# Safety Risk Management in Metro Rail Projects: Application of Hazard Identification, Risk Assessment and Fault Tree Analysis

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**Abstract**: *Safety in the construction industry remains one of the most widely discussed subjects and continues to be a focus of ongoing research. With frequent accidents occurring at construction sites, it becomes crucial to identify the underlying causes. A hazard refers to any recognized source of potential harm, while risk is the likelihood of harm or negative outcomes resulting from that hazard. There is several risk and hazard assessment methods have been developed. Hazard has been classified into several categories. So a great concern is needed to minimize the occurrence of this hazard and for this purpose it is very necessary work for this. Classical safety analysis techniques such as event tree analysis, fault tree analysis, failure mode effective analysis, and job safety analysis are used for risk assessment.*

*In this project, Job Safety Analysis, FMEA, Safety Performance Monitoring, and the Fault Tree Model of crane accidents are applied to enhance workplace safety. Workers and others involved have the right to be safeguarded from harm resulting from any type of failure, and it is equally important to implement all necessary and reasonable control measures to ensure their protection.*

*For this project various Hazard Analysis and Risk analysis methodologies are used for ranking the risk by knowing its consequence and its frequency of occurrence in the Construction work place by means of analyzing all the processes which are being carried out in place.*

*The primary goal of this project is to identify the hazards present in the workplace and then evaluate the associated risks using various available methods. These approaches, commonly applied in the construction industry, help reduce hazards and contribute to creating a safer work environment.*

**Keywords**: Hazard Identification & Risk Assessment, Risk Ranking, fault Tree Analysis, Job Safety Analysis, Failure Mode and Effect Analysis, Consequences Analysis etc