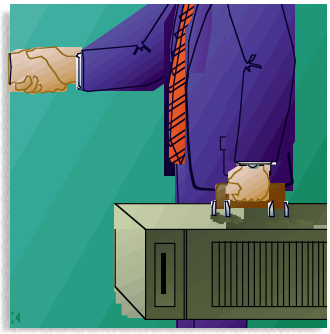
Achieving a Healthy Workplace Computing Environment



Employees, management and government must cooperate to ensure that the workplace promotes safety.

By and large, the transition from industrial revolution to information revolution has given most of us much safer places in which to work; the chances of breaking a leg or spraining an ankle have become practically insignificant. But working with computers brings with it a new class of insidious workplace health hazards; these injuries are actually harder to prevent, because their causes are not obvious and (despite a fair amount of media attention over the last few years) there is limited awareness of and respect for them among both management and staff. Likewise, their treatment is also complicated by their relative newness to government policy makers, medical professionals and the insurance industry.

Computing health hazards can be classified into four general areas:

The *repetitive strain injury* (RSI) has long been known to assembly line workers, athletes and musicians, but it has entered mainstream parlance only since computers became common. Almost any simple movement, repeated thousands of times, can become an RSI if warning signs are ignored. Continuing to repeat the motions while experiencing muscle fatigue, stiffness and minor pain is asking for trouble. Poor posture or unnatural body position can greatly exacerbate an RSI, especially tendon problems such as carpal tunnel syndrome.

Eyestrain is more than uncomfortable; it can trigger headaches and mental fatigue, which can reduce performance as well as morale. Although hard evidence is lacking, many users report the onset or worsening of myopia (nearsightedness), a condition that is typically permanent.

Monitors emit many different types of *electromagnetic radiation*, some of which have effects that are not well-understood. For example, extremely low frequency (ELF) radiation is among these. There has been controversy about possible biological effects of ELF in recent years, and many researchers now contend that this type of radiation does have an effect on living organisms—they're just not sure what kind of effects. A 1992 Finnish study revealed that human fetuses are particularly susceptible to ELF and other monitor emissions, especially in their earliest stages of development.

Stress, which most of us take for granted, can promote and exacerbate health problems, including gastrointestinal diseases, cardiovascular disease, high blood pressure, ulcers, immune system disorders and high-risk pregnancies. Of course, intense or constant stress also reduces productivity, hurts employee morale and increases the likelihood of drug and alcohol abuse.

By Jim Johnson

An Ounce of Prevention

Although these hazards are of different types, many of the tactics for preventing them are similar. First and foremost is to *pay attention*; most of us ignore minor pains and discomforts, but these are the warnings that we must heed. Learn to be more aware of how your eyes feel, to notice shoulder and neck tension before it becomes a headache, to catch yourself slumping forward in your chair, to breathe deeply and steadily, and to take breaks and stretch even when you're deeply immersed in your work.

Correct posture is more than just a habit; proper arrangement of furniture, equipment and work material is the key to making good posture happen more naturally. If you're leaning forward to use your mouse or keyboard, you need to change your layout. If your chair becomes uncomfortable after an hour or two, you need a different one. Wrists should be straight when typing, the spine should be aligned from the pelvis to the skull and the major joints in your body—elbows, hips and knees—should be bent at the most relaxed angles possible. Good posture also relieves pressure on tissues prone to RSI.

Your monitor should be at arm's length, with the center of the screen at or just below eye level; this helps prevent eyestrain, neck strain and excess exposure to electromagnetic fields. Sunlight is the best light, as long as it's adequate and

doesn't create glare on your monitor screen; rearrange your office and shield your monitor as necessary to produce the best contrast.

Our eyes are designed to scan back and forth constantly; holding them rigidly focused for long periods strains them and contributes to the long-term deterioration of vision. Learn to scan your eyes around the office periodically, to gently roll your eyes and to close them and massage the sockets occasionally. Because they may work with fewer distractions, telecommuters can actually be more at risk than office workers for uninterrupted staring and inadequate breaks for stretching.

Everyone Has Responsibilities

Naturally, there is no substitute for the advice of a medical professional in the treatment and prevention of medical conditions. Research in this area is still fairly new, so many experts have had to base their advice on anecdotal evidence.

Although awareness of these problems is in its relatively early stages, what awareness there is has already created tension between employers and employees. Many problems can be avoided if there is a mutual understanding of each party's responsibilities. Users, employers, manufacturers and government all have roles to play in workplace safety.

Computer users are responsible for the manner in which they use the computer, including posture, workstation layout, taking breaks and monitoring fatigue. Employers must provide a safe working environment; this includes providing safe furniture and equipment, educating employees in how to avoid injury, setting reasonable breaks and work hours and accommodating tactics on the part of the users that are intended to prevent and treat injury. Manufacturers are responsible for designing their furniture and equipment ergonomically and for educating their sales forces in these issues. The government is responsible for establishing and enforcing workplace health and safety regulations and guidelines and for encouraging research in consumer safety.

For more information on this subject, I recommend Joan Stigliani, *The Computer User's Survival Guide* (O'Reilly & Associates), which provided some source material for this article. IT

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