I. MINIMIZE SIGNIFICANT BODY MOTIONS

1. Reduce Bending Motions
   A. Eliminate the need to bend by:
      • Using lift tables, work dispensers and similar mechanical aids.
      • Raising the work level to an appropriate height.
      • Raising or lowering the worker.
      • Providing all material at work level.
      • Keeping materials at work level (e.g., don’t lower anything to the floor that must be lifted later).

2. Reduce Twisting Motions
   A. Eliminate the need to twist by:
      • Providing all materials and tools in front of the worker.
      • Using conveyors, chutes, slides, lifts or turntables to change direction of material flow.
      • Providing adjustable swivel chairs for seated workers.
      • Providing sufficient workspace for the whole body to turn.
      • Improving the layout of the work area.

3. Reduce Reaching Out Motions
   A. Eliminate the need to reach by:
      • Providing tools and machine controls close to the worker, to eliminate horizontal reaches over 16 inches.
      • Placing materials, workplaces and other heavy objects as close to the worker as possible.
      • Reducing the size of cartons or pallets being loaded, or allowing the worker to walk around them; rotate, raise or lower them.
      • Reducing the size of the object being handled.
      • Allowing the object to be kept close to the body (i.e. Scissor Lifts).

II. REDUCE OBJECT WEIGHTS/FORCES

1. Reduce Lifting and Lowering Forces
   A. Eliminate the need to lift or lower manually by:
      • Using lift tables, lift trucks, cranes, hoists, balancers, industrial manipulators, drum and barrel dumpers, elevating conveyors, and similar mechanical aids.
      • Raising the work level. Lowering the operator. Using gravity dumps and chutes.

   B. Reduce the weight of the object by:
      • Reducing the size of the object (specify size to suppliers).
      • Reducing the capacity of the containers. Reducing the weight of the container itself.
      • Reducing the load in the containers (administrative control).
      • Reducing the number of objects lifted or lowered at one time (administrative controls).

   C. Increase the weight of the object so that it must be handled mechanically:
      • Use the unit load concept (such as bins or containers, preferably with fold down sides rather than smaller totes and boxes).
      • Use palletized loads.

   D. Reduce the hand distance by:
      • Changing the shape of the object.
      • Providing the grips or handles.
      • Providing better access to object (i.e. scissor lifts, turntables or tilters).
      • Improving layout of work area.

2. Reduce Pushing and Pulling Forces
   A. Eliminate the need to push or pull by:
      • Using powered conveyors.
      • Using powered trucks.
      • Using powered scissor lifts or turntables.

   B. Reduce the required force by:
      • Reducing the weight of the load.
      • Using non-powered conveyors, air bearings, ball caster tables, monorails, and similar aids.
      • Providing good maintenance of floor surfaces, hand trucks, etc.
      • Treating surfaces to reduce friction.
      • Using powered scissor lifts.

   C. Reduce the distance of push or pull by:
      • Improving layout of work area.
      • Relocating production or storage area.

3. Reduce carrying forces
   A. Eliminate the need to carry by converting to pushing or pulling.
      • Use conveyors, air bearings, ball caster tables, monorails, slides, chutes and similar aids.
      • Use lift trucks, two wheel hand trucks, four wheel hand trucks, dollies and similar aids.

   B. Reduce the weight of the object by:
      • Reducing the size of the object (specify size to suppliers).
      • Reducing the capacity of containers.
      • Reducing the weight of the container itself.
      • Reducing the load in the container (administrative control).
      • Reducing the number of objects lifted or lowered at one time (administrative control).

   C. Reduce the distance by:
      • Improving the layout of the work area.
      • Relocating production or storage area.

Ergonomics Toolbox™ multimedia tool for identifying, analyzing and implementing ergonomic solutions for material handling problems available from MHIA 1-800-345-1815