

Appendix B
Three-tier Hierarchy of Controls

Engineering Controls:

Engineering controls are the most desirable and reliable means to reduce workplace exposure to potentially harmful effects. This is achieved by focusing on the physical modifications of jobs, workstations, tools, equipment, or processes. At a minimum, the following engineering controls should be incorporated into the employee's workstation.

- Ensure that the height of the work surface shall be such as to provide adequate clearance under the work surface to accommodate the operator's legs in a normal upright seated position.
- Ensure that computer display stand is adjustable so that the entire primary viewing area of the display is between zero and sixty degrees below the horizontal plane passing through the eyes of the operator and that the display is placed directly in front of the user.
- Ensure that glare shall be eliminated through methods that include but are not limited to shielding windows with shades, curtains, blinds, positioning the terminal so that the screen is at a right angle to the windows, fitting the computer screen with anti-glare filters, and providing a workstation environment that is finished in a manner to minimize reflection.
- Provide an adjustable document holder based on document placement, height, and capable of supporting the documents used by the employee (documents include: papers, a file, or a book).
- Provide adequate lighting that is neither excessive nor inadequate. Office lighting should range from 20 to 50 foot-candles. If LCD monitors are in use, higher levels of light are usually needed for the same viewing tasks (up to 73 foot-candles).
- Reduce High contrast between light and dark areas of the computer screen, horizontal work surface, and surrounding areas to reduce the likelihood of eye fatigue and headaches.
- Provide hands-free telephone devices for employees who regularly use a telephone for 2 or more hours in a single work shift.
- Provide users an adjustable chair that meets the following minimum standards:
 - Seat pan that is appropriately sized to fit the individual. A two-inch clearance behind the knees and on either side of the hips is ideal.
 - Armrests that can be adjusted to allow the employee's shoulders to relax and elbows at their sides.
 - Seat back designed with lumbar support that can be adjusted to fit the curvature of the employee's lower back.

- Adjustable chair height to allow the employee to use appropriate body posture at the working surface height.

Administrative Controls:

Administrative controls are used in controlling or preventing workplace exposure to potentially harmful effects by implementing administrative changes. At a minimum, the following administrative controls should be incorporated into the employee's work tasks:

- Ensure that the computer user maintains a non-bent wrist position when operating a keyboard and/or mouse by providing armrest, wrist rest, articulating drawers, and mouse wrist rests where needed. This means the computer user, when seated in a normal upright position, is able to operate the keyboard with their forearms, wrists and hands in a position approximately parallel to the floor while elbows are in a ninety-degree bend next to the side of the body.
- Encourage working with the body in a neutral position to reduce stress and strain on the muscles, tendons, and skeletal system and reducing the risk of developing a musculoskeletal disorder (MSD).
- Provide the computer operator who may be expected to routinely perform repetitive keyboard motions for two (2) or more hours, five-minute microbreaks to stretch and move body parts that are affected by the repetitive motion.
- Encourage workers to change working position frequently throughout the day through task switching, job rotation, work pacing, micro-breaks, and periodic stretching.

Personal Protective Equipment (PPE):

- Although not recognized as an effective means of controlling hazards and do not take the place of engineering or administrative controls, there are acceptable forms of PPE, which include wrist braces, elbow pads, kneepads, and anti-vibration gloves.
- If an employee is utilizing PPE due to symptoms of repetitive strain injury (RSI), the PPE must be approved by the City Physician.
- Departments should consider reasonable, cost-effective engineering and administrative controls to identify ergonomic risk factors and reduce hazards.

Additional engineering and administrative controls for workstation users are located on page 1 of the Ergonomic Evaluation Form (Appendix A).