

SECTION 3

ECONOMICS OF INDUSTRY

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STRUCTURAL FACTORS OF MODERNIZING THE OCCUPATIONAL SAFETY MANAGEMENT SYSTEM IN UKRAINE

The occupational safety management system in Ukraine is currently in a complex state, characterized by a significant gap between the theoretical goal of harmonization with the European Union’s regulatory framework and the actual indicators of occupational injuries and diseases. This gap results from a set of interrelated issues, including statistical inconsistencies, regulatory deficiencies, and deeply rooted economic and social factors.

The primary legal document shaping the occupational health and safety system at present is the Law of Ukraine “On Occupational Safety,” which sets the general objective of ensuring workers’ safety, health, and well-being, and preventing occupational accidents and diseases. However, despite these intentions, recent dynamics demonstrate the opposite trend. Over the last decade, there has been a steady increase in the number of workplace injuries: from 4,040 in 2018 to 12,315 in 2021 [1]. The number of fatal injuries has also risen, from 275 in 2018 to 537 in 2021 [1]. These data contradict the general trend of decreasing accident rates observed since the 1990s, when they dropped by 28.5 times, and indicate that the severity of incidents is growing.

For instance, in 2015, Ukraine’s fatality rate (4.3 per 100,000 workers) was 2.4 times higher than the EU average of 1.83 per 100,000 workers [2].

The mechanical engineering industry, which ranks fifth in occupational injury rates in Ukraine, serves as a clear example of these challenges.

Such alarming statistics stem from a deep regulatory gap. Under the Association Agreement, Ukraine is obliged to align its legislation with EU norms; however, implementation remains slow and incomplete [2]. According to one estimate, only 26.7% of EU directive provisions have been fully implemented in Ukrainian law, 23.3% partially, and 48.7% not at all. Notably, there are no national laws regulating minimum workplace requirements (Directive 89/654/EEC), the use of work equipment (89/655/EEC), or personal protective equipment (89/656/EEC).

Key structural factors sustaining high injury rates in industry include: outdated equipment; insufficient occupational safety funding; systemic underreporting due to employer pressure; and weakened regulatory control, which has deteriorated further under wartime conditions after 2022, reducing the effectiveness of ensuring safe workplaces.

A fundamental shift defining the new occupational safety paradigm is the transition from Directive 2006/42/EC to the new Regulation (EU) 2023/1230, which will take effect on January 20, 2027 [3]. This regulation introduces critical changes that must be reflected in Ukraine’s reform concept for occupational safety and mechanical engineering.

The first and most important change is the comprehensive coverage of the machine life cycle. Safety now extends across all stages – from design and manufacturing to operation, maintenance, and dismantling. Employers and engineers must assess risks at every stage, including the prediction of unexpected machine behavior during long-term operation.

The second major challenge involves the integration of artificial intelligence (AI). Machines that employ AI or machine learning for safety functions are now classified as high-risk, requiring employers to conduct special risk assessments that explicitly consider “dynamic” and “unpredictable” behaviors inherent in machine learning [3].

The third innovation is cybersecurity, now an obligatory safety requirement. Machines connected to networks (IoT) must be protected from

unauthorized access, misuse, and malicious software interference. The regulation mandates that cyber risks be incorporated into risk analysis and technical documentation.

The fourth change concerns the employer’s role. Any “substantial modification” to a machine (controller replacement, automation upgrades, or software updates) turns the modifying entity into the legal manufacturer. This means the employer bears full responsibility for conducting a new risk assessment, obtaining a declaration of conformity, and applying the CE marking [3].

Finally, the regulation formally supports digital documentation. Instructions and declarations of conformity may now be provided in digital form, promoting environmental sustainability and efficiency. This requires enterprises to implement new document management systems.

Effective reform of Ukraine’s occupational safety management system is impossible without adequate legislative and policy implementation. This process is the most complex and critical, as it determines whether proposed changes will become reality or remain on paper. A key element of successful implementation is extending the legislation’s coverage to all economic sectors, ensuring a uniform level of protection for all workers.

Following the signing of the EU Association Agreement, Ukraine began aligning its occupational safety framework with European directives. In 2018, the Cabinet of Ministers approved the Concept for Reforming the Occupational Safety Management System [4] and planned to implement it through new legislation. Based on this concept, a draft law “On the Safety and Health of Workers at Work” (Reg. No. 10147 of October 13, 2023) [5] was developed, grounded in the principles of EU Directive 89/391/EEC (Framework Directive on Occupational Safety and Health) [6]. In December 2024, the draft passed its first reading, and the Verkhovna Rada Committee recommended its full adoption at the second reading. Thus, Ukraine is gradually shifting from the old “Law on Occupational Safety” to a new model – a risk-based occupational safety management system.

The central principle establishes the employer’s full responsibility for creating safe working conditions [5]. This includes not only risk assessment and employee consultation but also health monitoring, information dissemination, and the provision of protective equipment. Importantly, employers bear all financial responsibility for implementing these measures. At the same time, workers have the right to safe conditions, access to risk information, and the right to refuse work in situations of serious and immediate danger [5].

Equally important is ensuring an effective state supervision system. This requires modernizing the State Labor Service, granting it powers comparable to those of EU counterparts, including the right to conduct unannounced inspections and to suspend operations in cases of serious danger [5]. It is also essential to establish a system of safety guidelines that carry a presumption of legal compliance, simplifying regulatory interaction for enterprises.

The adoption of the new Law “On the Safety and Health of Workers at Work” is significant both legally and practically. It will provide Ukrainian workers with a higher level of protection: shifting the focus from formalism to the actual safety of life rather than paper-based procedures. The law brings national legislation closer to global standards – and in particular, to European directives (89/391/EEC and related documents).

For businesses, this means a transition to a modern risk management system, which, although initially requiring investments in technical equipment and training, will ultimately enhance enterprise efficiency and competitiveness. The state will gain mechanisms for more effective control and promotion of a safety culture (for example, through national programs and audits).

The new law lays the foundation for a comprehensive national occupational safety system that is more responsive to contemporary challenges – from digitalization to the requirements of international partners – and has the potential to significantly reduce occupational injury rates in Ukraine.

In summary, successful improvement of Ukraine’s occupational safety management system requires a comprehensive reform approach

combining international experience, scientific advances, and adaptation to national realities. This includes fostering a safety culture, implementing advanced technologies, integrating with other management systems, and ensuring continuous personnel training. Such an approach will not only help achieve national goals but also align with the EU Framework Strategy, ensuring a safe, healthy, and productive future for all workers in the field of mechanical engineering.

References

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