Computer Workstation Ergonomics

Evaluation: The first step to a successful ergonomics program is for you and your employees to evaluate the work and the computer (VDT) workstation. What follows is a *"VDT Checklist"* to help you make a quick but thorough appraisal of your VDT workstations. This, together with a look at your employees work injury experience, will help you decide whether you need to make any changes. Answer each of the Checklist questions for each of your VDT operators and their workstations. A "yes" answer means you are in good shape. A "no" answer means that you should take a closer look.

VDT CHECKLIST

VDT OPERATORS		
	Y	**N**
VDT operators have been encouraged to report to management any physical problems that they associate with the use of their VDT workstation.		
VDT operators do not have physical problems that they associate with the use of their VDT workstation.		
LIGHTING AND GLARE		
VDT workstation is arranged to minimize glare and visual discomfort.		
VDT screen is clean and free of perceptible flicker.		
WORKSTATION SEATING		
The seat and backrest of the chair support comfortable postures permitting occasional variation in the seating.		
Seat height allows the operator to comfortably place the entire sole of the foot flat on the floor or flat on a footrest.		
Seat pan does not push against the back of the lower leg behind the knee.		
The seat pan angle allows the operator to assume a comfortable position with the thighs approximately parallel to the floor and the lower leg approximately perpendicular to the floor.		
The angle between the seat back and the seat pan allows the operator to assume a comfortable upright position with the torso approximately perpendicular to the floor.		
The seat back width is at least 12 inches.		

The seat back allows the operator to assume a comfortable position with ample support for the lower back.		
Arm rests, if present, allow the operator to assume a comfortable position and to:(a) relax the shoulders and arms in a position close to the body;(b) operate the keyboard with the home row at approximately elbow height and the hands, wrists and forearms in a straight line approximately parallel to the floor;(c)		
Arm rests, if present, have a minimum inside distance between them which is at least equal to the width of the hips of the operator.		
Adjustable seat pans, seat backs, and arm rests, if present, are readily operable by the operator without the use of tools.		
SCREENS, KEYBOARDS, AND WORK SURFACES		
The topmost line of the VDT screen is slightly below eye level with the operator in an upright position.		
The operator while sitting in a comfortable position can perform keying with the torso sitting in an upright position.		
Operators wearing bifocals or trifocals can look at the screen without tilting the head.		
The keyboard, seating and work surfaces are positioned so that the operator, while seated in the most comfortable upright position, can perform keying with the keyboard approximately at elbow level, and the forearms, wrists and hands in a straight line approximately parallel to the floor.		
The operator, while seated in the most comfortable position, can perform keying with relaxed shoulders (i.e., <u>not </u>elevated) and arms resting close to the sides of the body (i.e., <u>not </u>extended outward or stretched forward).		
The keyboard is positioned (i.e., angled) so that keystroking can be performed with the wrist, hands, knuckles and fingers in a relaxed, natural (neutral) position.		
The work surface is high enough underneath so that it does no contact the top of the operators legs whenever the operator is sitting at the VDT with the feet flat on the floor or flat on a footrest.		
The work surface is large enough to hold all needed input devices (e.g., keyboards, mouse, trackball), task materials and related accessories.		
Input devices are positioned on the work surface at approximately the same height and distance from the operator at the keyboard.		
Input devices, primary work materials and frequently used accessories are positioned on the work surface in front of the operator.		
Adjustable screens, keyboards and work surfaces, if present, are readily operable by the user without the use of tools.		
WORK PRACTICES		
VDT operators have frequent short interruptions from keystroking at regular intervals throughout the shift, during which they can perform other duties or otherwise give their hands and wrists a break from keystroking. Even periods as short as 30 seconds are helpful.		

VDT operators routinely change body positions while working at the VDT.		
VDT operators routinely perform stretching and movement exercises and provide their eyes with short mini-rest breaks.		
VDT operators work regular hours without a lot of overtime.		
VDT operators are normally able to complete daily work and meet deadlines without harmful stress.		
VDT ACCESSORIES		
Document holders are provided upon the operator's request for any employee who types from documents.		
Document holders are positioned so that reading material is at approximately the same height and at the same distance from the operator as the VDT screen.		
Wrist rests are provided upon the operator's request.		
Wrist rests assist the operator in maintaining a straight, neutral position of the wrists and hands while keystroking, and are padded and free of sharp edges.		
The wrist rest, if present, is (a) approximately the same height as the keyboard; (b) positioned directly adjacent to the keyboard without gaps; and (c) allows the operator to avoid resting the arms/wrists or hands on hard, sharp or square edged surfaces. *		
Footrests are provided as needed to allow the operator to place the entire sole of the foot flat on a stable surface.		
Telephone headsets are provided up0on request for VDT operators who frequently answer telephones as part of their normal work activities.		
*NOTE: A "no" response to any single item in (a) through (d) should be recorded as a "no" response should be		

Options

VDT Operators:

- Develop and implement problem reporting procedures.
- If a quick fix to the work practice or workstation will not work, consider an evaluation for physical problems reported as being associated with VDT use. See discussion under Potential Ergonomic Injury (Step 3).

Lighting and Glare:
- Use blinds or curtains over windows that create glare.
- Position VDT operator and monitor so that direct light is not in the operator's eyes or reflected on the monitor.
- Position monitor screen to be at a right angle to windows that create glare.
- Install a dimmer switch and/or remove some light bulbs.

- Turn-off some overhead light and use task lighting, if needed.
- Use glare screen.

Workstation Seating:

- A chair adjustable for height and tilt of seat pan and backrest.
- Any other chair which allows the operator to assume safe, neutral working postures as described above. Armrests, if present, should be removable or adjustable.
- Lumbar support cushion if chair does not provide adequate back support.
- Footrest if VDT user's feet do not rest firmly and comfortably on the floor.

Keyboards, Monitors and Work Surfaces:

- Provide work surfaces with adequate space for VDT's, accessories and any work materials.
- A bi-level table easily adjustable for screen and keyboard height.
- A lower or higher desk or table.
- A height adjustable keyboard tray that can be attached to existing desk or table.
- Raise or lower monitor by putting it on, or removing it from, the top of hard drive, boxes or books.
- Adjustable monitor arm.
- Eye exam and a new prescription for glasses, if necessary.

Work Practices:

- Place documents and equipment in front of operator.
- Frequent periods of alternative work, or rest, which allow a brief respite from keystroking.
- Vary the job tasks.
- Sensible job demands.
- Adequate training.

VDT Workstation Accessories:

- Padded surfaces for wrists.
- Work surface large enough to accommodate all equipment within comfortable reach.
- Document holder adjustable to screen height.
- Telephone headset for employees who engage in more than occasional simultaneous use of telephone and VDT.

Hazard Control Plan

Once you have become familiar with your VDT workstations and your options, the next step is to decide whether you or your VDT operators should or need to make any changes. If the answer is yes, then it's time to develop a Plan. This means choosing the specific changes you want to make and setting a schedule. Deciding whether and how to make improvements will depend on your financial resources, how you define your priorities and input from your employees.

To help you define your priorities, answer the following questions:

- Which workstations see the highest volume of work by a single employee? Workstations used by employees who spend the most time keystroking should generally be given a high priority for modification. If employees

spend more or less the same amount of time keystroking at a VDT, those who do more constant keystroking without interruption should be considered a higher priority. Workstations that are used only intermittently may not need any changes.

- How long will it take to implement the change? How do finances affect your short-term and long-term options?
- If a long-term changeover is being considered, are there any simpler and less costly changes that can be made in the interim?
- Are there any changes you would like to try out on a temporary basis? If so, you should implement these sooner, rather than later, so that you can find out as soon as possible what works and what doesn't.
- Are there any quick fixes or inexpensive changes that could make a big difference? If so, why not get to these right away?
- What are the costs and benefits of the ergonomic improvements you are thinking about? There may be costs related to equipment purchases, training, and work time spent implementing improvements. (Not taking these measures can be costly, too.) Consider potential reductions in costs associated with workers compensation claims and lost work time. And don't forget that improved efficiency and new equipment can add value to the business and increase productivity.
- Are any employees currently having symptoms that appear to be related to their use of a VDT? If so, modifying their work practices or workstations is your top priority.

Consider

Adjustable equipment is convenient for workstations used by more than one employee, because the workstation can be modified instantly and easily to suit the needs of each. The disadvantage of adjustable equipment is that it is often more expensive than non-adjustable equipment. But don't forget—adjustability alone will not do the trick! It's the fit that counts, and the fit doesn't happen unless the equipment is <u>actually adjusted</u>. Keep in mind—you don't always need adjustable equipment to get a good fit. Many important improvements can be made simply by reorganizing a workstation and using equipment you already have.

A VDT screen can be "adjusted" by placing a book under it. If only one person is using it, this is an effective approach. If many people are using it at different times, and they require different screen heights, more readily adjustable equipment becomes a more effective solution.

A good Plan should include the options you've selected for change (STEP 2) and a schedule for their implementation. Now, have a look at two more ingredients you need to complete your Plan: Training and Ongoing Problem Reporting and Problem Solving.

Training

To prevent ergonomic injury, training is a must for VDT operators and their supervisors. You can use the Appendix, and the *VDT Checklist* in STEP 1, to provide your employees with the general information they need to use a VDT safely. There's one more thing you need to do when training your employees. Tell your employees how things are done in <u>your </u>business—what equipment is used and what work practices are to be followed. This is information that only you can provide. It should be front and center in their training. Consider hands-on training, with ample opportunity for questions and answers, as a way to help get the message across.

Continuing Problem Reporting and Problem Solving

Not even the best of planning can't predict all of the problems a business will confront from day to day. Nowhere is this more true than in the area of ergonomics, because ergonomic injuries tend to be fixable and inexpensive at first, but expensive and unfixable later on. Employees should be thoroughly trained on when and how to report problems. This is particularly true for problems related to ergonomics. That is why it is important to build into your Plan procedures that will allow you to become aware of and handle unforeseen ergonomic problems as they arise on a case-by-case basis. This means designing a system for Problem Reporting and Problem Solving that will

keep you on top of new developments.

Problem Reporting

Fast responses to early warnings are the goal here. A reporting procedure which encourages employees to report problems—a work practice that can be improved or symptoms which could signal an ergonomic injury—will get you well on the way.

The reporting procedure is based on the following principles:

1. **You can't fix a problem if you don't know about it; and**
2. **It's better to know too much than too little.**

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Problem Solving

Problem solving consists of improving a ***workstation or work practice***, or dealing with a ***potential ergonomic injury***. This is done on a case-by-case basis as new problems are brought to your attention.

Work Practice:

If an employee reports a problem related to his or her work activity, you'll need to have a second look at the employee's workstation and work practices. The employee's report can be used as an opportunity to identify and correct problems missed the first time around, and reemphasize points that may have been overlooked in the employee's training.

Potential Ergonomic Injury:

Whenever an employee reports symptoms that could be related to an ergonomic injury, it is in your best interest to get involved. Take a second look at the employee's work right away to see if there is anything obvious in the employee's workstation or work activity that may be causing the problem. Ask the employee about any outside activities that may be causing or contributing to the symptoms. If you can't find a quick fix that alleviates the symptoms, the best solution may be for the employee to obtain a health care evaluation.

Implement & Monitor

Implementation is where the rubber meets the road. The key to succeeding with this step is to do what you say you are going to do and periodically monitor progress. "Continuous improvement" is a buzz word that is very popular these days. Nowhere is this concept more relevant than in the area of ergonomics, which is a constantly evolving body of information based on fine tuning approaches that work and reconsidering the approaches that do not work.

Remember that employees have much of the critical information necessary to identify problems and propose solutions. Their full participation in the dialogue is one of the most important ingredients of success. Some questions to consider as you evaluate your program's effectiveness include:

- Are ergonomic injuries being reduced in number and/or severity?
- Has the scheduling, pace, organization or work activity changed?
- Have staffing levels changed?
- Have any additional ergonomic problems been created by new job tasks, equipment or even the program itself?
- Is information freely exchanged between employees and their supervisors about updates or changes in the program?

- Is the problem reporting and problem solving procedure working?
- Is any additional training needed?