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ENVIRONMENTAL & OCCUPATIONAL
HEALTH & SAFETY SERVICES

Computer Workstation Ergonomics:

a guide to proper work
practices and design of
your work environment

In their 2002 *Lost Worktime Injuries & Illnesses* survey, the Bureau of Labor Statistics reported that work-related musculoskeletal disorders (WMSDs) accounted for 487,000, or 34%, of the injuries and illnesses with days away from work. Among major disabling injuries and illnesses, median days away from work were highest for carpal tunnel syndrome – 30 days. Among the most frequent events or exposures, repetitive motions, such as typing, resulted in the longest absences from work, a medium of 23 days.

According to Liberty Mutual's *Workplace Safety Index 2004*, the cost of serious workplace injuries continue to rise, even though the number of such incidents are on the decline. Repetitive motion injuries, one type of WMSD, accounted for only 5.7% of injuries but cost \$2.8 billion.

Both the amount of time away from work and the enormous costs demonstrate that computer-related injuries are serious.

Ergonomics is the science of fitting jobs to workers and is the tool used to design appropriate computer workstations. Computer workstations should be designed or modified so that good body alignment can be achieved.

This brochure is intended to provide valuable information about workplace practices aimed at reducing the risk of cumulative trauma disorders.

◆ What are cumulative trauma disorders (CTDs)?

Cumulative trauma disorders, or repetitive motion injuries, are the type of musculoskeletal disorders (WMSDs) most often experienced by computer users. CTDs are a group of health problems which result from over-use or misuse of muscles, tendons, and nerves and often occur in the upper body. The most common body parts are fingers, hands, wrists, elbows, arms, shoulders, backs, and necks. Some examples of CTDs are: carpal tunnel syndrome, tendonitis and tenosynovitis. Job-related CTDs are caused by any combination of the following factors:

- **Repetitive Tasks** (doing the same movements over and over)
- **Awkward or Fixed Posture** (working in an awkward position or holding the same position for a long time)
- **Insufficient Recovery Time** (inadequate rest breaks)
- **Fast Pace** (having to work quickly)

◆ Prevention of CTDs: Workstation Furniture and Equipment

Computer workstation furniture and equipment should be adjustable and/or designed so that proper working postures can be achieved. Improving the workstation maybe as simple as rearranging or adjusting your area, or in some cases, new furniture may be necessary. Below are the key components for an ergonomically designed workstation:

Furniture/ Equipment	PEOSH Guideline
Chair	<ul style="list-style-type: none"> • Chair features should be easily adjustable without tools: i.e. chair height, chair back, lumbar support and armrest (optional), • Seat pans need to be sufficiently wide and deep. • The chair should have 5 legs and the ability to swivel. • The seat should have a waterfall front edge. • The chair should be appropriate for the size of the user.
Keyboard/ Keyboard Tray	<ul style="list-style-type: none"> • Keyboard tray should be height and angle adjustable. • Soft wrist rest should be available. • Adjust the keyboard tray to a negative 10 degree angle.
Input Device (Mouse/Trackball)	<ul style="list-style-type: none"> • A mouse platform, located on the same level as the keyboard, should be available. • Adjust the mouse height to avoid wrist extension.
Computer Monitor	<ul style="list-style-type: none"> • Position the computer monitor, and adjust lighting, to avoid glare. • Computer monitor should be height adjustable, with tilt and swivel. • Position your monitor directly in front of you, at a distance of approximately arm's length.
Accessories	<ul style="list-style-type: none"> • Computer tables should be height adjustable. • If needed, provide a document holder to be placed in-line with the monitor, or at the same height and distance as the monitor screen. • If needed, provide a task light. • A headset should be provided if user works on the computer at the same time as talking on the phone. • Provide a chair mat. • Organize the workstation so that frequently used items are easily accessible.

◆ What are the symptoms of CTDs?

Numbness	Decrease Joint Motion	Pain
Redness	Weakness	Aching
Tingling	Clumsiness	Swelling
Burning	Loss of Strength	Cracking or popping of joints

These symptoms may appear in any order and at any stage in the development of the injury. Symptoms may not occur immediately after working, so that computer operators may experience symptoms away from the job. A serious CTD can develop months after symptoms appear, or it could take years.

◆ Prevention of CTDs: Proper Posture at Computer Workstations

Maintaining good body alignment while working at a video display terminal (VDT) is essential to avoid injury. For example, working with the forearms sloping up on a slanted keyboard tray can put unnecessary pressure on the nerves located in the wrists. The following instructions will help promote good body alignment to reduce the likelihood of a CTD injury:

To avoid injury in your	Maintain the proper position:
Back	<ul style="list-style-type: none"> • Sit with your back against the backrest so it is supported. • Slightly recline the backrest of your chair.
Arms, wrists, and hands	<ul style="list-style-type: none"> • Do not reach for mouse or telephone; place them close to the computer. • Maintain your wrists in a neutral position; do not angle your wrists up or down as they should be a natural extension of your forearms. • Do not rest your forearms, wrists or hands on the desk, tray or armrests while keying or mousing. • Avoid using excess force to hold or click the mouse.
Head and neck	<ul style="list-style-type: none"> • Your head should face forward and be tilted slightly downward. • Do not raise your shoulders, maintain them in relaxed position. • Place the material you are working on near the computer, directly in front of you.
Legs and feet	<ul style="list-style-type: none"> • Your feet should be on the floor or on a foot rest. • There should be adequate clearance for your thighs and feet under the desk. • Use the appropriate chair size to avoid the front of the seat pan from hitting the back of your knees.

Do not stay in any one working position for an extended period of time. To avoid muscle stress from performing too many repetitive motions with insufficient recovery time, try to vary job tasks by interspersing non-computer tasks with computer tasks. Exercise during breaks helps to relieve physical stress and strain.

What Should I Do If I Have Symptoms?

- Report any symptoms to your supervisor immediately
- Complete an Incident Report (Form 70)
- Forward a copy of the Incident Report to Risk and Claims Management and EOHSS.

Staff will be referred for medical evaluation by Risk and Claims Management, and EOHSS can evaluate the workstation for proper design, posture and furniture.

If you have any questions, would like an assessment of your workstation, or need a list of ergonomically approved furniture and equipment, please call the Department of Environmental and Occupational Health and Safety Services (EOHSS):

Newark

973-972-4812

Scotch Plains

908-889-2486

Piscataway/ New Brunswick

732-235-4058

Stratford/ Camden

856-566-6189

For additional information on computer workstation ergonomics, visit our website at:

<http://www.umdnj.edu/eohssweb/eohss.htm>

