

عنوان مقاله:

Hazard Identification and Process Risk Assessment at the Building Stone Processing Company through Combination of EFMEA & William Fine Methods

محل انتشار:

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خلاصه مقاله:

In this research, the levels of safety, health, and environmental risks in a building stone processing company (BSPC) have been identified using the integrated approach of EFMEA (Environmental Failure Mode and Effects Analysis) and William Fine method, along with the TOPSIS technique for prioritizing organizational safety layers, examining potential incidents, and enhancing organizational efficiency. To achieve this, data and risk assessment information were first collected and evaluated, and then, with the formation of an expert task force, brainstorming sessions were held to identify and analyze environmental risks in the production process using the EFMEA technique. Additionally, with the assistance of the William Fine method, safety and health risks in the production process were identified and examined. In the next step, the costs of corrective actions were calculated, and the results obtained from the tables of both EFMEA and William Fine techniques were combined, and decisions were made regarding risks with high and very high levels. Subsequently, using TOPSIS, protective layers were prioritized based on two criteria: cost and time. Following the risk assessment using the EFMEA method, ۴ risks were classified as high-risk, ۹ risks as medium-risk, and ۲ risks as low-risk. Subsequently, employing the William Fine technique, a total of ۴۱ hazards were evaluated across ۵ worksheets. ۵% of the hazards were categorized as very high-risk, ۱۹% as high-risk, ۲۷% as medium-risk, and ۴۹% of the evaluated hazards were classified as low-risk. Ultimately, the results obtained from the integration of the William Fine and EFMEA techniques categorized ۲ risks as very high-risk, ۱۲ risks as high-risk, ۲۰ risks as medium-risk, and ۲۲ risks as low-risk. Furthermore, working at heights was selected as one of the risks with high risk, and protective layers and control measures were proposed and examined. The use of helmets, shoes, harnesses, and the establishment of a safety platform, considering both time and cost criteria, is the first priority for controlling risks in working at heights activity

کلمات کلیدی:

risk assessment, EFMEA, William Fine method, TOPSIS, Building Stone Processing

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