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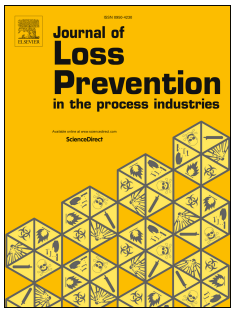

A method to utilize facility siting techniques in the early phases of capital projects to reduce risks and safety spending

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A Method to Utilize Facility Siting Techniques in the Early Phases of Capital Projects to Reduce Risks and Safety Spending

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Abstract

A common complaint when undertaking capital projects is the cost of engineered designs that must be added late in the project in order to mitigate hazards or risks. Due to the typical phasing of these project activities, the facility siting study (FSS) or other consequence or risk modeling is not completed until the layout of the facility has been established. However, when a site layout is already in a mature state, it can be extremely difficult to move hazards or populations to safer locations due to the substantial amount of rework that would be required. With mitigation through relocation thus limited or even unavailable, increasing the safety systems within the unit or adding layers of protection at the buildings of interest becomes the only option. Costs could be reduced and designs made safer if FSS or similar studies could be conducted earlier in the design process.

Moving the FSS up into the early design phases comes with its own hurdles, which often revolve around the lack of fully developed process information and a constantly changing facility layout. This requires that any FSS done in the early stages of design must be flexible and expedient to meet the rapidly evolving plant layout and process changes. This paper details a method for performing a FSS during the feasibility stages of a greenfield project through the creation of a design library of hazards and buildings that can be easily moved and edited.

This paper presents three case studies to explore examples of early mitigation of blast, fire, and toxic hazards, and provides examples of both consequence-based and risk-based decisions to be considered for each. A discussion of a basic cost saving analysis utilizing the FSS process is also explored. Through the use of FSS early in a design process, the capital project can create an optimized design that meets both geographic constraints and corporate safety goals while providing a potential reduction in overall project cost.

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