

## APPENDIX L

## ERGONOMIC GUIDELINES FOR OFFICE FURNITURE SELECTION

Before acquiring new chairs, desks, work stations, etc., be sure your choice is an ergonomically correct one. Chair design, screen location, lighting, work stations, etc., contribute to the comfort and productivity of all employees. Support is available from the Safety Office to help you choose the proper furniture that can reduce/eliminate injuries at the work site.

1. Chairs. The chair can be a crucial factor in preventing back pain as well as in improving employee performance in office work. As the majority of office workers spend most of their time sitting, a properly designed and adjustable chair for comfort, efficiency, and for the task being performed is critical. All adjustments should easily be made from the seated position.

a. Legs. Chair should have 5 legs for stability and appropriate casters for easy movement while seated.

b. Height. Seat height should be pneumatically adjustable while seated. The height should be adjustable between 15-21 inches off the floor. Seat height should also allow a 90 degree angle at the knees and elbows when typing.

c. Seat Pan.

(1) A seat pan width of 17-20 inches suffices for most people and should be deep enough (15 to 17 inches) to permit the back to contact the lumbar backrest without cutting into the backs of knees.

(2) The front edge should be rounded and padded. The seat pan angle (tilt) should be adjustable (0 to 15 degrees). Avoid bucket-type seats.

(3) The seat should swivel easily.

d. Backrest.

(1) The backrest should offer firm support, especially in the lumbar (lower back) region, should be 12-19 inches wide, 15 - 20 inches high and should be easily adjustable both in angle and height, while sitting.

(2) The optimum angle between seat and back should permit a working posture of at least 90 degrees between the spine and thighs.

(3) Lumbar support should be provided that is 6 to 9 inches long and 12 inches wide, positioned 6 to 10 inches above the seat pan and protrude 2 inches forward from the seat back.

e. Padding.

(1) A chair seat and back should be padded enough to

allow comfortable circulation. If a seat is too soft, the muscles must always adjust to maintain a steady posture, causing strain and fatigue.

(2) The seat fabric should "breathe" to allow air circulation through clothes to the skin.

(3) The seat cushion thickness should be 1.5 - 2.0 inches.

f. Armrests.

(1) Armrests are optional, depending on user preference and tasks performed. They should not restrict movement or impede the worker's ability to get close enough to the work surface.

(2) Armrests should be 9 to 12 inches long and 8 to 9 inches above the seat.

(3) Armrests should be adjustable vertically as well as laterally.

2. Tables and Work Surfaces

a. Height.

(1) Correct table height depends upon the user of a workstation and upon the chair and other factors that interact with the user and table.

(2) If a computer is to be located at the workstation, the ideal is for the user to be able to sit at the table with the keyboard in place and be able to easily maintain a 90 degree elbow angle and straight wrists while typing.

(3) The height of an adjustable keyboard support should adjust between 23" and 28" to accommodate most-but not all-users. 26" is a recommended compromise position, while leg clearance must still be considered.

b. Surface Area.

(1) The table top should be big enough to allow space not only for all necessary equipment, but also for paperwork, books, and other materials needed while working. Working with materials on chairs and at odd angles has the potential for neck and other body strain.

(2) A general recommendation is that the table top should be at least as big as the standard office desk -- 30" by 60". A depth of at least 30" allows flexibility in use/reuse of the table.

(3) Usable space may be maximized by good wire/cable management.

## c. Leg Room.

(1) Knee spaces should allow a worker to feel uncrowded and to allow some changes of position. Minimum dimensions are provided below. If a computer is located at the workstation, leg room should be sufficient for keyboard support to be lowered to the correct level for use.

(2) The knee space should be at least 30" wide by 19" deep by 27" high to comply with the requirements of the Americans with Disabilities Act.

(3) Leg clearance should be greater than the height of the thigh and knee of the largest person using the workstation; for those using a footrest, clearance must be calculated with the legs in place on the footrest.

(4) Likewise, depth of the "clearance envelope" for both knees and toes should be evaluated while the workstation user is in a normal working position at the table (determined by the design of the seating system and the way the user sits). Drawers and support legs (for furniture) should not go where human legs need to fit.

## Minimum Knee Space Dimensions

	<u>Female</u>	<u>Male</u>
Minimum Depth*		
- Depth at knee level	12.2"	15.0"
- Depth at toe level	18.7"	23.5"
Minimum Width	20.0"	20.0"
Minimum Height**	20.2"	26.2"

\*The minimum depth under the work surface from the user's edge of the work surface.

\*\*From the floor to the bottom of a support surface.

(Source: ANSI/HFS 100-1988. Human Factors Engineering of Visual Display Terminal Workstations.)

d. Edges. Table edges should be smoothed or rounded to avoid discomfort on the part of the user as hands, arms, and wrists contact the table.

e. Construction. Sturdily built tables help avoid irritating vibrations.

f. Surfaces. Medium and light-colored surfaces may help avoid excessive contrast with printed materials. A non-shiny surface is recommended to help in reducing glare.

## 3. Workstation Accessories.

a. Document Holder. Use of a document holder-instead of resting documents on the table top-helps eliminate strain and

discomfort by keeping the document close to the monitor and at the same height and distance from the user's face as the screen. The dimensions and strength of the document holder should be sufficient to support the type of document being used (e.g., computer printouts, books, letter and legal size documents, etc...).

b. Keyboard Tray.

(1) User comfort (and strain avoidance) dictate that the keyboard should be at a lower level than the screen so that the screen can be viewed comfortably with the keyboard located in a comfortable position.

(2) Keyboard trays should be wide enough to accommodate the keyboard, mouse and wrist rests.

(3) The keyboard tray should be adjustable in terms of height, angle and forward/rearward movement to allow for a proper posture to be achieved.

(4) The keyboard tray should have a locking mechanism.

(5) The keyboard tray should be able to be stowed when not in use.

c. Footrests. Situations will arise in which a user is perfectly adjusted for keyboard use and with the monitor at a correct angle, but her/his feet do not rest flat on the floor. A footrest may be used to correct this problem.

