



Ergonomics for Manual Material Handling



The material handling process is the movement, protection, control and storage of products and materials. Material handling plays a crucial role in the construction, manufacturing, warehousing and distribution industries, where a significant amount of the work is performed manually. Manual material handling (MMH) involves routinely moving and handling objects by carrying, holding, lifting, pulling, pushing and stooping. These movements contribute to fatigue in the workplace and increase the risk of employees developing musculoskeletal disorders. When designed without considering the work system, manual material handling tasks can also lead to an increase in wasted motions, reducing work process efficiency. This document provides strategies to help improve common workplace material handling tasks.



Use mechanical aids.

Implement mechanical aids such as motorized pallet jacks, powered carts or dollies, and air or rollerball tables for work tasks requiring manual pushing/pulling of material. Also, use semi-automated mechanical aids such as overhead cranes and inline lift assists when handling heavier loads.

Choose the right equipment for the job.

The workplace may have a selection of dollies, carts, pallet jacks and hand trucks that differ in design, load capacity, automation and other features. Therefore, employers must provide adequate training and instructions about the types of equipment so employees can choose the correct equipment for each job.

Optimize material process flow.

Evaluate tasks as a system instead of focusing on one stage of the operation. This can be accomplished by following an item through the production process from origin to destination, or starting at the destination and tracing the way back to the item's origin.

Eliminate double handling.

Following the workflow helps identify wasted steps such as unnecessary transfers. Examples include moving material from one material handling piece of equipment to another, or to and from storage areas. Generally, fewer transfers mean less wasted time, less risk of damage to the items and less risk of employee injury from repetitive lifting. Use carts, pallet jacks and dollies to eliminate carrying- and holding-related work tasks.

Consider worker-friendly task design.

Design work tasks to accommodate the employee population. Reduce long reaches by proper material staging. Store materials and/or products off the floor. Tilt deep containers and orient them toward the worker for easier access. Use turntable and load levelers to bring the staged materials closer. When designing carts and dollies, choose the correct casters and maintain them regularly.

Train.

Ensure that employees who perform material handling tasks are trained on the importance of maintaining neutral body postures and the use of body mechanics, including proper lifting techniques. Training is most effective when it is interactive, fully involves workers and is provided at regular intervals.

Implement work practice controls.

Update work protocols to perform tasks within the Power Zone, which is close to the body, between mid-thigh and mid-chest height. In addition, consider implementing a stretching program developed by a licensed professional. Other administrative controls include job/task rotation, multi-person lifting and manual lifting weight limits.

By effectively designing manual material handling tasks, businesses can make work safer, reduce exertion, and get the job done efficiently, effectively, and effortlessly.

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