regulations, which caused writing of new occupational health and safety law. Now, the only thing we need to do is correct implementation and unconditionally to obey the law. But, one thing need to be mentioned. There is no part about occupational health and safety management system (OHSMS). This lead to conclusion that organizations have to design their own without any framework offered. Fortunately, countries in EU, USA and Australia developed number of guidelines that would be useful. Implementation of OHSMS in some countries is legal requirement.

First of all, there is no correct and officially recognized OHSMS definition [19]. The main problem in definitions that

is not clearly defined whether management system includes only management components or can include also technical/operational components.

Second, OHSMS need to be integrated in overall management system of the organization. Implementation of management system such OHSMS is reflected on systematically elimination of injury, illness or fatal outcome in the workplace. This would be successful if the hazards are eliminated or controlled before any adverse event occurs. That would be the ultimate aim of OHSMS. Based on that, content and scope of OHSMS is determined with hazard identification and implementing corresponding measures [14]. This part is the most important and if is performed poorly then we didn't do anything for health and safety improvement and very good chance that OHSMS become just "font on the paper" [20]. There are a lot of reasons why

develop and implement successful occupational health and safety management system. In their book Bateman, King and Lewis mentioned three important reasons implementing such a system: humanitarian, financial and legal [1]. No matter which of listed reason is taken it's very important to take at least one into consideration.

In Serbia, everyone think that the only valid document is risk assessment act and nobody thinks much wider. The focus is only on risk management, but risk management is just one part of much bigger puzzle. Our law prescribes duties that organization must to meet that kind of requirements. However, about 60% (32%+21%+7%) of organization meet some parts of proposed requirements, but still large number, about 40%, of organizations didn't meet the primary (basic) law requirements - figure 1 [16].

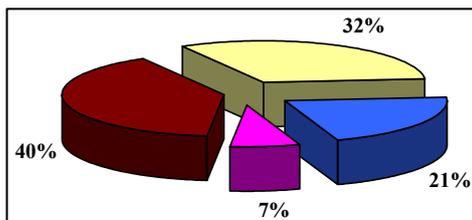


Figure 1 – Percentual number of organizations that did and didn't meet law requirements (2007)

Regardless the fact that OHSMS have positive effects, some authors from more academic circles has some suggestions. They suggested that when apply OHSMS external regulatory approaches would be weak [2], false sense of security [6], developing attitudes like always blame the employee [15] [22] and employees-management misunderstanding [12].

The success of OHSMS is likely to be dependent on the nature of the intervention, characteristics of the workplace and characteristics of the external environment [19]. One way of successful and easier OHSMS

implementation is applying of adequate software tool.

The purpose of this paper is to show how important is implementing occupational health and safety management system. Also, we will present one part of complex OHSMS software tool. It refers to hazard identification and defines measures implementation.

2. OHSMS CHARACTERISTICS AND MAIN ELEMENTS

In a big systematic review of OHSMS [19] is stated that large number of standards, guidelines and audits in a field of occupational health and safety that have been developed and studied. The key for success is that the impact of OHSMS needs to be observed timely.

Some initial conclusions based on practice are made. Results of such a management system, like OHSMS, are variable. OHSMS is a combination of the management organizational arrangements and the specific program elements that are combined to improve health and safety performance [3]. Simplified, this type of management system can be understood as process of combining people, policies and resources. Improvements in the field of health and safety affect all area of organization, from employees to organization's productivity and costs. Broadly, an OHSMS is a planned, documented and verifiable method of managing hazards and associated risks [4].

Many times we said what positive effects have implementing OHSMS. But, this type of management system can also have detrimental affects if organizations don't take certain values and conditions into account. That would be possible if there isn't understanding and dialogue between management and employees. This is crucial for successful occupational health and safety management system.

Every organizational and management decision need to be complied with the needs of OHSMS. This way will be ensured continual improvement in the filed of occupational health and safety.

Today, there are many different standards and guidelines that help organization to organize OHSMS. It depends which country organization belongs, whether is EU, USA, Canada or Australia and New Zealand. The most mentioned in the practice are OHSAS 18001, BS 8800, AS/NZ 4801, ILO-OSH 2001 and ANSI Z10. Regardless that every continent has own standard or national guideline, something is very common for all these documents. Every single of them are based on known principle called Deming Plan-Do-Check-Act or PDCA cycle [21]. Based on this the only one conclusion could be made. Many similarities and differences exist between Quality Management (QM) and OHSMS [5]. We may say that QM supports continual development of OHSMS.

In practice organizations have different requirements and that is something that competent person for implementing OHSMS need to have on his mind. There are four general characteristics [5]:

- system objectives (ethical, legal, economic...),
- specification of system elements and their inter-relationship (systems not necessary have the same elements),
- determining the relationship of the OHSMS to other systems,
- requirements for system maintenance.

A few authors tried to define what OHSMS consist. Their conclusion is that universal OHSMS has 27 elements, and 16 primary elements are as follows [18]:

- management commitment and resources,
- employee participation,
- occupational health and safety policy,
- goals and objectives,
- performance measures,

- system planning and development,
- OHSMS manual and procedures,
- training system,
- hazard control system,
- preventive and corrective action system,
- procurement and contracting,
- communication system,
- evaluation system,
- continual improvement,
- integration,
- management review.

Reading these elements of OHSMS we may say that some elements could be attached to much narrow category. The main elements of the OHSMS are:

- policy,
- organizing
- planning and implementation,
- evaluation and
- action for improvement.

Categorization showed above is much easier to use. As we mentioned earlier, Deming PDCA cycle is a paradigm for every successful OHSMS. The new look of OHSMS according to PDCA cycle is shown below (figure 2).

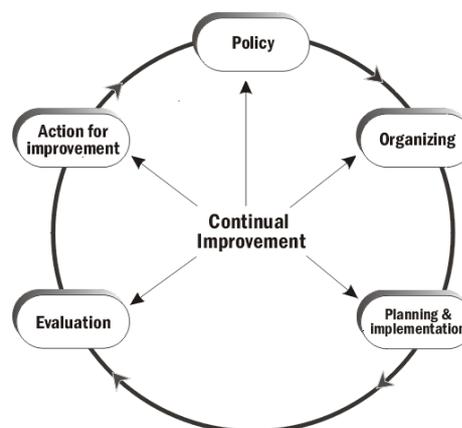


Figure 2 – Main elements of OHSMS

2.1 Policy

Occupational health and safety policy need to be set in consultation between employer and employees and their

representatives. When we are talking about policy it is necessary to note that OHSMS need to be compatible with other management systems in the organization. Policy will be the most effective if occupational health and safety results will be integrated across organization.

2.2 Organizing

Employer and management should have general responsibility for employee's health and safety. They need to be promoters of development and implementation of OHSMS and to give an example to others how management system like this functioning. Also, in this part of OHSMS the focus is on establishing training, communication and documentation.

2.3 Planning and implementation

Planning and implementation need to be carried out in consultation with employees and their representatives. Planning need to meet the minimum of legal requirements as well as organization's need for development and improving. Also, this part includes hazard identification and risk assessment. This is one of the essential drivers to whole OHSMS. Identification is the best to be applied as multidisciplinary approach which includes technical, human and organizational aspects. After identification and risk assessment certain preventive measures need to be implemented. Implementation must be compatible with existing procedures and rules of organization.

2.4 Evaluation

Occupational health and safety performance has to be measured, monitored and recorded. Both qualitative and quantitative measures should be established. Within this step there is one type of investigation about work-related injuries, diseases and accidents and their impact on employees' health and safety.

Also, periodic audits will be requested to determine whether OHSMS is adequate and effective.

2.5 Action for improvement

Continual improvement need to be established for relevant elements in OHSMS as well as for whole system. Action for improvement gets relevant data from management review. Management review evaluates the whole management system, identify differences timely and provide feedback to person who is responsible for that job to react properly.

Sometimes, elements of OHSMS are compared with others in order to improve health and safety performance.

3. PROBLEMS AND BENEFITS OF THE OHSMS

First of all OSHMS is an integral part of the overall management system of the organization [1]. Second, we need to take one step further from risk management to OHSMS. Countries such USA, Canada, Australia and European countries developed such a management system already. Starting point should be establishing framework for regulating health and safety. This framework varies across the world. One of the best ways to correctly and effectively is implementing legislation. Legislation framework is different from one country to another and usually consists elements such Acts, Regulations, Directives (across the EU), Codes of Practice and Standards.

Many problems and benefits are associated with OHSMS [7]. The main benefits are:

- authorities have more confidence in organizations which have OHSMS,
- health and safety is given the same emphasis as other organization's objectives (quality and finance),
- systematically addressed health and safety risks,

- organization is prepared for emergency,
- organization is competitive on the market.

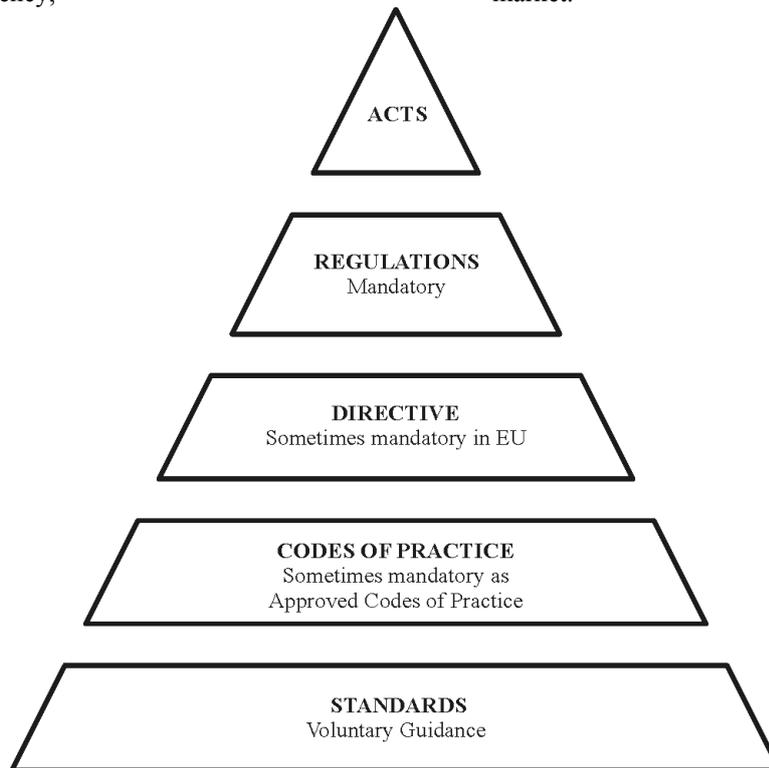


Figure 3 – Typical legislation framework

However, there are several problems associated with OHSMS. But, the good thing is that these problems are resolvable. The main problems are [7]:

- procedures aren't visible at workplace level,
- documentation is excessive,
- implementation sometimes, without reason, lead to reduction of the resources,
- poor system implementation is result of lack of employers' and employees' understanding,
- the performance review is not seriously implemented.

One of the key attribute of OHSMS is ability to manage multitude of complex hazards [13].

4. WHY TO IMPLEMENT OHSMS?

Occupational health and safety affects all aspects of work. In a low hazard organization, health and safety may be supervised by a single competent manager and in high hazard manufacturing plant need many different specialists [7]. Regardless the fact that in industrialized countries number of accidents and work-related injuries is decreased the improvement in field of occupational health and safety never stops. And today it needs more than ever real advances. There are many statistical data how important is implementation of OHSMS. The data are worrying [8] [9] [10]. Some representative global data are shown in table 1 [7].

Event	Average daily	Annually
Work-related death	5.000	2 000 000
Work-related deaths on children	60	22.000
Work-related accidents	740.000	270.000.000
Work-related disease	438.000	160.000.000
Hazardous substance deaths	1205	440.000
Asbestos related deaths	274	160.000

Table 1 - Global work-related adverse events (2004)

Unfortunately accidents happen and OHSMS is one successful tool secure to come out as a winner in battle like this. When accident happens employees and their families costs very much. Also, they can hurt companies. Personal injuries may cost make much greater then damage to equipment, property or lost production.

When we are talking about employee's injuries the unavoidable thing is insurance. Every year 750.000 employees take time off work because of work-related injuries or illnesses [9]. Employees must have insurance that cover injuries, illness and accident involving vehicles. Also, organizations need to provide building, equipment and third-party assurance. But, insurance covers just small portion of the accidents cost. It includes [9]:

- sick-pay,
- damage or loss of product and raw material,
- repairs of plant and equipment,
- overtime working and temporary employees,
- production delays,
- investigation time,
- fines.

Many studies found that insurance can not cover all the costs. Uninsured costs far

more outweigh insured costs (figure 4).

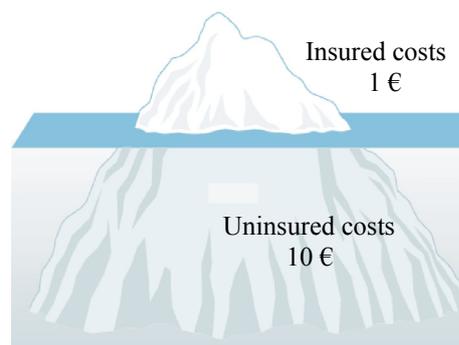


Figure 4 – Accident Iceberg

When you are looking iceberg you will see just one tenth of whole iceberg. The same situation is with costs caused by accidents. Uninsured costs are from twice up to 30 times paid in insurance premiums in the same year. Average uninsured costs are around 10 times the amount paid in premiums.

Implementing OHSMS organizations will be able to keep their employees and reduce injuries, illnesses, property and equipment damage as well as the costs caused by accidents. That led to fewer process stoppages and better quality. Complying with the law and other mandatory and voluntary guidances, organizations will avoid fines and in that way won't damage theirs publicity.

When accident occurs all organization (management and employees) will be under investigation. Inspectors won't have what to do in organizations with OHSMS. This approach to managing health and safety is tried and tested across world.

But, implementation is different from country to country. Effectiveness of OHSMS depends on support from much higher level, institutions such Government, Occupation Health and Safety Directorate, Association for Occupational Safety and Health, Association of Employers and relevant Universities.

5. SOFTWARE TOOL

This software solution will be crucial for OHSMS understanding and implementation. It isn't just basic software that helping people to solve their problems, but this software will be used for education of wide range of people. The approach like this enables continuously education. Application is developed as web based application with strong support for web services.

In this paper only one part of OHSMS software tool will be presented. This part includes (figure 5):

- basic informations about organization,
- hazard identification,
- quantitative and qualitative risk value,
- risk classification,
- measures that need to be implemented,
- responsible person.

The screenshot shows a web-based risk assessment tool. The main window is titled 'Procena rizika'. It features a sidebar on the left with a tree view containing items like 'Procena rizika', 'Definisanje predloga mera', and 'Izveštaji'. The main content area is divided into several sections:

- Procena rizika:** A header section with search and filter options.
- Procena rizika od identifikovane opasnosti:** A form with the following fields:
 - Aktivnost: 'Uzorkovanje na drugom radnom mestu'
 - 1) TP-Frekvencija: 'Uobičajeno (1-2) (4.0)'
 - 2) LI-Osiguranje događaja: 'Niska (2.0)'
 - 3) VP-Versnost/većina posledica: 'Mala do srednja, mala nezgodljivost (2.0)'
 - 4) RIZIK=TP x LI x VP=90
- Risk Level Indicator:** A horizontal bar with four segments: 'Niska opasnost (0-50)', 'Moderan (51-200)', 'Visok rizik (201-500)', and 'Kritičan rizik (501-1000)'. The 'Moderan' segment is highlighted in green.
- Komentar:** A text area with the note: 'U slučaju radnog mesta postoji više opasnosti, treba ih uzeti u obzir i proceniti ih zajedno.' Below it is a 'Procena' button.

Figure 5 – One part of software

This part of software solution should help to identify the risks, find major contributors, effective ways to reduce risk with improvement of understanding of complete process. One important thing about this software is that it is very flexible. It can be used in all types of organizations and integrated into overall management system of organizations. Specific user needs and requirements are

defined by type and size of organizations, number of workplaces, used equipment etc. We can define software scope and performance based on that. In some stages of using this software, user can import different types of materials (photos, drawings, layouts, illustrations etc). This has the function to define certain situation at organization.

Entire software solution is based on the model in EU countries. In the basis,

this software solution presents combination of:

- large occupational health and safety databases,
- procedures that user follows through OHSMS,
- procedures that allow user to finish all activities effectively and every step (or all OHSMS procedure) will be documented,
- large number of extern databases for different workplaces and
- databases of measures for risk minimizing.

Focus of further research will be software development and improvement. The main aim will be finalizing of overall OHSMS software according to our capabilities. Development of software like this indicates that field of occupational health and safety must be taken seriously. Therefore, this tool will be very important in OHSMS implementing.

The biggest advantage of this tool because is web-based solution. That is very important because all jobs about occupational health and safety are team jobs. Another advantage of web-based solution is that it can be dynamically integrate with other systems.

6. CONCLUSION

As Charles Darwin once said “it is not strongest of the species that survives, nor the most intelligent, but the most responsive to change”. This would be motto for the most of organizations, especially here in Serbia. The organizations need to keep on mind that if they want to compete more effectively in

the market must be very open to accept changes.

Providing a safe and healthy working environment is much more than just complying with current laws and regulation, it is a question of sustainability for the continuity of company operations. The positive impact of OHSMS, both on the reduction of hazards and risks and on productivity, need to be recognized by governments, employers and employees.

Like we told earlier there is no mandatory standards that organization need to follow and accept as obligation. Realizing the importance of OHSMS many organizations are trying to adopt developed guidelines to them. Adopting this kind of system is a signal that organization is very interested to gain profit and to be competitive at the market. A structured and well-organized occupational health and safety management system is essential for the maintenance of high health and safety standards within all organizations and countries. Besides that, OHSMS also broadens the base of every employee’s knowledge and skill.

Some general conclusion would be that all we need is better understanding the concept of OHSMS. The best way is that if health and safety would be founded in common sense and practicality. The software would be the tool that supports our desire for occupational health and safety implementation into our system. Of course, implementation must be correctly and on the right way managed.

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