Subchapter 7. General Industry Safety Orders
Group 15. Occupational Noise
Article 106. Ergonomics

§5110. Repetitive Motion Injuries.

ERGONOMICS -- HISTORY OF CALIFORNIA STANDARD

(a) Scope and application. This section shall apply to a job, process, operation where a repetitive motion injury (RMI) has occurred to more than one employee under the following conditions:

(1) Work related causation. The repetitive motion injuries (RMIs) were predominantly caused (i.e. 50% or more) by a repetitive job, process, or operation;
(2) Relationship between RMIs at the workplace. The employees incurring the RMIs were performing a job process, or operation of identical work activity. Identical work activity means that the employees were performing the same repetitive motion task, such as but not limited to word processing, assembly or, loading;

(3) Medical requirements. The RMIs were musculoskeletal injuries that a licensed physician objectively identified and diagnosed; and

(4)Time requirements. The RMIs were reported by the employees to the employer in the last 12 months but not before July 3, 1997.

(b) Program designed to minimize RMIs. Every employer subject to this section shall establish and implement a program designed to minimize RMIs. The program shall include a worksite evaluation, control of exposures which have caused RMIs and training of employees.

(1) Worksite evaluation. Each job, process, or operation of identical work activity covered by this section or a representative number of such jobs, processes, or operations of identical work activities shall be evaluated for exposures which have caused RMIs.

(2) Control of exposures which have caused RMIs. Any exposures that have caused RMIs shall, in a timely manner, be corrected or if not capable of being corrected have the exposures minimized to the extent feasible. The employer shall consider engineering controls, such as work station redesign, adjustable fixtures or tool redesign, and administrative controls, such as job rotation, work pacing or work breaks.

(3) Training. Employees shall be provided training that includes an explanation of:

(A)The employer's program;
(B) The exposures which have been associated with RMIs;
(C) The symptoms and consequences of injuries caused by repetitive motion;
(D) The importance of reporting symptoms and injuries to the employer; and
(E) Methods used by the employer to minimize RMIs.

(c) Satisfaction of an employer's obligation. Measures implemented by an employer under subsection (b)(1), (b)(2), or (b)(3) shall satisfy the employer's obligations under that respective subsection, unless it is shown that a measure known to but not taken by the employer is substantially certain to cause a greater reduction in such injuries and that this alternative measure would not impose additional unreasonable costs.

Office Ergonomics

Ergonomic Setup Tips

KEYBOARD SETUP & USAGE

There are a number of ailments that can come from using your keyboard incorrectly- from short-term issues like sore wrists to long-term problems like Carpal Tunnel Syndrome. These ailments can take years to develop, and once present, can be difficult or even impossible to reverse. That's why it's so important - even if you're not currently feeling pain-to position and use your keyboard properly to avoid future problems. To learn more after reading these tips, feel free to browse the related links to the right.

SETUP & POSITIONING

1. **If you don't currently use an adjustable keyboard/mouse tray, consider attaching one to your surface.**
   This allows a much wider range of adjustment, and helps you maintain a proper ergonomic setup. Choose a system that is height adjustable, lets you tilt the keyboard away from you slightly for better posture (negative tilt), and allows you to use

the mouse with your upper arms relaxed and as close to the body as possible.

2. **Make sure the height of your keyboard allows you to keep an "open angle" with your arms.**
In the proper position, the keyboard should be placed just above the level of your lap. This is lower than most people normally place their keyboard, but lets your arms tilt downward while using the keyboard, leaving your elbows at a comfortable "open" angle. (If you don't have an adjustable keyboard tray, you may need to accomplish this by adjusting your chair height).

3. **If your keyboard is lower than the desk surface, tilt the back edge of the keyboard slightly down (known as "negative keyboard tilt").**
Using a slightly negative keyboard tilt will help you keep your wrists in the proper (neutral) position. Try to avoid positive keyboard tilt (i.e., where the top row of keys is noticeably higher than the bottom row of keys). Also, make sure that if there are "legs" attached to the bottom front of your keyboard, they are left un-extended.

4. **If you use a keyboard tray, make sure there's enough room for your mouse.**
Your mouse should be close to your keyboard so that you don't have to reach far to grasp it.

5. **If you have a broad chest, consider a "split" keyboard.**
Split keyboards divide the keyboard into two halves, each of which points slightly outwards. The outward angle lets your wrists and forearms point inward without requiring your elbows to come in as far, better conforming to the contours of your body. Conversely, thinner people may find a traditional "straight" keyboard more comfortable.

Tips for Healthy Keyboard Usage

1. **Use a light touch when typing (don't bang on the keyboard!).**
Try to use the minimum amount of force necessary to depress the keys. The tendons from your fingers connect near your elbow, so striking the keys too hard can lead to problems you might not associate with your keyboard—for example, pain and inflammation in your elbows (Epicondylitis).

2. **Keep your wrists in a neutral (straight) position—not bent up or down.**
Repeatedly bending your wrists up and down (extension and flexion) compresses structures inside the carpal tunnel in the wrist. This can cause pain and lead to injuries like carpal tunnel syndrome. When you're typing, your forearms tend to sag as the arms tire, putting the wrists into even greater wrist extension—another good reason to take frequent stretch or rest breaks!

3. **Keep sure your elbows at a slightly open angle—90Ì or greater.**
Keeping your elbows bent less than 90° can cause nerve compression, leading to sore wrists and arms. Adjust the height of your chair or your keyboard tray to achieve a comfortable position.

4. **Keep your shoulders relaxed, and your elbows at your side.**
You shouldn't have to raise your shoulders to get your hands to reach the keyboard—try raising your chair instead. Your forearms should be roughly parallel to the floor. If your chair has armrests, the

armrests should comfortably support your elbows during rest breaks.

5. **Don't use wrist rests or armrests while typing—only while resting.**
If your workstation has wrist rests or armrests, be sure to use them only while taking breaks. Never use wrist rests or armrests while typing. A wrist rest should be used to rest the heel of your palm, not your wrist itself.

6. **Stay centered on the lettered part of the keyboard.**
Keyboards aren't symmetrical. Letter keys are on the left and the numeric keypad is on the right, but most people center themselves with the entire keyboard or keyboard tray—not the letters! This puts the keyboard a little too far to the left. If you use the letters most, it makes sense to align yourself with that section—the "B" key should be about in line with your belly button.

7. **Consider using a voice recognition software program.**
Voice recognition programs allow you to dictate to your computer and free yourself from the keyboard. There are a number of commercially available
programs. Be aware, however, that this can lead to new problems such as voice loss!

8. **Consider using keyboard shortcuts or macros to repeat common tasks.**
Many of the commands available through menu choices can also be accomplished by using the keyboard. (For example, Ctrl-C can be used to copy text.). Some programs also allow you to automate common tasks (such as formatting a document or inserting your address) with scripts called macros. You can even buy software programs that allow you to easily record macros for any software and assign complex key sequences. These can significantly reduce the amount of typing you need to do.

MONITOR SETUP & USAGE

Choosing the right location for your computer monitor on the desk or workspace can be a difficult decision. Yet if not positioned correctly, your monitor can cause neck pain, shoulder pain, or even eye strain. The following guidelines can help determine the ideal ergonomic position for your monitor. To learn more after reading these tips, feel free to browse the related links to the right.

SETUP & POSITIONING

1. **Center your monitor.**
For most workstations, the best position for your monitor is directly in front of you. Putting the monitor off-center (i.e., to the left or right of your body) can cause neck and shoulder pain due to twisting and awkward posture.

   - **Exception:** If you only occasionally look at the screen, it's acceptable to place the monitor to the side. People who frequently interact with others across a desk - bank tellers and managers, for example - may want to keep the monitor to the side so that it doesn't interfere with their communication. A good solution for these situations is a monitor swivel arm.

2. **Sit arms' length away.**

Your monitor should be about arm's length away when you're sitting back in your chair. (Sitting too close or too far from your screen can cause eyestrain). If you have a large monitor - 20" or larger - you should sit slightly further back.

3. Position the top of your screen level with your eyes.

The ideal viewing height is to have your eyes level with an imaginary line across the screen, about 2"-3" below the top of the monitor. This can be accomplished in one of two ways - either by either lowering your monitor or raising your chair. If your screen is too low, you'll find yourself tilting your head forward to view the monitor (a common cause of neck pain). If it's too high, you may have to tilt your head back, leading to neck and shoulder pain - and increasing the likelihood of glare from overhead lights (a common cause of headaches).

- **Exception:** If you wear bifocals or trifocals while using your computer, it may be appropriate to position your monitor a few inches lower than otherwise recommended to accommodate comfortable viewing through your lower lenses.

- **Exception:** If you use a large monitor (20" or larger), position your monitor so that the top of the viewing area is about 3" above eye level.

4. Tilt your monitor slightly upward.

Tilt the screen so that the base is slightly closer to you than the top. This enables you to view the entire screen and the display more clearly. Tilting the monitor downward isn't recommended unless necessary to reduce the glare of overhead lights or if your monitor is too high and can't be adjusted.

- **Beware:** Tilting the screen too far back may cause reflected glare problems from overhead lighting.

5. Beware of your windows.

Windows are a common source of glare on the monitor. If you work in a room with windows, be sensitive to any reflections (or glare) that may show on your monitor and cause you to squint. A great way to check for glare is to turn your monitor off and examine any reflections visible on it. Also, placing your monitor directly in front of a window can create an uncomfortable viewing situation if the brightness of the window is greater than that of the monitor (see below).

6. Balance the brightness of your monitor and its surroundings.

You should adjust your monitor so that its brightness is approximately equal to the area directly behind it. The goal is to eliminate any contrast between the brightness of the screen and the area behind it. (Make sure, of course, that your workplace is adequately lit!). Uneven brightness can cause headaches and vision issues (such as fatigue and squinting). You may need to adjust your screen brightness throughout the day if your workspace is lit by natural light..

7. Adjust your font size and color.

The size of your text should be about two or three times the size of the smallest text that you can read. Black text on a white background is usually the easiest to discern when word processing.

8. **Reduce glare.**
If left uncorrected, glare will cause discomfort, eyestrain, and headaches. Try to reposition your monitor so that there's no glare on the screen (but avoid putting it in a position that's uncomfortable to view!). If you can't avoid the glare by readjusting your monitor positioning, consider a high-quality glass anti-glare screen.

9. **Consider a swivel arm.**
If you frequently interact with others, and placing your monitor in the recommended location would interfere with your interactions, consider purchasing a swivel arm. Swivel arms enable users to maintain proper monitor location while in use and easily swing their monitors out of the ways when not in use.

Tips for Healthy Monitor Usage

1. **Follow the 20/20/20 Rule**
If you tend to work on your computer for prolonged periods of time, be sure to take a 20 second break every 20 minutes and look at least 20 feet away. This gives yours eyes a break and chance to adjust focus-a great way to avoid visual fatigue.

2. **Keep a clean screen**
Dust gathers easily on monitor screens. Be sure to periodically use a recommended solvent to remove any accumulated dust or fingerprints, ensuring a clean and visually consistent display.

MOUSE / POINTING DEVICE SETUP & USAGE

There are a number of ailments that can come from using your mouse incorrectly, from sore wrists to aching shoulders. They may take years to develop, but once present, can be difficult to reverse. That's why it's so important - even if you're not currently feeling pain - to position and use your mouse properly so that you avoid future problems. To learn more after reading these tips, feel free to browse the related links to the right.

Setup & Positioning

1. **Place your mouse close to your keyboard and within easy reach.**
Placing your mouse too far away can cause your shoulders muscles to tire from constantly supporting your outstretched arm, leading to neck and shoulder pain. Keeping it close to your keyboard means you won't have to overstretch when reaching for the mouse.

2. **Keep your mouse close to your keyboard.**
Placing your mouse on a desk if your keyboard is on a tray can cause you to overreach, and result in shoulder or neck pain. You should be able to use your mouse comfortably with your arms close to your side, and your elbows at a slightly "open" angle.

3. **Consider a mouse tray to help keep your mouse near your keyboard.**
Your mouse should be close to your keyboard, and both should be comfortably placed. If you are using a keyboard tray, the best position for your mouse is on an adjustable tray that slides over the numeric keypad of your keyboard, putting your mouse about 2 inches above your keyboard (known as a mouse bridge). If your keyboard tray has a tiltable mouse tray to the side, then try angling it down slightly to improve your wrist

posture. Try to avoid using a mouse to the side of the keyboard on a flat, lowered tray, because this puts your hand in greater wrist extension.

4. Adjust your mouse/trackball's software controls.

Many people don't realize that the way their mouse functions can be controlled through software. You can adjust the speed at which your mouse moves, the time required between double-clicks, and the size of the cursor. If you're constantly having to backtrack because you shot past the "close window" button, try slowing your mouse down.

5. Consider using a different input device to reduce repetitive arm motions.

Trackballs decrease the distance your shoulder has to travel, which may help reduce movement-related pain. (However, they can also put more strain on the fingers and hands.) Some mouse designs work like a joystick and may help. You can also use a touch pad, a pen and tablet, or a foot-operated mouse. Try a variety of devices, and use the one that feels most comfortable.

6. Make sure you're using the right size pointing device.

People often don't realize that mice may come in different sizes. Make sure that the mouse fits comfortable in your hand; if it's too large, you may want to find a smaller mouse. There are even adjustable-size mice.

Tips for Healthy Mouse Use

1. Use your elbow-not your wrist-to move the mouse

Keeping your forearms in one place and using your wrists to "flick" the mouse can increase intracarpal pressure-leading to wrist and finger pain.

2. Limit the amount you use your tracking device

Take breaks every 15-20 minutes and change your position frequently.

3. Use keyboard shortcuts

Many of the commands available through menu choices can also be accomplished by using the keyboard. (For example, Ctrl-C can be used to copy text.) These shortcuts can significantly reduce the amount you need to move your mouse.

4. If you surf the web or edit long documents, consider a mouse with a scroll wheel

Scrolling with a wheel instead of the entire mouse helps reduce repetitive arm motions.

5. Don't click too hard!

Just like typing on a keyboard, some people tend to use excessive force when clicking the mouse or trackball buttons. A light touch will do-and it will help save your hands and wrists!

6. Make sure you're holding your mouse correctly

Believe it or not, there's a right and a wrong way to hold your mouse. Here are a few tips to help:

- **Avoid letting your fingers "hover" above the mouse or trackball buttons.** Some people are always "poised and ready" to click, holding their fingers over the button even when they're not using it. This causes unnecessary stress on your fingers. When you're not ready to click, you don't need your fingers raised-give

them a rest by letting them relax or lay gently on the button.

- **Use a light grip.** Just like typing too hard on a keyboard, holding your mouse too tightly can lead to pain. Don't choke your mouse, it's already dead!

- **Don't hold the mouse when you're not using it.** Some people seem glued to their mouse. If there's a short period where you won't be using your mouse, you don't need to hold onto it.

- **Keep your wrists in a straight or "neutral" position.** Avoid tilting (up and down) or angling (side to side) your wrists.

7. **Try using your other hand to operate the mouse**
   Switching hands, or "load sharing," limits the amount that each hand has to work. It may seem strange, but it takes most people just a few days to get used to the change.

8. **If you use a trackball, consider placing padding or a rest under your elbow**
   This can help reduce the work your shoulder performs in keeping your arm raised. Make sure you use different fingers to operate the trackball- using just your thumb can lead to discomfort!

CHAIR SETUP & USAGE

Experts agree that your chair is perhaps the single most important component of a healthy working environment. In fact, it's what most people should adjust first - before modifying their keyboard or monitor position. We've put together some guidelines for achieving optimal chair positioning; to learn more after reading these tips, feel free to browse the related links to the right.

SETTING UP YOUR CHAIR

The Basics

You should be able to sit comfortably in the chair, using as much of the chair back as possible for support. The lumbar support should fit comfortably into the curve of your lower back, and your feet should be flat on the ground (use a footrest if necessary). The seat pan (i.e. the part on which you sit) should be an appropriate size that allows at least one inch between your legs and either side of the chair, and supports your legs without applying pressure to the back of your knees.

Adjustable Chair

1. **Adjust the Chair Height**
   Start with your seat at the highest setting and then adjust downward until your legs and feet feel comfortable, and the back of your knees is at an open angle (90Ì or slightly greater, and not compressed).

2. **Sit Back in the Chair**
   Adjust the height and/or depth of the lumbar support to provide comfortable lower back support.

3. **Adjust the Recline**
   If the chair has a recline lock, set this at a comfortable position. Remember to unlock this periodically; this will allow the backrest to move with your back as you change posture.

It's generally better to be slightly reclined, as this helps relieve tension from your lower back. If the chair allows you to, adjust the recline tension as you move back and forth so that the chair provides consistent support.

4. **Adjust the Seat Pan**
When sitting back, make any adjustments to the seat pan (e.g., seat pan tilt) to reach a comfortable position. The seat pan should extend about an inch on both sides of your legs, and should not apply pressure to the back of your knees.

5. **Adjust the Armrest**
If possible, adjust the height, width, and position of your armrests to one most comfortable for how you work. Keep in mind that armrests will be used only *between* typing sessions, not while typing or using your mouse. Consider lowering or swinging the armrests out of the way when not in use so as to not inhibit your movement.

6. **Clear Obstacles**
Make sure that the chair's casters (wheels) move smoothly, and that nothing obstructs your ability to position the chair in front of your desk and computer.

Non-Adjustable Chair
If you don't have an adjustable chair, consider purchasing one. It's a wise investment because it's such a crucial element in creating an ergonomically correct workspace. See our buyer's guide for more on what to look for before making a purchase.

If you don't have an adjustable chair, you may need to think creatively to obtain an ideal sitting posture.

- If you sit low (i.e. there's a downward slope from your knees toward your body), consider sitting on a soft, evenly-filled cushion to provide the added height necessary.

- If you sit too high (i.e. there's an upward slope from your knees to your body), consider using a footrest to bring your thighs to a level parallel with the ground. If you don't have a footrest, use a firm and level alternative, such as a phone book.

- If your seat pan is too deep (which creates pressure on the back of your knees), consider putting a back pillow between you and your backrest to push your body forward and into a better position.

Tips for Healthy Sitting Posture

Ergonomists generally agree that there isn't a single, "static" seated posture that should be used all of the time. It's a good idea to move around into different postures throughout the day to improve circulation and reduce muscle fatigue. However, if you have to sit for long periods, the following posture puts the least strain on your body.

General principles include:

- **Keep open angles.** Contrary to popular belief, good posture doesn't mean sitting flat and firm, with your hips, elbows, and knees at 90 degree angles. Your hips, elbows, and knees should be at slightly open angles (greater than 90 degrees). Sitting erect or leaning forward

increases the strain on the lower back - it's okay for short term use, but isn't recommended for prolonged periods of time.

- **Keep thighs parallel with the floor.** Your thighs should be roughly parallel with the floor.
- **Recline slightly.** Research has shown that reclining eases pressure off your lower back.
- **Avoid pressure points.** Uncomfortable pressure (e.g., on the back of your knees) can impede circulation. Be sure to make the proper adjustments to your chair to reduce such pressure.
- **Rest your feet flat on the floor.** Your feet should be flat on either the floor or a footrest.
- **Move Around.** Making slight adjustments to your sitting posture throughout the day is healthy.

Healthy Computing Articles

What is the "Best" Sitting Posture?

Ergonomists generally agree that there isn't a single static seated posture that should be used all of the time. It is a good idea to move around into different postures throughout the day to improve circulation and reduce muscle fatigue. If you do sit for long periods, these tips will help reduce strain on your body:

Upper Body

- **Make certain that your head is balanced.**

  Tilting the head back or too far forward for extended periods will put strain on the neck.

- **Upper arms should be close to the body and relaxed.**
  Not tensed, out to the side, or flexed forward.

- **Wrists should be level with forearms.**
  A slight deviation is OK.

- **Make sure the armrests don't interfere with arm movements.**
  If they do, lower them out of the way.

Lower Body

- **Make sure your feet rest comfortably on the floor or a solid surface.**
  If you do not have an adjustable chair, make sure to provide a footrest. See Tips for a Less-Than-Ideal Workstation for some ideas.

- **Be sure that your feet rest ahead of the knees**
  Also, note that the seat cushion isn't compressing the backs of your knees

General

- **Recline Slightly**
  Reclined postures, where the chair back is at an angle of 100Ì-110Ì, often work best. In this posture, the body is relaxed, upper and lower back are well supported by the chair, and back

muscle activity and lumbar disc pressure are low. (Sitting erect or leaning forward increases the strain on the lower back--it's okay for short term use, but it should not be a habit!)

PAPER DOCUMENTS SETUP & USAGE

Do you work from or read paper documents while using your computer? If you do, positioning them properly is an important way to avoid neck and shoulder pain. Follow the same principles for good head and neck posture while viewing paper documents as you do while viewing your computer monitor. Your head and neck should not be twisted or bent at awkward angles while you are working because this can lead to neck, shoulder, and eyestrain. Follow the important tips below when working with paper documents. To learn more after reading these tips, feel free to browse the related links to the right.

SETUP & USAGE

1. **Don't put the documents flat on your desk or work surface while working with them.**
   You'll likely have to twist and tilt your neck to read the documents, then move your head to see the computer screen. This repeated neck twisting and head movement can cause neck discomfort.

2. **Use a copyholder, or place the documents as close as possible to the computer screen - at about the same distance and level as your monitor.**
   Keeping documents at the same distance as your screen minimizes the refocusing your eyes do when switching between the two. Positioning the documents (and the monitor) directly in front of you minimizes the number of times you need to turn or swivel your head. Lastly, placing documents at roughly the same level as your monitor means you don't have to tilt your head as much to view them. All of these can be helped by a copyholder. There are three major types:

- **Screen-mounted document holders.** These attach to the side of your computer monitor and suspend the paper document in the same vertical plane. This kind of holder is good for single sheets of paper or lightweight documents.

- **Freestanding document holders.** Although a number of different designs are available, most of these have a sloping surface that angles the document in the same plane as your computer screen. You can adjust the angle and/or height on certain models. Some are designed for lightweight documents (a single sheet of paper), while others can support large books. Whatever the design, this kind of holder should be placed close to the side of the computer monitor at the same distance as the screen. Because the visual field curves to either side, you can also rotate the document holder slightly at an angle to the screen to follow this curve.

- **In-line document holders.** This kind of document holder places documents between the keyboard and computer screen at an angle that follows your field of vision, which naturally curves down. In-line document holders eliminate side-to-side head movements and let you look from the screen to document and vice versa. These document holders are very useful if you work with oversized documents, such as

wide-legal paper or wide-format computer printouts.

3. Make sure you have enough light to see your documents clearly.

Be especially sensitive to adequate lighting if you have reduced your lighting to help glare problems. If you cannot adequately light paper documents and keep monitor glare low, consider using a separate task light to illuminate the documents or a high quality glass glare screen on your monitor.

LIGHTING SETUP & USAGE

A crucial component to setting up your workstation is your lighting, which can be associated with vision problems (eyestrain, dry eyes, itchy/irritated eyes), health problems, and reduced work performance. Computer work can be particularly visually demanding.

LIGHTING YOUR WORKSTATION

Optimal Lighting For Your Work Space

1. The ambient lighting you use should be low or glare free.

Indirect or direct/indirect light fixtures provide the best lighting solutions for many offices. This kind of light fixture hangs from the ceiling and gives more even illumination.

2. The task lighting you choose can be used to provide supplemental light for paper documents.

If you do choose to use a task light to illuminate paper documents, be sure to:

- Choose a low glare, asymmetric lens;
- Choose an adjustable position task light and place it in a convenient position to light-colored documents without causing reflected glare in the computer screen;
- Position your task light to the side of the computer screen so that the light shines on paper documents rather than the monitor screen.

3. Your light level should be appropriate for your tasks.

With too much ambient light your computer screen will look "washed out" because of veiling glare. This makes reading more difficult, and increases your chance of making reading/typing errors.

4. Use blinds or drapes to control the light from windows.

Avoid veiling glare that is caused by direct light shining on the monitor screen, washing out the images.

5. Fluorescent lighting is preferable to other types of office lighting.

Make sure your fluorescent lamp doesn't flicker.

6. All of the lamps in your light fixtures should have the same color temperature.

Split keyboards divide the keyboard into two halves, each of which points slightly outwards.‹ The outward angle lets your wrists and forearms point inward without requiring your elbows to come in as far, better conforming to the contours of your

body. Conversely, thinner people may find a traditional "straight" keyboard more comfortable.

7. **The lamps in your light fixtures should compliment your home office colors.**
   Cool white lamps will enhance blues and greens; warm white lamps will enhance yellows and reds.
8. **Optimize the color of your room.**
   The room color can be optimized by:

   - Painting or papering the walls in a neutral colors
   - Painting ceilings white or a light color (avoid dark ceilings)
   - Using a neutral floor covering (carpet, wood, tile) with a low reflectance
   - Choosing furniture (chairs, desks, file cabinets) with low range reflectance
   - Choosing office technology with a neutral color and low range reflectance

Trouble Shooting Your Workspace

Look for these common problems:

1. **Inadequate lighting levels.**
   The area where you work is too dim or too bright, or the lighting fluctuates during the day because of bright sunlight.

2. **Direct glare from light fixtures.**
   When you look at your computer screen, you can see bright objects reflected in the screen, such as lights, paper, or your clothes.

3. **Reflected glare on computer screens.**
   When you look at your computer screen, you can see bright objects reflected in the screen, such as lights, paper, or your clothes.

4. **Veiling glare.**
   When you look at your computer screen, it looks washed out because there is too much direct light falling onto the screen.

5. **Harsh lighting and shadows.**
   The lighting shines straight down from the fixtures, making the ceiling look dim and the office look gloomy. Another sign is when the lighting causes dark shadows on the faces of others in the room.

PHONE SEUP & USAGE

Most people are surprised to learn that misusing the telephone can lead to shoulder and neck pain. Yet if you're like most, you probably occasionally cradle the telephone between your head and a hunched shoulder, talking and typing simultaneously - a sure-fire prescription for pain. Below are tips for using and positioning your telephone to help reduce the likelihood of experiencing discomfort. To learn more after reading these tips, feel free to browse the related links to the right.

SETUP & POSITIONIONG

Positioning Your Phone

If you frequently answer or place calls from a corded phone (where the numbers are located on the phone's base), the base should be positioned in your normal reach zone. To determine the area covered by this zone, reach each arm out to the side of your body and move them from this position until the hands meet at the center

of your body in front of you. Your phone, along with everything else you use frequently, should be within this zone. For people who rarely use the phone, a more distant position is fine to free up space for other commonly-used items (like documents).

Tips for Healthy Phone Usage

1. **Use a phone with the right set of features.**
   If you frequently place calls, consider using a cordless phone or one with the number pad on the receiver rather than the base. This will help you avoid having to extend your reach to dial. However, if you often make calls to voice mail and other automated systems, using a phone with desktop numeric pad will be more convenient (since you'll need to listen and press keys simultaneously).

2. **Learn proper phone position.**
   Learn how to hold your phone in a proper position against your ear: head straight and shoulders relaxed (not hunched). Your shoulder and head can be bent slightly to one side to cradle the phone, though preferably not for prolonged periods of time (as this can cause muscle aches in the upper back and neck). If you tend to use the phone for long durations, consider alternating ears and supporting the hand on a regular basis. If your calls tend to be shorter, consider alternating ears and hands each every other call.

3. **Consider using a headset.**
   This allows hands-free phone conversations and eliminates the risk of any discomfort or injury associated with improper phone use. It is superior to a speakerphone because it will work well in a noisy environment or with confidential conversations. If you use the phone frequently all day long, a headset is your best option. Headsets can be purchased at most electronics or office supply stores for a price ranging from $35-$250, and then easily installed on any phone. If you do use a headset with a single earpiece, consider alternating ears to eliminate any discomfort that may be caused by continuous pressure on your ear.

4. **Consider using a speakerphone.**
   This allows hands-free phone conversations, eliminating the risk of any discomfort or injury associated with improper phone use. Speakerphones do have practical limitations: they generally won't work well in a noisy environment or for confidential conversations, and can sometimes reduce the sound quality of the conversation.

DESK SETUP & USAGE

Your desk is a critical component of your workstation. It supports tasks (writing), above-surface equipment (computer monitor, phone, etc.), and below-surface equipment (keyboard tray system or CPU holder). The height and layout of your work surface play an important role in your work posture and efficiency. A good ergonomic arrangement is one that will allow you to work most efficiently in a good posture. To learn more after reading these tips, feel free to browse the related links to the right.

SETUP & POSITIONING

The best ergonomic fit of your work surface depends upon the kind of work surface that you have:

1. **Using a fixed height desk?**
   If you have a desk with limited clearance or a center drawer that stops you from installing a keyboard/mouse tray system, then you may need to raise the height of your chair to use the keyboard and mouse on the desk top. This arrangement is not ideal, and you should think about replacing the desk with a work surface/keyboard tray arrangement as soon as possible. If you have to do this, remember to use a good footrest to support your legs while you are working.

2. **Using a fixed height work surface?**
   If you have a fixed height work surface, it's probably between 28"-30" above the floor. While this is a comfortable height for writing on paper, it's too high for computer keyboard and mouse work. The best arrangement is for you to install a height adjustable keyboard/mouse tray system beneath the work surface. Another option is to place the keyboard and mouse on top of the desk and adjust your chair upward, using a foot rest to maintain proper seating posture.

3. **Using an adjustable height work surface?**
   If you have an adjustable height work surface, set it to a comfortable height for writing and then attach a separate height adjustable keyboard/mouse tray system to correctly adjust these components.

4. **Positioning your Desk**
   Try to arrange the desk so that you have space on either side of it and easy access to the rear for cables to connect your computer.

Tips for Healthy Desk Usage

1. **First**, when you are sitting comfortably, pull up to the edge of your work surface and look straight ahead. What you see is your optimal viewing zone, and things that you look at during work (computer screen, documents etc.) should be in or close to this zone.

2. **Next**, reach each arm out to the side of your body and move them from this position until the hands meet at the center of your body in front of you. The semi-circular area covered by the sweep of your arms is called your normal reach zone, and everything that you frequently use should be placed inside of or close to this area. You should not have to bend or stretch to reach things that you frequently use.

3. **Then**, relax your upper arms down to the side of your body. Using your elbows as pivot points, swing your forearms out to each side and then move them together until your hands touch in the center of your body in front of you. The area covered by the sweep of your forearms looks like that area covered by your windshield wipers, and it is called your normal working area. Things that you operate with your hands, such as your keyboard and mouse, should be placed in this area and positioned for optimum comfort.