

## 41. Ergonomics and Material Handling

This program applies to all employees. It provides a series of specific actions to be implemented with the ultimate goal of integrating ergonomics into every activity decision. This process promotes continuous improvement in the efficiency, comfort and well-being of all employees through a team effort of management and employee involvement. The objective is to fit the activity and the work area to the employee over time by designing activities within the employee's capabilities and limitations. This action will lead to the reduction of musculoskeletal disorders (MSDs).

### 41.01. Responsibilities

- 41.01.01. Supervisors are responsible for employee training and the implementation of the ergonomics program. They will perform a hazard analysis of the activities that employees is assigned to complete.
- 41.01.02. Employees are responsible for following the ergonomics program policies and procedures. Employees shall report all incidents and inform supervisors of ergonomic hazards.
- 41.01.03. The Ergonomics Specialist is responsible for performing ergonomic assessment with the supervisors. They will also formulate solutions to ergonomics hazards.
- 41.01.04. Ergonomics hazards will be addressed by performing Job Hazard Analysis (JHA) reviews of ergonomics intensive job duties. The JHA shall be conducted by the Supervisor and or Ergonomics Team:
  - 41.01.04.01. Review normal activities for signs of ergonomics problems
  - 41.01.04.02. Discuss activities with employees for their opinion of ergonomics issues
  - 41.01.04.03. Review incident reports for prior ergonomics issues.
  - 41.01.04.04. Conduct an ergonomics hazard analysis on these activities
  - 41.01.04.05. Look for alternatives and solutions to lessen the ergonomics hazard
- 41.01.05. Investigate conditions
  - 41.01.05.01. Try to find which jobs may be causing problems by: observing the workplace, talking to employees and becoming aware of early warning signs:
    - 41.01.05.01.01. Employee fatigue or discomfort
    - 41.01.05.01.02. Employees restricting their movements or range of motion because of fatigue or discomfort (e.g., a stiff neck, sore shoulder, or backache)
    - 41.01.05.01.03. Employees modifying tools, equipment or workstations on their own
    - 41.01.05.01.04. High absenteeism or employee turnover rates
    - 41.01.05.01.05. Poor product or service quality

41.01.05.01.06. Employee reports of problems

41.01.06. To determine which tasks to address first, consider the following:

41.01.06.01. Frequency and severity of complaints, symptoms and injuries

41.01.06.02. Contributing factors or other problems identified in a particular task

41.01.06.03. Employee ideas for improvements

41.01.06.04. Difficulty of implementing various improvements

41.01.06.05. Time frame for making improvements

41.01.06.06. Potential effects on productivity, efficiency and product or service quality

41.01.06.07. Technical and financial resources

41.02. Musculoskeletal Disorders (MSD)

41.02.01. A musculoskeletal disorder (MSD) is an injury or disorder of the nervous system or soft tissue such as muscles, tendons, ligaments, joints, cartilage or blood vessels. MSD risk factors are major contributors to MSD-related injuries and illnesses. Prolonged exposure to one or more of the following risk factors puts you at risk of an MSD:

41.02.01.01. Repetition and duration—Same motion repeated for long periods of each day, which includes daily and lengthy use of a keyboard or mouse

41.02.01.02. Force—Constant lifting, pushing, pulling

41.02.01.03. Awkward postures

41.02.01.04. Working with back or neck bent down or twisted working with hands above head

41.02.01.05. Extending arms to type or sitting forward with hunched shoulders

41.02.01.06. Bent wrists when typing, using tools or operating equipment

41.02.01.07. Contact stress

41.02.01.08. Using hand or knee as a hammer

41.02.01.09. Contact with a hard surface such as leaning against a counter

41.02.01.10. Continually pounding a stapler with palm

41.02.01.11. Vibration—Using vibrating tools or equipment such as jackhammers or powered saws

41.02.02. Employees suffering from MSDs may display behaviors such as:

41.02.02.01. Vigorously shaking hands as if trying to regain circulation

41.02.02.02. Massaging hands, wrists or arms

41.02.02.03. Cradling arms

41.02.02.04. Limping

41.02.02.05. Walking stiffly, indicating a sore back

Note: The feeling of the pain varies depending on the MSD and can be described as tightness, stiffness, soreness, burning, tingling, coldness, numbness, or general discomfort. MSDs may affect the back, neck, shoulders, arms, legs, elbow and knee joints, hands, wrists, fingers, thumbs, feet and toes.

41.03. MSD Prevention Tips:

Employees shall report any MSD symptoms immediately to prevent further injury. Reducing exposure to risk factors such as repetition, poor posture, forceful gripping, contact stress and vibration, will reduce the potential for suffering from an MSD-related injury. Suggested prevention measures include:

41.03.01. Avoiding Repetition

41.03.01.01. Avoiding repetition is the best defense in preventing an MSD-related injury. Keep the body in a neutral position when possible. When faced with risk factors of repetition including force, duration, awkward postures, contact stress and vibration, change movement as soon as the task is finished.

41.03.02. Paying Attention to Posture and Workspace

41.03.02.01. One of the best ways to reduce exposure to MSD risk factors is to adjust the workspace or workstation design to maintain a neutral posture as much as possible while working. Overall, the body should be in a relaxed and comfortable position.

41.03.03. Neutral posture should include the following elements:

41.03.03.01. Head should be vertical and facing forward. Put work that is repetitive or of long duration (i.e., notes that need to be typed) in front of you to minimize head rotation.

41.03.03.02. Maintain a straight back posture

41.03.03.03. Shoulders should be in a neutral position with arms tucked close to your body and hanging relaxed. Elbows should be positioned comfortably below the shoulders and not extended outward from the body or forward or backward from the shoulders.

41.03.03.04. Forearms should be parallel to the ground and wrists in a straight line with the forearms.

41.03.03.05. Sit with thighs parallel to the floor, knees bent about 90 degrees and feet resting comfortably flat on the floor or on a footrest.

41.03.04. Ergonomically Correct Workspace Includes:

41.03.04.01. Adjustable furniture

41.03.04.02. Employee's ability to maintain neutral position and avoid awkward postures and extended reaches

- 41.03.04.03. Variety of working positions available to avoid prolonged static postures
- 41.03.04.04. Adequate room for a full range of body motion
- 41.03.04.05. Easy access to all tools and equipment
- 41.03.04.06. Work items in front of employee and within easy reach
- 41.03.05. Stretch muscles
  - 41.03.05.01. Hand stretches—Make a fist, then extend and spread fingers.
  - 41.03.05.02. Wrist and forearm stretches—Hold arms out in front of body and bend hands up and down. Place palms together with fingers pointed upward and elbows pointed out, bring hands down until you feel the stretch.
  - 41.03.05.03. Shoulder stretches—Shrug shoulders; roll shoulders forward and back. With elbows out, move arms back to bring shoulder blades together. Reach arms overhead and stretch; bend from side to side.
  - 41.03.05.04. Neck stretches—Rotate head up and down. Turn head from side to side. Tilt head toward each shoulder.
  - 41.03.05.05. Back and arm stretches—Put hands behind head and pinch shoulder blades together. Bend forward in chair and touch the floor. While sitting, grasp your shin or knee and pull knee toward your chest. Stand up, place hands on the hips and bend backwards.
- 41.03.06. Take breaks
  - 41.03.06.01. Eye breaks: Every 30 minutes look away from the monitor and focus on something at a distance of about 20 feet for a minute or so. This allows eye muscles to relax. Also, blink rapidly for a few seconds to refresh the eye's surface.
  - 41.03.06.02. Mini-break: Typing is typically done in short bursts. Between those bursts of activity, allow your hands to relax in a flat and straight posture. A mini-break is not a break from work; rather it is a break from using the typing or "mousing" muscles. Make a phone call or file some documents.
  - 41.03.06.03. Rest breaks: Take a short rest break every thirty to sixty minutes. Stand up and get a drink of water, make some photocopies, etc. Just get away from your computer workstation for a couple of minutes.
- 41.04. Corrective Action
  - 41.04.01. Administrative improvements include changing work practices or the way work is organized.
  - 41.04.02. Provide variety in jobs.
  - 41.04.03. Adjust work schedules and work pace.
  - 41.04.04. Provide recovery time (i.e., muscle relaxation time).

- 41.04.05. Modify work practices.
- 41.04.06. Ensure regular housekeeping and maintenance of workspaces, tools and equipment.
- 41.04.07. Encourage exercise.
- 41.04.08. Provide variety in jobs—there are a couple of ways to increase variety in jobs. Job rotation means rotating employees through different jobs. Job enlargement means increasing the variety by combining two or more jobs or adding tasks to a particular job. To be effective, both of these improvements rely on rotating through or combining jobs and tasks which differ in the following ways:
  - 41.04.08.01. Muscles or body parts used
  - 41.04.08.02. Working postures
  - 41.04.08.03. Amount of repetition
  - 41.04.08.04. Pace of work
  - 41.04.08.05. Amount of physical exertion required
  - 41.04.08.06. Environmental conditions
- 41.04.09. Adjusting work schedules and works pace—Limit the amount of time any employee has to spend performing repetitive activities. If you have new employees or employees returning from long absences, introduce them to a normal work pace and workload gradually. Try to break up work with frequent, short recovery periods. Even recovery periods as short as a few seconds on a regular basis are helpful.
- 41.04.10. Modify work practices—Employees should be encouraged to be comfortable, to change positions and to stretch when working.

### 41.05. Employee Training

- 41.05.01. Employees shall be trained thoroughly and given opportunities for hands-on practice with any new tools, equipment or work procedures. The goals for training shall include a mix of the knowledge and the skills needed to work safely. Employees will be informed of any workplace changes.