Workplace Safety North™
A Health & Safety Ontario Partner

Tips for Eliminating and Controlling MSD Hazards

Force

Gripping tools/equipment

- Provide tools that allow workers to grip the tool using a power grip
- Eliminate the use of pinch or key grips as much as possible
- Choose tools that have triggers that allow for the use of multiple fingers rather than one finger or a thumb
- Choose tools that can be used with the wrist straight
- Choose tools with vibration reducing features
- Choose tools that are lighter and designed reduce hand torque and kickback
- Ensure the tool is balanced and does not require extra muscular effort to hold it in position
- Ensure the handle of a tool does not create pressure points in the palm of the hand
- Use tools with handles that fit the hand, for example use a smooth hand grip without hard ridges to space fingers
- Provide rubber or sponge-type grips on tool handles
- Provide tools than be safely used by either left handed or right handed workers
- Maintain tools regularly
- Inspect tools regularly. Ensure worn or damaged tools are fixed or replaced

Pushing and pulling

- Provide carts that have vertical or height adjustable to enable different size workers to position their hands between waist and shoulder height
- Use larger wheels on carts and bins as this reduces push and pull forces and they are easier to roll over cracks or holes
- Ensure that wheels / casters that are suitable for the load being transported and are compatible with the type of flooring
- Determine the most suitable swivel arrangement of casters – 2 or 4, front or back.
- Ensure there is enough space so the worker does not have to use awkward postures to move the cart
- Design / change layout of work area to eliminate the need to push wheeled objects up slopes or over uneven surfaces
- Ensure the flooring is one level, smooth and in good condition
- Ensure workers can see over the top of the cart
- Push rather than pull carts
- Maintain carts, especially wheels and wheel bearings
- Provide brakes on carts where practical

Heavy, Frequent or Awkward Lifting

- Use mechanical assists to lift/lower loads - such as hoists, pallet trucks, pump trucks ladder hoists, gin poles, daisy chains, cranes, or chain falls
- Move objects as close to the body as possible – use turntables to keep loads close
- Ensure there are no obstacles between the worker and the load being lifted
- Provide height adjustable pallet trucks/scissor lifts to keep loads off the floor and allow for height adjustability to keep the loads above knee height
- Organize the starting and ending location of the lifts to limit the overall vertical travel distance a load has to be lifted
- Avoid lifts below knuckle level and above shoulder level – limit shelf heights either high or low
- Avoid lifting loads that are heavier than 4 kg when seated – stand and use larger, stronger muscles
- Improve grip/handles on objects being lifted
- Split the overall weight of a load into smaller loads
- Avoid uneven, unbalanced loads
- Use gravity as an assist whenever possible (lower rather than lift)
- Use carts, motorized buggies, conveyors, gravity feed conveyors - to transport loads rather than carrying
- Provide tools / devices to help with carrying tasks - carrying handles, extension handles
- Train workers to assess all material handling tasks and to ensure that the path is clear of obstructions / trip hazards when carrying items
- Do not carry objects up and down stairs if two hands are needed to hold objects. Keep one hand free to hold hand rail
- Improve housekeeping to prevent trips and falls
- Require suppliers to include the weight on all objects / packages that are manually handled
- Use shoulder pads when carrying loads on shoulders

Fixed or Awkward Postures

- Provide height adjustability in a standing workstation
- Establish a suitable working height depending on the type of work being done (i.e. precision, light or heavy work)
- Provide sit/stand stools at standing workstations
- Provide height adjustable chairs
- Utilize lift tables to keep the position the objects close to the worker
- Utilize tilt tables to angle objects close to workers
- Utilize rotating platforms to minimize reaching for objects
- Provide self-elevating platforms in deep bins to keep items within easy access to the top of the bin
- Provide false bottoms in deep sinks or containers
- Limit shelf heights between knee and shoulder height
- Provide foot rests at standing workstations
- Ensure the type of flooring will minimize shock absorption to the worker's body
- Provide anti-fatigue matting for standing work areas with hard floor surfaces

- Use devices such as lifts, duct jacks, scissor lifts, and extension poles or stands for operating tools overhead Use adjustable scaffolds, aerial and other work platforms to raise whole body closer to work
- Place materials used often at appropriate height and less frequently used materials in less desirable locations
- Use tables, benches, or stands to bring work to waist height

Repetition

- Implement well-designed job rotation
- Add different tasks to the job to increase the variety of activities
- Include flexibility in the job so the worker can control pace of work
- Use a work/rest schedule that allows for frequent changes of activity
- Encourage employees to take micro-breaks
- Mechanize the task where necessary

Repeated Impacts

- Look for tools / equipment that will eliminate the need for repeated impacts
    - Use rubber mallets / other tools instead of the hand
    - Use power stretchers for carpet installations
- Provide workers with well-designed padded gloves / knee pads
- Change fittings/parts/equipment to minimize the forces used with repeated impacts
- Limit the duration of time that repeated impacts are required

Contact Stress

- Change or modify equipment (e.g., use a long-handled screwdriver to prevent the butt from digging into the palm)
- Change or modify work area to prevent sharp edges from digging into skin (e.g., pad sharp or metal edges)
- Use personal protective equipment (e.g., use knee pads while kneeling; use padded gloves when lifting heavy objects by narrow plastic strapping)
- Improve or change work practice to reduce resting or leaning against sharp edges

Local or Hand-Arm Vibration

- Use vibration-absorbing padding on grips or handles
- Provide employees with anti-vibration gloves
- Keep tools well maintained / sharp to reduce vibration
- Source various suppliers who can supply tools with lower levels of vibration.
- Reduce total exposure to vibration by alternating between tasks using tools which vibrate to task with non-powered tools or incorporating job rotation between tasks
- Use cutting or powerhead vibration dampening devices
- Use equipment that includes vibration-dampening rubber grommets on controls and control box

Whole-Body Vibration

- Avoid sitting or standing for prolonged periods on vibrating surface if practicable (e.g. catwalks on vibrating machinery)
- Isolate the source of vibration from the rest of the work space to prevent transmission of vibration to the sitting or standing area (e.g., isolation of track cabs from diesel engine vibration)
- Train and instruct operators and drivers to:
    - adjust the driver weight setting on suspension seats
    - adjust the seat position and controls correctly to provide good lines of sight and support
    - adjust the vehicle speed to suit the ground conditions to avoid excessive bumping and jolting
    - steer, brake, accelerate, shift gears and operate attached equipment smoothly
    - follow worksite routes to avoid traveling over rough, uneven or poor surfaces.
- Choose machinery suitable for the job
    - Select vehicles and machines with the appropriate size, power and capacity for the work and the ground conditions
- Maintain machinery and roadways
    - Make sure that paved surfaces or site roadways are well maintained, eg potholes filled in, ridges leveled, rubble removed
    - Maintain vehicle suspension systems correctly (e.g. cab, tire pressures, seat suspension)
    - Replace solid tires on machines such as fork-lift trucks, sweepers and floor scrubbers before they reach their wear limits
    - Obtain appropriate advice (from seat manufacturers, machine manufacturers and/or vibration specialists) when replacing a vehicle seat. Seats need to be carefully matched to the vehicle to avoid making vibration exposure worse

- Other measures
    - Introduce work schedules to avoid long periods of exposure in a single day and allow for breaks where possible
    - Avoid high levels of vibration and/or prolonged exposure for older employees, people with back problems, young people and pregnant women

Cold Temperatures

- Ensure workers wear high-friction, well-fitting gloves
- Ensure that workers wear clothing that keeps them warm without adding a lot of bulk
- Ensure hand tools are stored in a warm place prior to use
- Provide alternating periods of cold and warm work (worker rotation) and allow workers to take rest breaks in warm areas
- Avoid having workers use tools that discharge cold gases over the hand
- Provide local source heating (portable heaters) for workers
- Educate workers about the adverse effects of cold and its influence on MSD
- Encourage workers to stay well hydrated

Hot Work Environments

- Provide alternating periods of cool / shaded and warm work (worker rotation) and allow workers to take rest breaks in cool areas
- Provide local source cooling (portable spot chillers) for workers
- Educate workers about the adverse effects of heat and its influence on MSD
- Encourage workers to stay well hydrated

Work Organization

- Ensure that repetitive or demanding tasks incorporate opportunities for rest or recovery (e.g., allow brief pauses to relax muscles; change work tasks; change postures or techniques)
- Incorporate task variability so that the worker does not have to perform similar repetitious tasks throughout the full shift. Provide the worker with the opportunity to vary work tasks by rotating jobs or increasing the scope of the job
- Ensure that work demands and work pace are appropriate

Work Methods

- Evaluate jobs to determine whether work methods are compatible with worker capabilities.
- Analyze the differences in work methods between individuals to find the best work methods.
- Ensure that the official work method is the best work method and corresponds with what workers are actually doing