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Digital Insights:

JSA Only is Not a Solution

Job Safety Analysis (JSA) is a commonly used tool for hazard identification and risk mitigation, but its practical application in brownfield projects often falls short due to issues.

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INTRODUCTION

Brownfield projects are a complex and unusual type of industrial project management, as they entail the construction, maintenance, or improvement of operated facilities. Therefore, they present a unique and heightened set of challenges in the field of industrial project management. This complex setting increases the likelihood of unforeseen hazards, and implementing rigorous risk management strategies. These environments require meticulous planning and stringent safety protocols to prevent accidents and disruptions. Among the most commonly used tools for hazard identification and risk mitigation is the Job Safety Analysis (JSA). JSA is intended to systematically identify potential hazards associated with a specific task and establish effective controls before work begins. However, despite its widespread adoption, the practical application of JSA in brownfield projects often falls short of expectations. Issues such as:

- Superficial hazard identification.
- Limited worker involvement.
- Poor cross-team communication.
- Outdated safety documentation compromises its effectiveness.

SHORTCOMINGS OF THE JSA

The risk in the Brownfields Projects is unique because of its nature of continuous functioning, space scarcity, and connection to the legacy system. Employees have to frequently work through multiple utilities, hazardous areas, and working limitations (Ghasemi et al., 2023). These challenges are exacerbated by tight schedules and the need to avoid disruption to existing operations. In the risk-laden environment, the JSA becomes an essential instrument in enhancing situational awareness and hazard proactive management. Nevertheless, the discrepancy between the hypothetical aim of JSAs and the way people employ them tends to discourage their utility in protecting workers.

Another weakness in the implementation of its JSA is the superficial nature of the identification of hazards. Some teams do not perform an effective analysis specific to the job and environment (Mahammedi et al., 2021). Instead of doing one properly, they just list generic risks like slips, trips, and falls. While these are legitimate concerns, their overuse reflects a lack of site-specific insight. When dealing with a brownfield projects where there are potentially large energy supplies and energized systems, chemicals, and building structures that might still be there, they can be disastrous. A shallow JSA does not teach workers about the actual hazards of the job, and this makes the exercise more ritualistic than useful.

Another issue is the absence of actual worker participation in the JSA process. JSAs that are created by supervisors or safety officers, with little or no contribution by the workers who will perform the actual job, become irrelevant and unacceptable (Kwon et al., 2024). The top-down approach may cause a break in planning and execution. Employees can become disengaged with the process and less willing to follow safety precautions that are prescribed to them.
There are also communication barriers between various teams and contractors, which undermine the effectiveness of JSAs. In brownfield projects, multiple disciplines often operate simultaneously within the same confined space (Kwon et al., 2024). However, JSAs are frequently siloed within individual teams, with limited sharing of information. This fragmentation introduces blind spots, particularly in the case where job tasks overlap. The lack of cross-team coordination and common understanding of risks increases the possibility of incidents tremendously.

POSSIBLE SOLUTIONS

Best practices in the industry and post-incident analysis have yielded some essential strategies that can be used to address these challenges. One key approach is the direct inclusion of the workers in the JSA process (Jung & Kang, 2025). The resulting JSAs are more accurate, practical, and respected when the front-line employees are involved in the identification of hazards and control measures.

Another approach could involve tailoring JSAs to be more site-specific. Use of generic templates should be discouraged in favor of tailored analyses that take into account the specific risks inherent in each job location and in each sequence of tasks (Tewari & Paiva, 2022). Such specificity helps to improve the quality of the risk assessment and ensures workers are more prepared for the challenges they might encounter. Better communication and cooperation between teams are essential as well. These tools are beneficial to achieve more transparency and make sure that all the parties are informed about the existing risks within the common environment.

CONCLUSION

While JSA remains a critical component of risk management in brownfield projects, its impact is often undermined by poor implementation. Although Job Safety Analysis is still considered an essential tool in ensuring risks are controlled in brownfield projects, its effectiveness is highly dependent on its implementation. The nature of the unique working conditions of brownfield sites, which involve operational systems at work, overlapping work, and a restricted workspace, requires that the safety planning has to be tactile and more integrated. Regrettably, the success of JSA is usually compromised due to generic risk assessments, poor participation of frontline employees, compartmentalization of communication, and inability to revise the safety standards in real time. To address these shortcomings, organizations need to address need to customize JSAs to site-specific environments, the need to have collaborative development with workers, the need to enhance communication in all our teams, and the need to adopt digital solutions that enable real-time changes.

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