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Letter to the Editor

Occupational Health and Safety Under Threat: Lessons from Recent Conflict and the Imperative for Future Preparedness

Edris Soltani [1], ***Payam Rashnoudi*** [1,2], ****Omran Ahmadi*** [1]

1. *Department of Occupational Health and Safety, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran*
2. *Department of Occupational Health and Safety, Faculty of Medical Sciences, Abadan University of Medical Sciences, Abadan, Iran*

***Corresponding Author:** Email: o.ahmadi@modares.ac.ir

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Dear Editor-in-Chief

The recent military conflicts in our country have starkly highlighted the critical importance of occupational health and safety (OHS) in wartime conditions. These events have unequivocally demonstrated the urgent need for preparedness and preventive measures to address such crises in the future. Beyond its political and social consequences, war inflicts extensive damage on the physical and mental health of populations, particularly workers across various sectors. In conflict zones, workers in vital industries such as energy are compelled to continue operations despite security threats, given the strategic necessity of maintaining production cycles and economic stability. This obligation exposes them to a wide range of occupational hazards and safety threats. These risks encompass diverse threats, from physical injuries caused by military attacks and explosions to exposure to hazardous materials, as well as psychological consequences such as occupational stress, anxiety, and depression all of which present workers with complex challenges in workplace safety and health. Recognizing this imperative, we have undertaken an examination of the key challenges facing occupational health and safety in wartime conditions and propose practical solutions to enhance preparedness for such scenarios.

Challenges Facing Occupational Health and Safety in Wartime Conditions and Practical Solutions

1. Shortage of Personal Protective Equipment (PPE): Ensuring adequate supply and distribution of PPE including masks, gloves, protective clothing, and other essentials poses significant challenges during crises (1). In such situations, in addition to planning for sufficient procurement and stockpiling, implementing a rationing system that prioritizes high-risk occupations (e.g., emergency responders and workers exposed to chemical hazards) can be effective. Collaboration with universities and local knowledge-based companies to produce cost-effective yet reliable PPE is another viable approach. In extreme emergencies, validated sterilization methods for controlled reuse of equipment (2), as well as innovative alternatives (e.g., multi-layered cloth masks or swim goggles for eye protection), can help mitigate shortages.

2. Exposure to Explosions and Military Attacks in Workplaces: Workers face direct threats from shrapnel, explosions, and airstrikes, which may cause severe injuries or fatalities (3). Risk reduction strategies include: constructing bomb-resistant shelters near critical facilities (e.g., refin-

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eries and power plants), conducting regular emergency evacuation and crisis response drills, and installing rapid alert systems for aerial attacks.

3. Stress and Psychological Trauma: The intense pressures of war lead to anxiety, post-traumatic stress disorder (PTSD), and depression (4). Chronic psychological stress from life-threatening risks impairs job performance. To address this, deploying industrial psychologists onsite, organizing routine counseling sessions, and implementing shorter work shifts with extended rest periods are practical measures.

4. Exposure to Hazardous Chemical Materials: Damage to industrial facilities may lead to leaks of toxic, radioactive, or chemical substances (5). To mitigate worker exposure, hazardous materials should be stored in secure warehouses with reinforced walls. Chemical leak detection equipment must be utilized, and workers should be provided with high-level protective gear along with comprehensive training on its proper use.

5. Lack of Emergency Medical Facilities: Wartime conditions often disrupt transportation systems and damage medical centers, severely limiting access to first aid and urgent care (6). To address this, workshops should be equipped with comprehensive first aid kits, and all personnel must receive first aid training. Additional strategies include establishing protected pharmaceutical storage areas, implementing triage systems, and designating shelters as a gathering point for people in need of medical assistance

6. Shortage of Skilled Personnel: The loss of specialized workers whether through displacement or casualty compromises workplace safety oversight. To counteract this, workplaces should implement remote expert guidance systems and adopt smart monitoring technologies. Financial and psychological support for remaining staff, identification of talented workers for accelerated training, and their deployment to critical positions during crises are additional practical measures.

7. Excessive Workload: The shortage of manpower and continuous production demands lead to extreme fatigue and increased human error (7). In such circumstances, production processes should be optimized, temporary auxiliary workers recruited, and a rotational shift system implemented.

8. Workplace Contamination: Failures in waste and sewage disposal systems, along with inadequate water and air purification systems, can transform workplaces into hotspots for infectious diseases (8). To prevent this, installing emergency water and air purification systems, implementing daily health monitoring programs, and distributing essential vaccines and medications to workers are critically necessary.

Occupational health and safety professionals play a vital role in managing worker safety and health during wartime conditions. They contribute by conducting occupational risk assessments, providing safety training, monitoring work environments, and offering counseling services to maintain worker health and safety. The recent conflict has once again reminded us of the critical importance of occupational health and safety in crisis situations. Learning from these painful experiences, we must take effective steps to enhance preparedness and emergency response capabilities. Developing national guidelines for occupational health and safety in emergencies, supporting occupational health professionals, and establishing cross-sectoral collaboration networks can significantly improve worker health and safety during crises.

Conflict of interest

The authors declare that there is no conflict of interests.

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