

ABSTRACT

Various fatal and large-scale incidents sometimes occur when human factor is considered to play an important role. One of activities that is a direct interaction between the tools work with humans is material handling activity. The consequences arise if material handling activity is not true one of them is complaints MSDs (Musculoskeletal Disorders). Therefore, an evaluation of material handling activity is conducted to assess the ability of workers (C, capacity of worker) to the demands of work given (D, demand of task). A good work activity criterion is at the value $D < C$. Evaluation is carried out on the activity of pushing the trolley, including evaluation on worker posture by using Posture Evaluation Index (PEI) approach, and evaluation of worker's capability to activity encourages Manual Handling Limits (MHL). Then the evaluation of lifting activity is done by Lifting Index (LI) approach on the existing condition. The outcomes of the three approaches exclude values beyond the capability of the worker, which means the work is not safe to do (at risk). Therefore it can be concluded that the existing conditions require changes as soon as possible. The problem that occurs is when the environmental conditions and tools used by the workers do not support well on the aspects of OSH management and ergonomics. It can be the worst possibility that workers get a temporary or permanent disability at a time and the complaints are felt after retirement. It strongly opposes the concept of ergonomics that has the concept to create a work system that Effective, Safe, Healthy, Convenient, and Efficient. Therefore, further identification of existing condition and given solution in the form of product design improvement by using Ergonomic Functional Deployment (EFD) method by incorporating Effective, Safe, Healthy, Convenient, and Efficient work system concept into ergonomic statement. With the result of the research, a draft proposed product concept that has fulfilled the user's need for ergonomic aspects with PEI value is 1.25 (under the safe standard is 2), the MHL value is 75% (right on the safe standard that is 75%) and the LI value is 0.92 (below the safe standard is 1). With the three values of work attitudes that are already on the safe limit will be able to reduce the possibility of risk of injury.

Keywords— *Material Handling, Posture Evaluation Index, Manual Handling Limits, Lifting Index, Ergonomic Functional Deployment*