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Occupational health and safety management systems – analysis of selected requirements for evaluation of occupational health and safety performance

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The publication undertakes the problems of occupational health and safety in the aspect of requirements for occupational health and safety management systems. The aim of the work was analysis of selected aspects of evaluation of occupational health and safety performance according to the ISO 45001:2018 standard. Performance evaluation and improvement are one of the basic requirements, that determine the suitability, adequacy, effectiveness and efficiency of management systems. The essential element of the study was the development of assumptions for evaluation of occupational health and safety performance, which

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include the analysis of occupational health and safety state and the evaluation of occupational health and safety management systems.

Keywords: ISO 45001:2018 standard, occupational health and safety (OH&S), OH&S management systems, OH&S performance evaluation

Introduction

Occupational health and safety (OHS) is an area of law, education and science. OHS issues are directly regulated by the Labour Code Act of 26 June 1974 (in particular, Section X entitled "Occupational Health and Safety") and implementing acts (including the Regulation of the Minister of Labour and Social Policy of 26 September 1997 on general occupational health and safety regulations), together with individual industry standards.

There is no universal definition of occupational health and safety. The most commonly quoted definition in the PN-N-18001:2004 standard defines the concept as the protection of human life and health from hazards present in the work environment. Among the basic issues related to the subject of OHS, the following can be identified: hazards in the work environment, occupational risk assessment, accidents at work, occupational diseases, occupational health and safety management systems.

Pursuant to Article 207(2) of the Labour Code Act of 26 June 1974, the employer is obliged to protect the health and life of workers by ensuring safe and healthy working conditions using appropriate technical and scientific measures. The latter include technical standards, including Polish Standards and international standards (e.g.: EN, ISO, IEC).

Pursuant to Article 5(3) of the Standardisation Act of 12 September 2002, the use of Polish Standards is voluntary. The use of international management system standards is an example of the use of science and technology to improve performance in a specific management area, such as occupational health and safety in this case.

In March 2018, the International Organisation for Standardisation (ISO) published the ISO 45001:2018 standard, and in June 2018, the Polish Committee for Standardisation (PKN) introduced it as PN-ISO 45001:2018-06 (English version), but it was not until August 2019 that the Polish version was published. In 2023, European Committee for Standardisation (CEN) adopted it without any modifications as EN-ISO 45001:2023, while in 2024 PKN introduced it as the discretionary standard PN-EN ISO 45001:2024-02 (English version).

ISO 45001:2018-compliant occupational health and safety management systems are compatible with other management systems, including, but not limited to, quality management systems governed by ISO 9000 series standards (e.g. PN-EN ISO 9000:2015 and PN-EN ISO 9001:2015), environmental management

systems governed by 14000 series standards (e.g. PN-EN ISO 14001:2015), food safety management systems regulated by the 22000 series standards (e.g. PN-EN ISO 22000:2018), and information security management systems regulated by the 27000 series standards (e.g. PN-EN ISO/IEC 27001:2023).

The structure of the aforementioned management system standards is standardised and comprises: initial chapters (foreword, introduction, scope of the standard, normative references, terms and definitions) and concluding chapters (application guidelines, bibliography). Chapters numbered 4–10 contain specific system requirements (context of organization, leadership, planning, support, operation, performance evaluation, improvement).

OHS management systems prior to the introduction of ISO 45001:2018 were based on the requirements of international standards (including the ILO-OSH:2001 standard and OHSAS series standards, e.g. OHSAS 18001:2007 and OHSAS 18002:2008), as well as domestic standards (including the Polish PN-N-18000 series standards). ISO 45001:2018 replaced the domestic PN-N-18000 series, with the exception of PN-N-18002:2011 (occupational risk assessment): PN-N-18001:2004 (requirements), PN-N-18004:2001 (application guidelines), PN-N-18011:2006 (auditing guidelines).

The aim of this article is to analyse selected aspects of management system performance evaluation using the example of OHS management systems. The scope of the paper covers the following issues: requirements for OHS management systems, requirements for the evaluation of OHS performance, as well as assumptions for the evaluation of OHS performance.

Selected requirements for OHS management systems according to ISO 45001:2018

The requirements for OHS management systems according to the international standard ISO 45001:2018 are fundamentally different from those provided by the domestic standards of the PN-N-18000 series (including PN-N-18001:2004). Among the many significant differences are the change of the process approach as a continual improvement model (PDCA cycle), e.g:

- current requirements according to the international standard ISO 45001:2018, including performance evaluation (monitoring, measurement, evaluation of compliance, internal audit, management review) and improvement (incidents, nonconformity and corrective actions, continual improvement);
- outdated requirements according to the domestic standard PN-N-18001:2004, including verification, corrective and preventive actions (monitoring, investigation of accidents at work, occupational diseases and near misses, auditing, nonconformity, corrective and preventive actions), management review and continual improvement.

ISO 45001:2018 is structured as follows:

1. Initial chapters: table of contents (Chapters 1–3); foreword (reference to the ISO organisation); introduction (basics, purpose of the OHS management system, success factors, PDCA cycle, content of the standard); scope of the standard (reference to the application of the standard); normative references (no reference); terms and definitions (list of 37 definitions).
2. The main body covering system requirements: context of organization (4.1–4.4): understanding the organisation and its context; explanation of the needs and expectations of workers and other interested parties; definition of the scope of the OHS management system; the essence of the OHS management system; leadership and worker participation (5.1–5.4): leadership and commitment; OHS policy; roles, responsibilities and authority within the organisation; consultation and participation of workers; planning (6.1–6.2): actions to address risks and opportunities; OHS objectives and strategy to achieve them; support (7.1–7.5): resources; competence; awareness; communication; documented information; operation (8.1–8.2): operational planning and control; emergency preparedness and response; performance evaluation (9.1–9.3): monitoring, measurement, analysis and performance evaluation; internal audit; management review; improvement (10.1–10.3): general provisions; incidents, nonconformity and corrective actions; continual improvement.
3. Concluding chapters: Appendix A (application guidelines for the standard); bibliography (a list of 15 sources); alphabetical index of terms (list of 37 terms).

In ISO 45001:2018, the requirements for OHS management systems consist of an introduction (chapter 0), terminology (chapter 3), system requirements (chapters 4–10) and application guidelines (Appendix A).

The terminology section defines concepts that are common and specific to individual management areas (e.g.: quality, environment, food safety, information security, OHS).

Common concepts according to EN ISO 9000:2015 and/or other system standards (e.g.: quality, environment, OHS) include: audit, objective, continual improvement, improvement, corrective action, performance (activity, operation), effectiveness, context of organization, monitoring, top management, nonconformity, organisation, policy, measurement(s), process, risk, efficiency, interested party, system, management system, documented information, participation, contractor (supplier, business partner), legal and other requirements (compliance obligations), requirement, management, conformity, outsourcing.

Specific concepts in ISO 45001:2018 include OHS-related concepts (incident, workplace, worker, injury and ill health, hazard) and systemic OHS management (OHS objective, OHS performance, OHS policy, OHS risk, OHS management system, OHS opportunity).

Selected requirements for the evaluation of OHS performance according to ISO 45001:2018

According to the continual improvement model, performance evaluation and improvement (Chapters 9 and 10 of the standard) simultaneously conclude and initiate the PDCA cycle (check and act stages). The remaining chapters of the standard include prerequisites (context of organization, leadership and worker participation) and reflect the plan and do stages (planning, support, operation).

Selected terminology according to ISO 45001:2018 (PN-ISO 45001:2018 Polish version) in terms of OHS performance evaluation:

- OHS management system (3.11): the management system or part of the management system used to implement the OHS policy;
- OHS policy (3.15): policy for the prevention of work-related injuries and ill health of workers and the provision of safe and healthy workplace;
- OHS objective (3.17): an objective set by the organisation to achieve specific outcomes consistent with the OHS policy;
- injury and ill health (3.18): an adverse effect on a person's physical, mental or cognitive health;
- hazard (3.19): source with a potential to injury and ill health;
- risk (3.20): the effect of uncertainty;
- OHS risk (3.21): combination of the likelihood of occurrence of a work-related hazardous event or exposure and the severity of injury and ill health that can be caused by the event or exposure;
- OHS opportunity (3.22): a circumstance or set of circumstances that may lead to an improved OHS performance;
- OHS performance (3.28): performance related to the effectiveness of the prevention of injuries and ill health of workers and providing safe and healthy workplace;
- incident (3.35):occurrence arising out of, or in the course of, work that could or does result in injury and ill health.

Other terminology used in ISO 45001:2018 includes: organisation (3.1), interested party (3.2), worker (3.3), participation (3.4), consultation (3.5), workplace (3.6), contractor (3.7), requirement (3.8), legal and other requirements (3.9), management system (3.10), top management (3.12), effectiveness (3.13), policy (3.14), objective (3.16), competence (3.23), documented information (3.24), process (3.25), procedure (3.26), performance (3.27), outsource (3.29), monitoring (3.30), measurement (3.31), audit (3.32), conformity (3.33), nonconformity (3.34), corrective action (3.36), continual improvement (3.37).

Selected management system-related terminology used in ISO 9000:2015 (not defined in ISO 45001:2018) includes: commitment (3.1.3), context of organization (3.2.2), supplier (3.2.5), improvement (3.3.1), management (3.3.3), system (3.5.1), success (3.7.3), effectiveness (3.7.10), review (3.11.2).

Selected requirements according to ISO 45001:2018 (PN-ISO 45001:2018 Polish version) in terms of performance evaluation and improvement (title and chapter number):

1. Monitoring, measurement, analysis and performance evaluation (9.1), including: The organisation should establish, implement and maintain processes for monitoring, measuring, analysing and evaluating performance. It should determine: aspects to be monitored and measured; methods for monitoring, measuring, analysing and evaluating performance; criteria against which the organisation's OHS performance are to be evaluated; the time frame of conducting monitoring and measurement; the time of analysing, evaluating and communicating the results of monitoring and measurement. The organisation should evaluate its OHS performance and determine the effectiveness of its OSH management system. It should keep relevant documented information as evidence of the results of monitoring, measuring, analysing and evaluating performance.
2. Management review (9.2), including: Top management should review the organisation's OHS management system at planned intervals to ensure its constant suitability, adequacy and effectiveness. The management review should take into account: the status of actions based on previous management reviews; changes in external and internal factors relevant to the OHS management system; the extent to which OHS policies have been implemented and OHS objectives achieved; information on OHS performance; the adequacy of resources to maintain an effective OHS management system; appropriate communication with interested parties; opportunities for continual improvement.
3. Incidents, nonconformity and corrective actions (10.2), including: The organisation should establish, implement and maintain processes, including reporting, investigating and taking action to identify and deal with incidents and nonconformity. It should keep documented information as evidence of: the nature of incidents or nonconformity and any actions taken in relation to them; the results of any corrective and other actions, including their effectiveness.
4. Continual improvement (10.3): The organisation should continuously improve the suitability, adequacy and effectiveness of its OHS management system by: improving OHS performance; promoting a culture that supports the OHS management system; promoting worker participation in the implementation of initiatives for continual improvement of the OHS management system; communicating relevant continual improvement results to workers; keeping documented information as evidence of continual improvement.

Assumptions for OHS performance evaluation

The assumptions for the assessment of OHS performance should include the following two areas of analysis and the associated authorised entities and types of requirements:

- analysis of the state of OHS in the workplace – the employer is responsible for the state of OHS in the workplace (Article 207(1) of the Labour Code Act of 26 June 1974); the analysis of the state of OHS is prepared and presented to the employer by an employee of the OHS department; the requirements are laid down in labour protection legislation, including the rights and obligations of the employer and workers in the field of OHS according to the Act of 26 June 1974 Labour Code and implementing acts;
- evaluation of the organisation's OHS management system – top management should demonstrate leadership and commitment in relation to the OHS management system (Chapter 5 of ISO 45001:2018); the assessment of the OHS management system is prepared and presented by a person appointed by top management (e.g. the OHS management system specialist); the requirements are laid down in technical standards for management systems, including the requirements and application guidelines according to ISO 45001:2018 and PN-N-18002:2011.

The applicable basis for the analysis of the state of OHS is presented in the following publications: Bukała (2022), Chojnicki, Jarosiewicz (2022), Gałusza, Śmidowski, Werner (2022), Krause (2022), Kryczka (2022), Rączkowski (2022).

The analysis of the state of OHS at the workplace is related to the following types of legal requirements:

- common labour protection requirements – based on the Labour Code Act of 26 June 1974 and implementing acts, in particular the protection of employee rights (e.g.: employment relationship, working time, leaves) should be taken into account, in particular in relation to persons with special needs (e.g.: juveniles, pregnant women, the disabled, the elderly);
- specific OHS requirements – based on Section X of the Labour Code and implementing acts (mainly the Regulation of the Minister of Labour and Social Policy of 26 September 1997 on general occupational safety and health regulations), in particular general industry-specific and internal requirements should be taken into account.

The basis for the evaluation of the OHS management system in terms of ISO 45001:2018 is presented in the following publications: Pacana (2019), Pacana, Jurgilewicz (2020), Pacana, Ostasz (2019), Pacana, Piątek (2021), Pawłowska, Pęciłło (2018), Romanowska (2019).

The evaluation of an organisation's OHS management system should address the following types of system requirements:

- common management system requirements – based on PN-EN ISO 19011:2018 (audit guidelines) and ISO 9000 series quality standards, e.g. PN-EN ISO 9000:2015 (basics and terminology) and PN-EN ISO 9001:2015 (requirements and application guidelines);
- common risk management requirements – based on the ISO 31000 series standards, e.g. PN-ISO 31000:2018 (requirements and application guidance) and PN-EN IEC 31010:2020 (risk assessment techniques);
- specific requirements for OHS management systems based on ISO 45001:2018 (requirements and application guidelines) and PN-N-18002:2011 (OHS risk assessment).

A properly established, implemented and operated OHS management system compliant with ISO 45001:2018 should focus on:

- the achievement of strategic objectives and outcomes, which include: preventing work-related accidents and diseases, providing safe and healthy workplace, ensuring suitability, adequacy, effectiveness and efficiency of the system;
- and approach based on risks and opportunities, which includes the following aspects for planning and operation: hazards (identification and elimination of hazards), risks (assessment and reduction of risks), opportunities (assessment and use of opportunities);
- the use of a process-based approach, in particular focusing on all the stages of the PDCA cycle (plan, do, check, act), which includes the following system requirements: OHS policy, OHS objectives, monitoring, measurement and evaluation of compliance, internal audit, management review, incidents, nonconformity, corrective actions, continual improvement.

Conclusion

ISO 45001:2018 is an international standard for OHS management systems compatible with other management systems (e.g. quality and environmental management system). Management systems are based on the continual improvement model (also known as the PDCA cycle), with four main stages (plan, do, check, act).

The structure of ISO 45001:2018 includes seven main system requirements. The purpose of the analysis was performance evaluation and improvement (Chapters 9 and 10 of the standard), which simultaneously conclude and initiate the PDCA cycle (check and act stages). Based on the literature on the subject, it was found that there are currently no practical guidelines for the evaluation of OHS performance.

On the basis of this research, several suggestions were proposed for the evaluation of OHS performance focusing on the two main problem areas: analysis of the OHS status (legal requirements: common labour protection requirements, specific OHS requirements), evaluation of the OHS management system (system re-

quirements: common requirements for management systems, common requirements for risk management, specific requirements for OHS management systems).

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Streszczenie

Systemy zarządzania bhp – analiza wybranych wymagań dotyczących oceny efektów działania w zakresie bhp

Publikacja podejmuje problematykę bezpieczeństwa i higieny pracy w aspekcie wymagań dotyczących systemów zarządzania bezpieczeństwem i higieną pracy. Celem pracy była analiza wybranych aspektów oceny efektów działania w zakresie bezpieczeństwa i higieny pracy według normy ISO 45001:2018. Ocena efektów działania i doskonalenie są jednymi z podstawowych wymagań, które decydują o przydatności, adekwatności, skuteczności i efektywności systemów zarządzania. Zasadniczym elementem badań było opracowanie założeń dotyczących oceny efektów działania w zakresie bezpieczeństwa i higieny pracy, które obejmują analizę stanu bezpieczeństwa i higieny pracy oraz ocenę systemów zarządzania bezpieczeństwem i higieną pracy.

Słowa kluczowe: norma ISO 45001:2018, bezpieczeństwo i higiena pracy (bhp), systemy zarządzania bhp, ocena efektów działania w zakresie bhp

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