**Abstract**

The manufacturing company under consideration recorded the high accident rates for last few years. These accidents cause the organization the heavy man-day loss, the production loss and heavy costs of insurance. The objective of health and safety department at the manufacturing company was to set and improve accidents prevention system. The paper presents how does the six-sigma technique will help to evaluate the safety and environmental hazards in performance of organizations? It is observed that the study helped the management to measure, analyze and improve overall safety plan to protect the life and health of the employees.

In order to build up system capabilities and graduate towards higher sigma levels of process performance is applied. In order to build up system capabilities and graduate towards higher sigma levels of operation, the backbone exercise of six sigma management system is reached by carrying out the failure mode effect analysis. Each potential failure mode component is assessed for its severity, occurrence and detection. Detection is measured on an inverse scale of (1-10). To build up system capabilities in risk management, the recommendation of FMEA are implemented. Subsequently the potential failure mode component is reassessed for their S, O and D. With every evolution in the system, as it slowly graduates towards becoming a six sigma risk management system, the risk priority number should go on decreasing. A case study of roof bolting exercise is presented as an example.

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