

THE OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT IN THE NATIONAL DEFENCE SYSTEM - STRUCTURAL ARCHITECTURE

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Abstract: *This paper aims to describe the context and some theoretical approaches needed to analyze and justify the need to implement an occupational safety and health management system (OSHMS) in the National Defense System (NDS). The specialized literature includes a very small number of articles and no concrete approaches regarding OSHM in the field of national defense can be identified. As a result, a brief analysis of the main aspects that can be the subject of much more in-depth studies regarding the specific issue in this field was considered appropriate. The first part of this article includes a description of the specific context of NDS, whose objectives are constantly adapted to the dynamics of economic, geo-political and security factors that are constantly changing. Next, the most eloquent theoretical approaches related to OSHMS and risk management that could be adapted to NDS are mentioned. The final part of this paper is intended to be a proposed structural architecture of OSHMS in NDS. The form proposed by the group of authors is based on a detailed analysis of the literature in the field of OSH corroborated with the experiences acquired throughout the academic and in the military field of the members of the drafting group.*

Keywords: the occupational safety and health management (OSH), structural architecture of OSHMS, risk management, contextual challenges, OSH regulations

1. Introduction

The dynamics of changes in NDS due to the political, economic and international security context is at a level that was hard to imagine a few years ago. The economic and public health crises generated by the COVID-19 epidemic, terrorism at the international level, the emigrant crisis and, in the last year, the war in Ukraine have a major impact on the pace and level of development of NDS both from a structural and endowment point of view and in terms of the types of activities carried out. In this special context, the compliance with the specific legislation of

the activities in the field of OSH and the implementation of an own OSH system is a challenge in itself. The lack of consistent approaches regarding these types of regulations can lead to the organization and performance of the OSH activity at a very low level compared to the real need, resulting in insufficient assurance of the safety and health of the personnel working in NDS.

2. Contextual challenges specific to NDS

In order to adapt to the conditions created by the mentioned economic-social and

security framework, the measures taken by the decision-makers in the NDS must respond to the following challenges that may affect the activity of OSH:

- the dynamics of structural transformations in response to the requirements assumed through partnerships or as members of some organizations;
- personnel management that must be permanently adapted to the conditions on the labor market in order to offer a high level of attractiveness and to ensure an optimal level of training;
- equipping and operating the new equipment acquired through the endowment programs, especially in the case of Ministry of Defence (MoD). Most of the types of equipment newly entered into the endowment of the army require a high level of specialized training, the complexity of the activities leading to the need to establish strict OSH measures; for each accident sequence, the safety measures that may or may not be introduced in the system to be analyzed must be ranked, thus providing a system of trees specific to the accident sequence;
- the continuous change of the procedures for carrying out activities in order to adapt to the requirements of the external context and in the working environment specific to the alliances and partnerships to which Romania is a party.

Also, an important characteristic of the national defense field results from the fact that the type of activities carried out to fulfill the objectives is unprecedented in other organizations. The activities of maximum importance carried out according to the essential requirements of each structure in NDS, such as for example those specific to combat weapons and combat support in MoD (infantry, artillery, tanks, navy, air forces, etc.), those specific to terrorist alert intervention in Romanian Intelligence Service or those of intervention in the fight against internal crime in the Ministry of Internal Affairs are supported by specific activities of other

economic organizations and not only, such as: educational, construction, medical insurance activities of all types, activities of transport of materials and people, etc.

All these types of activities are in turn characterized by very high levels of risk and in the case of most of these risks with irreversible consequences for the exposed persons (disability or death), the measures that must be taken in accordance with the situation presented require a degree of versatility picked up.

As a short conclusion to what was presented previously, we can say that a simple compliance with the legal requirements in the field of OSH cannot be sufficient for the management of this field in NDS.

3. OSH management in NDS

The adaptation of domestic legislation to the requirements of national legislation is carried out with difficulty due to the following factors (Băbuț, 2021):

- the absence of a community or national legislative framework in the form of guidelines and/or codes of good practice for the unitary regulation of the adaptation of legislation within the NDS structures;
- the low level of adaptability to the evolution of legislation and theory specific to the field of OSH;
- the specifics related to information security within the NDS.

Also, the specialized literature at the national and international level does not include references related to the management of OSH activity in military structures and structures in which civil servants with special status work, with the exception of nuclear activities where the OSH issue has a consistent literature, the approaches being varied and complex. Adapted to other types of activities, at national and international level there are a multitude of good practice guides and manuals, these being designed to facilitate the understanding and application of principles and concepts related to OSH

management and OSH risk management. Their development led to the identification and continuous improvement of three major approaches to the effective management of OSH activity in organizations: the implementation of OSH management systems (OSHMS), behavior-based safety (BBS), and safety culture change programs within the NDS.

3.1 OSH management systems

An OSH management system can be defined as a system or part of a management system whose main objective is the implementation of the OSH policy with the help of tools that regulate the organization and performance of specific activities in order to achieve the desired level of personnel safety the organization.

Among the most important advantages of implementing an OSHMS highlighted in the specialized literature are:

- it provides a unified approach and a well-organized framework for domain management;
- it ensures a viable correlation with the incident legislation avoiding non-conformities;
- it ensures a realistic forecast of all that is necessary in terms of materials and costs used to achieve the objectives;
- it ensures the optimal framework for continuous improvement leading to the increase of the yield of the domain;
- it increases the level of involvement and awareness of all employees regarding the specific issue;
- it ensures a positive image for the organization's external environment and increases trust in the organization's management.

To ensure the functionality of a management system, it must contain the following essential elements: OSH policy, organization, planning and implementation, evaluation, improvement measures. The defining element for the optimal functioning of a system is related to evaluation and continuous improvement, based on the PDCA model (Plan - Do - Check - Act) known as Deming's cycle [6].

3.2 Behavior-Based Safety (BBS)

This approach involves the direct relationship of OSH managers with workers in order to promote direct intervention on individuals or groups with the aim of improving their OSH reaction/action and evaluating the resulting OSH-related behavior. In this sense, guiding behavior in beneficial directions is done by implementing an intervention at the moment when a stable reference of the frequency, duration and rate of the previous behavior is obtained [3]. This model (ACC – antecedent-behavior-consequence) has been used with great results, increasingly frequently for the prevention of undesirable events related to OSH [7].

3.3 Safety culture change programs

The term safety culture is defined in the literature by the attitudes and beliefs shared by workers regarding OSH [4]. Thus, the level of personnel security can become a value of the organization in itself. The manifestation of the safety culture is given by the safety climate which is defined by the perceptions regarding the OSH. Safety culture programs, recent approaches to OSH management, emphasize the development of the notions that define this term, starting from top managers to the executive level of the organization. Thus, by implementing coherent and concrete measures to strengthen the security culture, a stable environment is created based on the adequate understanding of the responsibilities related to OSH [4].

4. Risk management in NDS

The specificity of the activities carried out within the structures of NDS makes the assessment of the impact of risk factors on the conduct and even the result of these activities to be one of the most important activities carried out. Risk management is thus essential for the planning and execution of specific tasks with maximum efficiency.

The purpose of risk management is to create and protect value by improving performance, encouraging innovation and supporting the achievement of objectives. The principles are the foundation for risk management and should be considered when establishing the organization's risk management framework and processes to enable it to manage the effects of uncertainty on its objectives (Figure 1). The conceptual framework of risk management, described in Table 1, gives the possibility of its integration in everything that means the decision-making

process within the organization by constantly evaluating risk management procedures and adapting them to organizational changes.

The risk management process involves the systematic application of policies, procedures and practices to communication and advisory activities, establishing context and assessing, treating, monitoring, reviewing, recording and reporting risk. It can be applied at the strategic, operational, program or project level.

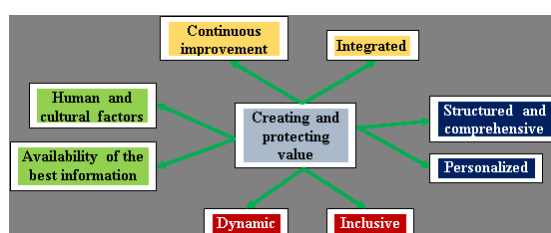


Fig. 1. The principles of the risk management process (Adaptation according to Requirement no. 4 of the ISO Standard 31000:2018)

As risk analysis and assessment tools for OSH, worldwide there is a great diversity of methods that are used according to the needs and the existing organizational context. Reported at the time of the

occurrence of an event or the materialization of an occupational disease, the risk assessment can be carried out before or after them, being classified as “a priori” or “a posteriori”.

Table 1 The conceptual framework of risk management (Moraru, 2019)

Leadership and commitment				
Integration	The design	Implementation	Evaluation	Improvement
- dynamic and interactive process customized to the specifics of the organization; - is based on understanding the organization's structures and context.	- understanding the organization and its context; - articulating the risk management commitment; - assignment of organizational roles, authorities and responsibilities; - allocation of resources; - establishing communication and consultation.	- elaboration of the implementation plan; - modification of the decision-making process; - feedback analysis.	- periodic measurement of risk management performance; - confirmation of the adequacy of risk management.	- continuous adaptation of the risk management framework to organizational changes; - continuous improvement.

Following numerous researches and studies addressing this issue, it was concluded that the numerous existing methods can be classified according to the following criteria presented in Table 2.

The risk assessment method chosen to be used within the organization must have the following characteristics:

- justified and appropriate to the context or organization, in relation to their relevance and compatibility;

- to provide concrete results that facilitate the understanding of the risk and how it can be treated;
- can be used in a detectable, repeatable and verifiable manner;
- the results should be comparable with those of other similar studies.

5. Architecture of the OSH in NDS

Due to the specificity of the NDS described in the introductory part of this

article, the national legislation that applies the recommendations of the European directives establishes the fact that the structures within the NDS are fully responsible for the organization and performance of specific OSH activities and establish internal authorization, approval and control structures equivalent to the Labor Inspectorate (LI) and of the Territorial Labor Inspectorates (TLI) within the Ministry of Labor and Social Justice. Due to the complexity of the organization of the structures within the

NDS, the establishment of these structures is a rather difficult task to achieve effectively without establishing some basic principles that must be taken into account, such as: independence from any other military command except the minister/to the head of the structure within the NDS for the component equivalent to the LI, impartiality and objectivity in the activities of control, approval, authorization and investigation of events, as well as the unique subordination for the component equivalent to the TLI.

Table 2 Typology of risk analysis and assessment methods (Moraru, 2016)

TYPES OF METHODS		EXAMPLES OF METHODS
Exclusive Deterministic Methods - based on consideration of equipment at the same time as assessment of consequences (effects on workers)	Qualitative	Checklists, AMDE, HAZOP
	Quantitative	Accident Hazard Index - AHI, Dow Chemical Exposure Index, SEVESO II Directive, Hazard Identification and Hierarchy - HIRA
Exclusively probabilistic methods - based on the estimated probability/frequency of occurrence of an event	Qualitative	Delphi Technique, Structural Reliability Analysis - SRA
	Quantitative	DELFI method, Event tree analysis - ATE
Combined methods - simultaneously deterministic and probabilistic approach	Qualitative	Safety Culture Hazard and Operability - SCHAZOP, Level of Protection Analysis - LOPA
	Quantitative	AMDE C, Butterfly knot method, MADS - MOSAR, Quantitative Risk Assessment - QRA

Considering the previously mentioned, the proposal regarding the structural

architecture of the OSH domain in NDS can be shown schematically as in Figure 2.

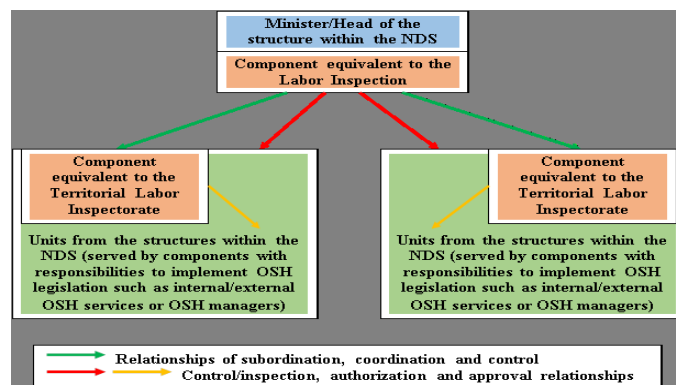


Fig. 2. Proposal regarding the structural architecture of the OSH domain in NDS

From the point of view of the attributions related to the legislation and implementation of provisions in the field of OSH, these can be assigned to the components of the NDS structures as described in Table 3.

6. Conclusions

Based on the relevant aspects presented, related to the context of carrying out

specific activities in NDS, the notions and specific OSHM terminology, as well as the analysis of the possibilities for the development of the OSH field, the following conclusions can be identified:

- The simple compliance of the OSH activity within the NDS is not enough, it must be supplemented with a management adapted to the specifics of each structure. Implementing the requirements of the ISO

45001 standard can be a viable solution. Although the structures within the NDS are not conditioned in any way to comply with the requirements of this standard, the principles underlying them can form the basis for organizing the OSH activity, ensuring a high degree of specific management quality;

- The lack of theorizing the field of OSH results in an approximate understanding of the principles and specifics of this field, sometimes leading to the development of specific activities with limitations. As a result, a theoretical approach through studies and research programs on OSH management and risk management adapted to NDS is needed;

Table 3 Tasks and types of documents specific to the structures within NDS

COMPONENT OF THE STRUCTURE OF THE NDS FRAMEWORK	TYPES OF ELABORATED DOCUMENTS	GENERAL SPECIFIC TASKS
Competencies with attributions regarding the legislation, control, approval and authorization of OSH activities		
The Minister/Head of the structure within NDS	- OSH Policy; - Instructions/provisions for the implementation of the OSH legislation. - Guidelines regarding the OSH Management System, risk management, etc.; - Approvals and authorizations for the TLI Equivalent Component; - Inspection/control documents.	- Legislation by issuing the OSH policy and instructions on the implementation of OSH legislation. - Legislation by issuing provisions on how to manage the OSH field; - Approval and authorization; - Activity coordination and Inspection/control.
The component equivalent to the Labor Inspection		
The component equivalent to the Territorial Labor Inspectorate	- Specific approvals and authorizations for the TLI Equivalent Component; - Inspection/control documents; - OSH event research files.	- Approval and authorization; - Research of OSH events according to assigned competencies; - Inspection/control.
Components with attributions regarding the implementation of OSH legislation that serve units from the composition of the structures within NDS. They are established based on the principles of specific legislation, depending on the number of workers and the types of activities performed		
Components equivalent to Internal OSH Services	- Specific documents implementing the OSH legislation to ensure the safety and health of our own and external personnel participating in the activities carried out.	- Implementation of OSH legislation to ensure the safety and health of own and external personnel participating in the activities carried out; - the investigation of OSH events according to the assigned competences.
Components equivalent to External OSH Services		

- The OSH policy is “A living document that includes the principles and guidelines of the specific activity in an organization aimed at ensuring the safety, health and well-being of employees at work”. By assuming this type of document, management proves that it understands and assumes its responsibilities and obligations regarding the health and safety of

- employees, also reflecting the processes and systems that are put into practice;
- Competencies with specific OS&H attributions must be organized so that their activity supports the fulfillment of the specific tasks of each structure within NDS with strict compliance with the provisions and principles of the incident legislation and standards.

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