# HEALTH CONCERNS OF COMPUTER USE

The widespread use of computers has led to important health concerns. Computer users should be proactive and minimize their chance of health complications. The following sections discuss computer health risks and preventions, along with measures users can take to keep the environment healthy.

## *Computers and Health Risks*

The Bureau of Labor Statistics reports that work-related musculoskeletal disorders account for one-third of all job-related injuries and illnesses. A musculoskeletal disorder (MSD), also called repetitive strain injury (RSI), is an injury or disorder of the muscles, nerves, tendons, ligaments, and joints. Computer-related RSIs include tendonitis and carpal tunnel syndrome. RSIs are the largest job-related injury and illness problem in the United States today. OSHA (Occupational Safety and Health Administration) has developed industry-specific and task-specific guidelines designed to prevent workplace injuries related to computer usage.

Tendonitis is inflammation of a tendon due to some repeated motion or stress on that tendon. Carpal tunnel syndrome (CTS) is inflammation of the nerve that connects the forearm to the palm. Repeated or forceful bending of the wrist can cause CTS or tendonitis of the wrist. Symptoms of tendonitis of the wrist include extreme pain that extends from the forearm to the hand, along with tingling in the fingers. Symptoms of CTS include burning pain when the nerve is compressed, along with numbness and tingling in the thumb and first two fingers.

Computer users sometimes suffer from tendonitis or CTS. Factors that can cause these disorders include prolonged typing, prolonged mouse usage, or continual shifting between the mouse and the keyboard. If untreated, these disorders can lead to permanent damage to your body.

You can take many precautions to prevent these types of injuries. Take frequent breaks during the computer session to exercise your hands and arms (Figure 1). To prevent injury due to typing, place a wrist rest between the keyboard and the edge of your desk. The wrist rest reduces strain on your wrist while typing. To prevent injury while using a mouse, place the mouse at least six inches from the edge of the desk. In this position, your wrist is flat on the desk, which causes bending to occur at the elbow when you move the mouse. Finally, minimize how often you switch between the mouse and the keyboard, and avoid using the heel of your hand as a pivot point while typing or using the mouse.

**Figure 1: Exercise your hands to reduce the chance of a repetitive strain injury.**

Another type of health-related condition due to computer usage is computer vision syndrome (CVS). You may have CVS if you have any of these conditions: sore, tired, burning, itching, or dry eyes; blurred or double vision; distance blurred vision after prolonged staring at a display device; headache or sore neck; difficulty shifting focus between a display device and documents;

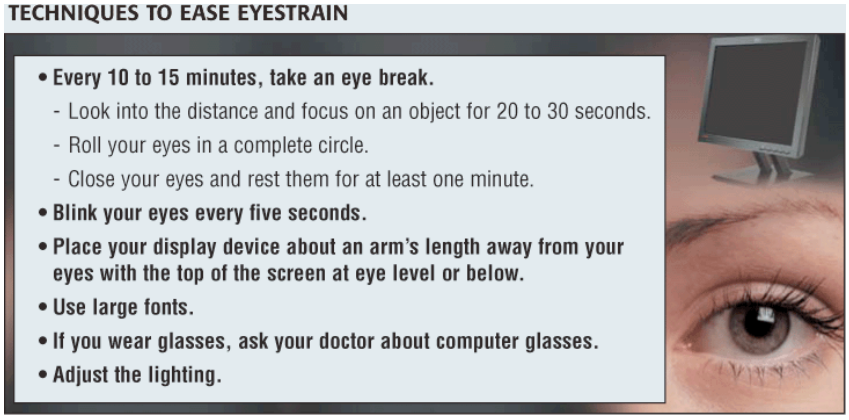


**Figure 2: Tips to help reduce eyestrain while working on the computer.**

difficulty focusing on the screen image; color fringes or after-images when you look away from the display device; and increased sensitivity to light. Although eyestrain associated with CVS is not thought to have serious or long-term consequences, it is disruptive and unpleasant. Figure 2 outlines some techniques you can follow to ease eyestrain.

People who spend their workday using the computer sometimes complain of lower back pain, muscle fatigue, and emotional fatigue. Lower back pain sometimes is caused from poor posture. Always sit properly in the chair while you work. Take a break every 30 to 60 minutes – stand up, walk around, or stretch.

Be sure your workplace is designed ergonomically. Ergonomics is an applied science devoted to incorporating comfort, efficiency, and safety into the design of items in the workplace. Ergonomic studies have shown that using the correct type and configuration of chair, keyboard, display device, and work surface helps users work comfortably and efficiently and helps protect their health. For the computer work space, experts recommend an area of at least two feet by four feet. The work area should be flexible to allow adjustments to the height and build of different individuals. Good lighting and air quality also are important considerations. Other ergonomic recommendations include the following:

- Viewing angle: 20 degrees to center of screen
- Viewing distance: 18 to 28 inches
- Elbows: 90 degree angle
- Feet: flat on the floor
- Chair: adjustable height with four or five legs for stability
- Hands: approximately parallel to the floor
- Keyboard height: 23 to 28 inches depending on height of user

Many display devices and keyboards have features that help address ergonomic issues. Some keyboards have built-in wrist rests. Others have an ergonomic design specifically to prevent RSI. Display devices often have controls that allow you to adjust the brightness, contrast, positioning, height, and width of images. Most monitors have a tilt-and-swivel base, allowing users to adjust the angle of the screen to minimize neck strain and reduce glare from overhead lighting. CRT monitors should adhere to the MPR II standard, which defines acceptable levels of radiation.

## *Computer Addiction*

Computers can provide hours of entertainment and enjoyment. Some computer users, however, become obsessed with the computer and the Internet. Computer addiction is a growing health problem. Computer addiction occurs when the computer consumes someone's entire social life.

Internet addiction disorder (IAD) describes the condition attributed to users who are dependent on or abusing the Internet.

Symptoms of a user with a computer addiction include the following:

- Craves computer time
- Overjoyed when at the computer
- Unable to stop computer activity
- Irritable when not at the computer
- Neglects family and friends
- Problems at work or school

Computer addiction is a treatable illness through therapy and support groups.

## *Green Computing*

Green computing involves reducing the electricity and environmental waste during computer use. People use, and often waste, resources such as electricity and paper while using a computer. Society has become aware of this waste and is taking measures to combat it.

Most personal computer, display devices, and printers comply with guidelines of the ENERGY STAR program. For example, many devices switch to standby or power save mode after a specified number of inactive minutes or hours.

You should not store obsolete computers and devices in a basement, storage room, attic, warehouse, or any other location. Computers, monitors, and other equipment contain toxic materials and potentially dangerous elements including lead, mercury, and flame retardants. In a landfill, these materials release into the environment. Recycling and refurbishing old equipment are much safer alternatives for the environment. Manufacturers can use the millions of pounds of recycled raw materials to make products such as outdoor furniture and automotive parts.

By the year 2007, experts estimate that more than 500 million personal computers will be obsolete. Because of the huge potential volumes of electronic waste, the U.S. federal government has proposed a bill that would require computer recycling across the country. Local governments are working on methods to make it easy for consumers to recycle this type of equipment. Manufacturers are beginning to incorporate recycling fees into new computer and component costs.

To reduce the environmental impact of computing further, users simply can alter a few habits. Figure 3 identifies some ways users can contribute to green computing.

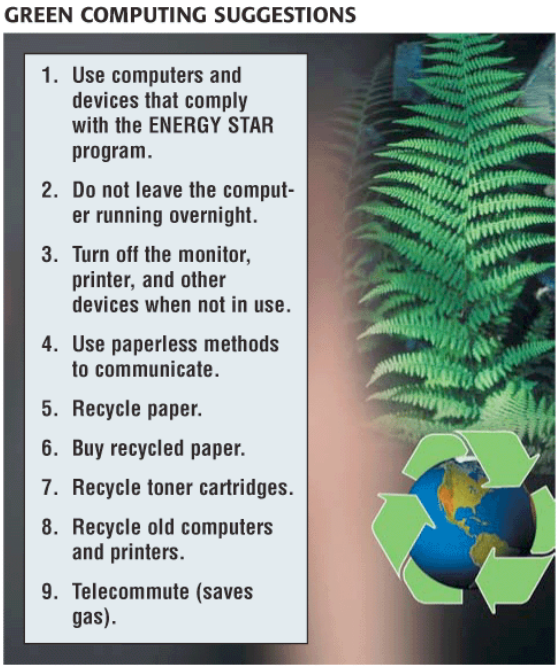


**Figure 3: Suggestions to make computing healthy for the environment.**