

Investigating the Causes of Human Error-Induced Incidents in the Maintenance Operations of Petrochemical Industry by Using Human Factors Analysis and Classification System

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Abstract : This article studied the possible causes of human error-induced incidents in the petrochemical industry maintenance activities by using Human Factors Analysis and Classification System (HFACS). The purpose of the study was anticipating and identifying these causes and proposing corrective and preventive actions. Maintenance department in a petrochemical company was selected for research. A checklist of human error-induced incidents was developed based on four HFACS main levels and nineteen sub-groups. Hierarchical task analysis (HTA) technique was used to identify maintenance activities and tasks. The main causes of possible incidents were identified by checklist and recorded. Corrective and preventive actions were defined depending on priority. Analyzing the worksheets of 444 activities in four levels of HFACS showed 37.6% of the causes were at the level of unsafe actions, 27.5% at the level of unsafe supervision, 20.9% at the level of preconditions for unsafe acts and 14% of the causes were at the level of organizational effects. The HFACS sub-groups showed errors (24.36%) inadequate supervision (14.89%) and violations (13.26%) with the most frequency. According to findings of this study, increasing the training effectiveness of operators and supervision improvement respectively are the most important measures in decreasing the human error-induced incidents in petrochemical industry maintenance.

Keywords : human error, petrochemical industry, maintenance, HFACS

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