

Analyzing the Ergonomic Design of Manual Material Handling in Chemical Industry: Case Study of Activity Task Weigh Liquid Catalyst to the Container Storage

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Abstract : Work activities for MMH (Manual Material Handling) in the storage of liquid catalyst raw material workstations in chemical industries identify high-risk MSDs (Musculoskeletal Disorders). Their work is often performed frequently requires an awkward body posture, twisting, bending because of physical space limited, cold, slippery, and limited tools for transfer container and weighing the liquid chemistry of the catalyst into the container. This study aims to develop an ergonomic work system design on the transfer and weighing process of liquid catalyst raw materials at the storage warehouse. A triangulation method through an interview, observation, and detail study team with assessing the level of risk work posture and complaints. Work postures were analyzed using the RULA method, through the support of CATIA software. The study concludes that ergonomic design can make reduce 3 levels of risk scores awkward posture. CATIA Software simulation provided a comprehensive solution for a better posture of manual material handling at task weigh. An addition of manual material handling tools such as adjustable conveyors, trolley and modification tools semi-mechanical weighing with techniques based on rule ergonomic design can reduce the hazard of chemical fluid spills.

Keywords : ergonomic design, MSDs, CATIA software, RULA, chemical industry

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