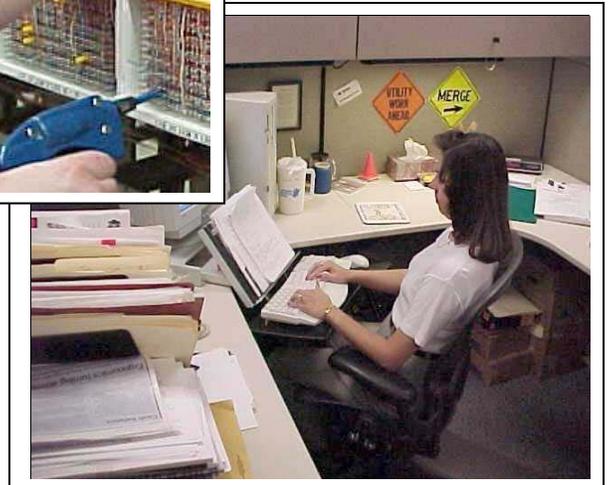
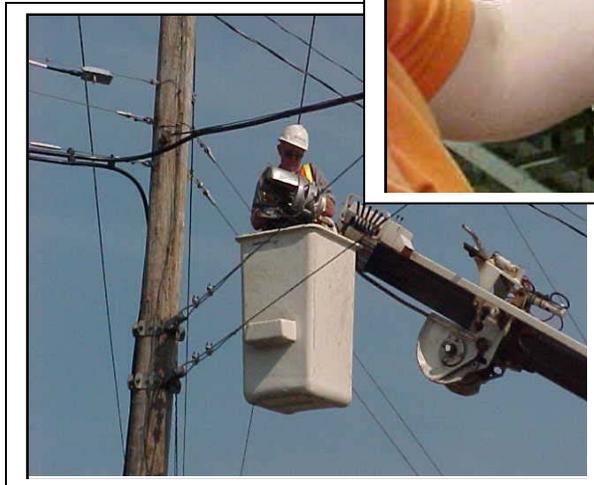


Ergonomic Guidelines for Common Job Functions Within The Telecommunications Industry



Prepared by the National Telecommunications
Safety Panel
Ergonomics Subcommittee

Disclaimer

This document has been developed by Safety representatives from major telecommunications companies across the United States as a guideline for Ergonomics in the telecommunications Industry. This guideline is based on our collective experiences and is intended to assist telecommunications companies in developing their own ergonomics program. Any adoption of these guidelines is made at the users' own discretion and volition and in doing so the users are forewarned that the guidelines are not guaranteed to reduce and / or prevent ergonomic illnesses. Companies in our industry are free to adopt or reject this guideline. Neither the adoption nor the rejection of this guideline shall be construed as an admission that our industry has an ergonomic issue. No third party shall have the right to enforce or benefit from this guideline. No third party may force any company within our industry to adopt or reject this guideline for any purpose (s). Furthermore, the guideline lacks the force of law and may not be used against our industry by any regulatory agency.

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Special thanks to the Developers of this Document

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Introduction

Ergonomics is the study of the way people, their equipment, tools, and the environment work together. Ergonomics seeks to adapt the environment in order to ensure people's productivity, comfort, and safety. The word ergonomics comes from the Greek word *ergon* meaning work, and *nomos* meaning laws. In other words, ergonomics literally means the laws of work.

One type of injury that may be avoided by eliminating risk factors in the work environment is a Cumulative Trauma Disorder (CTD). Cumulative Trauma Disorders or CTDs refer to disorders of the soft tissues, including those of the muscles, tendons, and nerves. CTDs are associated with repeated exertions, or movements of the body, awkward postures, and extreme force.

CTD risk factors can be found in activities both on and off the job, and can lead to muscle fatigue. Fatigue commonly leads to discomfort, and to a reduction in endurance, strength, and muscle control.

The differentiating factor between a CTD and another type of injury is the acuteness of the injury. Acute trauma refers to injuries that occur immediately such as cuts, bruises, and falls. Some cumulative trauma injuries may appear to be sudden, but can be the result of exposure to CTD risk factors over time.

Exposure to CTD risk factors is correlated with the development of CTDs. These CTD risk factors are not necessarily causative, but research has shown an association or relationship. The mere presence of a CTD risk factor does not necessarily constitute the development of a CTD. It is theorized that the likelihood of developing a CTD is greater with a higher exposure to a greater number of risk factors.

CTD Risk Factors

Listed below are examples of potential CTD risk factors. Exposure to CTD risk factors is correlated with the development of CTDs. These CTD risk factors are not necessarily causative, but research has shown an association or relationship. The mere presence of a CTD risk factor does not necessarily constitute the development of a CTD. It is theorized that the likelihood of developing a CTD is greater with a higher exposure to a greater number of risk factors.

CTD Risk Factors	Description
Static Posture	Maintaining a stationary position for extended periods of time.
Awkward Posture	Any fixed or constrained body positions other than neutral alignment. Neutral posture occurs when the natural tensions of the muscles are relaxed. If an extreme posture is sustained or combined with high forces, it can place a person at a greater risk of injury.

CTD Risk Factors	Description
Repetition	High numbers of similar wrist, hand, or leg movements. Repetitive motions can act to combine the effects of fatigue, force and posture to create an increased risk of injury.
Forceful Exertion	Excessive force or strength used to perform a job, as in gripping or lifting. Force can be applied by an object to a body part, or internally within the body.
Contact Stress	Long-term pressure on soft tissue and underlying nerves, such as the palm or forearm.
Excessive Vibration	Vibrations are most commonly transmitted to workers through tools, controls, or contact with vibrating work surfaces. Vibration primarily affects circulation and nerve function.
Extreme Cold Temperatures	Cold is typically transmitted to the person from tools, work surfaces, and the environment. The primary effect of cold is that it triggers the body's natural response to reduce circulation to the affected area.
Work Structure	A person's work structure is defined by job factors such as organization design, job design, incentive systems, and management policies and styles. Research has shown that these variables can affect the incidence of CTDs
Non-occupational Activities	Non-occupational activities can sometimes expose a person to many of the risk factors described above.
Individual Factors	Certain medical conditions and anatomical differences are known to increase an individual's risk of developing a CTD.

Principles of Good Body Mechanics

One of the ways we can enhance safety is by using our own bodies as effectively and efficiently as possible through the use of the principles of good body mechanics. Here are some general tips to keep in mind:

B...Back

- Maintain the natural curves of your back/spine
- Pay particular attention to the normal inward curve of your lower back (the lumbar region)

A...Arms

- Keep your arms as close to your body as possible
- Hold the weight close to your body and at waist height
- Remember to keep elbows in and palms up (or in neutral) to stabilize the shoulder joint

T...Twisting

- Avoid trunk twisting when turning
- Move your feet by pivoting or side-stepping
- Keep in mind that if your shoulders are not positioned in the same plane as your hips, your trunk is twisted

B...Base of Support

- Place your feet shoulder width apart and staggered (one slightly in front of the other)

L...Legs

- Use the large muscles of your legs and buttocks to generate the force for movement; use your own body weight as a counter-weight
- Bending at the hips and the knees allows your leg and buttocks muscles to be active

E...Evaluate

- Think before you act
- Evaluate your load and the environment

It may be difficult to adhere completely to every principle every time. However, by keeping these principles in mind, you have the ability to set up each situation using as many principles as possible to enhance the safety of yourself.

Resources

Professional Associations

- American Industrial Hygiene Association (AIHA) <http://www.aiha.org/>
- American Society of Safety Engineers (ASSE) <http://www.asse.org/>
- National Safety Council (NSC) <http://www.nsc.org/>
- National Telecommunications Safety Panel <http://www.telsafe.org/>
- Human Factors and Ergonomics Society <http://www.hfes.org>

Governmental and Standards Agencies

- American National Standards Institute <http://www.ansi.org/>
- American Public Health Association (APHA) http://www.apha.org/public_health/
- Centers for Disease Control and Prevention (CDC) <http://www.cdc.gov>
- Construction Occupational Safety & Health – Electronic Library <http://www.cdc.gov/niosh/elcosh/>
- Department of Energy <http://tis.eh.doe.gov>
- Legislative Information on the Internet <http://thomas.loc.gov/>
- National Institute for Occupational Safety and Health (NIOSH) <http://www.cdc.gov/niosh/homepage.html>

State Regulations & Activity:

- State Ergonomics Regulations:
http://www.osha.gov/SLTC/ergonomics/state_plan.html

Federal Occupational Safety & Health Administration (OSHA) <http://www.osha.gov>

A Four-Pronged, Comprehensive Approach

Effective ergonomics is part of OSHA's overall strategy for reducing workplace injuries and illnesses. OSHA has developed a four-pronged comprehensive approach to ergonomics that the agency believes will quickly and effectively address MSDs in the workplace. The four segments of OSHA's strategy for successfully reducing injuries and illnesses from MSDs in the workplace are:

- The development of industry-or-task-specific ergonomic guidelines
- Enforcement
- Outreach and Assistance
- Research

Ergonomics Program Elements

Experience has shown that successful ergonomic programs contain common elements. These elements typically include all, or some combination of, the following:

- Management Commitment
- Employee Participation
- Recognizing and Evaluating Risk Factors
- Controlling Risk Factors
- Training
- Health Care Management
- Program Evaluation

Each element is discussed in more detail below. Telecommunications companies are encouraged to utilize these elements and modify them as needed to meet the goals of their particular organizations. Successful ergonomics programs are characterized by a dynamic approach where the objective is continual process improvement.

Management Commitment

The benefits of an ergonomics program, like all health and safety programs, are greatly enhanced when management at all levels is committed to its success. Management commitment may be demonstrated by any or all of the following actions:

- A policy statement that recognizes the value of an ergonomics program to the organization, defines goals to be achieved, and encourages employees to participate.
- Assignment of specific persons within the organization to take responsibility for the various aspects of the ergonomics program. These persons should also be authorized to take the appropriate actions necessary to achieve the goals of the program.
- Provide the resources necessary to implement the program. This may include employee time, tools, furniture, training materials, consultants, and/or other resources as deemed appropriate to meet the specific ergonomic requirements of the organization.
- Implement changes to the program as identified by employee feedback, injury/illness results, and/or periodic program review. Ensure the individuals having responsibility for the ergonomics program meet regularly to understand whether objectives are being met and modify elements as needed to attain the desired outcome.

Employee Participation

Ergonomics programs tend to achieve more positive results when employees actively participate. The potential benefits of employee involvement include:

- Enhanced worker motivation and job satisfaction,
- Added problem-solving capabilities,
- Greater acceptance of change,
- Greater knowledge of their work environment and organization.

Employee input is valuable in understanding job functions more thoroughly, determining potential risk factors associated with jobs, and evaluating possible control measures. Participation methods will vary according to the size, labor status, department structure, and geographic distribution of a particular organization. Participation may consist of group, individual activities, or both.

Group participation typically consists of general safety teams, or teams specifically formed to address ergonomic issues. Depending upon the size and characteristics of the organization, these teams may be organized on a company-wide, department, or work group level. Team membership will vary depending upon the company and the goals of the particular group, and may include:

- Safety and industrial hygiene personnel,
- Health care providers,
- Human resource personnel,
- Engineering personnel,
- Facilities and maintenance personnel,
- Ergonomics specialists,
- Labor representatives, if applicable.

To ensure the success of an ergonomics team, the members should receive some basic instruction on the following topics before beginning their efforts:

- The goals and expectations of the team and its members,
- Hazard recognition and control as it applies to ergonomics
- Basic problem solving principles
- Any limitations the team may be working under, e.g. budget.

Individual employees should also be encouraged to participate in ergonomics programs by promptly reporting unsafe working conditions as well as promptly reporting any signs and symptoms of health problems that may be related to their work environment. Other means of individual participation could include employee surveys or suggestion programs.

Recognizing and Evaluating Risk Factors

In order to implement ergonomic solutions, the jobs or job functions that pose possible risks must first be identified and evaluated. Definitions of ergonomic risk factors are

described in the Introduction section of this document and are discussed in detail in the Common Job Functions section. Methods of gathering information about particular jobs could include:

- Reviewing injury reports, worker's compensation claims, and medical reports for injuries typically associated with ergonomic risk factors, or trends associated with particular jobs.
- Logging worker complaints regarding pain or discomfort while performing a certain task, or complaints about tools or workstation design.
- Interviewing workers and supervisors about the job.
- Conducting walk-through surveys of the work environment.
- Using checklists to identify characteristics of the job function.
- Performing job hazard analyses.

Job hazard analysis breaks a job into its various elements or actions, describes them, measures and quantifies risk factors inherent in the elements, and identifies conditions contributing to the risk factors. A complete description of the job is obtained and the job is broken down into a number of discrete tasks. Tasks can typically be described in terms of the:

- Tools, equipment, and materials used to perform the job;
- Workstation layout and physical environment; and
- Task demands.

Each task is then studied to determine the specific risk factors that may occur during that task. Information may be gathered by:

- Observing and/or videotaping workers performing the tasks.
- Taking photos to illustrate work postures, workstation layout, tools, etc.
- Taking measurements of workstation parameters, (e.g. surface heights, reach distances, etc.)
- Measuring tool handle sizes, weighing tools and parts, measuring tool vibration.
- Determining characteristics of work surfaces such as slip resistance, hardness, and sharp edges.
- Measuring exposures to heat, cold, and whole body vibration.
- Biomechanical calculations, (e.g. muscle forces required to lift, push, pull, etc.)

Information gained from the job hazard analysis process and other sources can then be evaluated, prioritized, and utilized to implement hazard control strategies.

Controlling Risk Factors

Ergonomic risk factors may be minimized or controlled by utilizing one or a combination of the following methods:

- Engineering controls
- Administrative controls
- Personal protective equipment

Detailed descriptions of control methods specific to tasks in the telecommunications industry are discussed in the Common Job Functions section of this document.

Engineering controls refer to changing the physical characteristics of the task and they are the preferred method for controlling ergonomic risk factors. Examples of engineering controls include, but are not limited to:

- Changing the workstation layout, i.e. adjusting the seating height, work surface height, reach distances, lighting, adding ancillaries such as footrests and keyboard trays, etc.
- Using mechanical means to lift, hold and/or transport materials instead of manual lifting
- Changing the design of tools (handles, weight, etc.) to place less stress on the user
- Using power tools in place of manual tools
- Substituting lighter weight materials in the work process
- Eliminating or minimizing sources of vibration

Administrative controls are work practices and policies designed to prevent or minimize exposures to risk factors. Administrative controls rely heavily on employee cooperation to be effective. These controls may be helpful as temporary measures until engineering controls can be implemented, or when engineering controls are not feasible. Employees must be trained on the proper procedures and management must provide oversight of the process for it to be successful. Examples of administrative controls may include:

- Rotating workers from physically demanding jobs to less physically demanding jobs
- Reducing shift length or scheduling more breaks
- Training employees to recognize risk factors and avoid them whenever possible
- Ensuring that employees are utilizing good postures and using tools & equipment properly
- Evaluating the ergonomic characteristics of tools and equipment before they are purchased
- Reviewing new job functions for ergonomic risk factors before they are implemented
- Requiring two persons for handling heavy loads
- Varying the job content to reduce repetitive movements and/or static postures
- Reducing the work pace of the job
- Instructing employees on exercise and/or stretching techniques

Personal protective equipment, such as wrist braces and back belts, is generally considered to be the least effective means of controlling ergonomic risk factors and should be used under the guidance of a health care professional.

Training

Training is an important component of any effective ergonomics program. The goal of ergonomics training should be to enable managers, supervisors, and employees to identify aspects of job tasks that involve potential risk factors, recognize signs and

symptoms of possible ergonomic-related disorders, and participate in the development of control measures. It is generally recommended that all employees receive basic ergonomics awareness training that may include any or all of the following topics:

- How to recognize ergonomic risk factors both on and off the job
- How to recognize signs and symptoms of musculoskeletal disorders (MSD's) that may be related to the work environment
- The organization's procedures for reporting job-related risk factors
- General principles for controlling ergonomic risk factors, (e.g. proper postures, lifting technique, etc.)

In addition to the basic awareness training, employees who are involved in evaluating jobs for risk factors, and recommending and implementing control measures, should be provided more training in such topics as:

- Ergonomic principles and identification of risk factors
- Methods for performing job hazard analyses
- Types of engineering controls that may be applicable to the job
- Types of administrative controls that may be applicable to the job
- Problem solving procedures
- Team building techniques

Health Care Management

Health care management and health care providers can be an important component of a comprehensive ergonomics program. Health care management is useful in promoting early detection and prompt intervention and treatment of work related injuries. In general, the earlier symptoms are identified and treated, the less likely a more serious disorder will develop. The health care provider should work closely with the employer to achieve these goals. Responsibilities of the health care provider may include:

- Promptly evaluating employees who report signs and symptoms of MSD's
- Recommending appropriate treatment for employees diagnosed with MSD's
- Determining work restrictions for injured employees
- Assisting with workplace accommodations for disabled employees
- Ensuring the privacy of medical information as required by law
- Assisting in the evaluation of control measures for ergonomic risk factors

Program Evaluation

Ergonomics programs should be reviewed and evaluated periodically to determine if they are achieving the desired goals. Some of the factors that may be evaluated during an overall ergonomics program review could include:

- The number of employees reporting signs and symptoms of MSD's
- The number of employees diagnosed with work-related MSD's
- The severity of work-related MSD's

- Changes in productivity for particular jobs

When program deficiencies are identified by the review process, appropriate measures should be implemented to correct any problems or enhance program effectiveness. In addition, when specific control measures are implemented, a follow-up evaluation should be conducted to determine the effectiveness of the controls. One of the goals of a successful ergonomics program should be to strive for continuous improvement.

References:

National Institute for Occupational Safety and Health (NIOSH), 1997, *Elements of Ergonomics Programs: A Primer based on Workplace Evaluations of Musculoskeletal Disorders*.

Outside Plant Environment



Job Function: Handling Extension Ladders

Description of Work Environment

This job function includes all aspects of working with and carrying extension ladders. Specifics include removing the ladder from the work vehicle, carrying the ladder to the job sight, extending and placement of the ladder for work, collapsing the ladder and returning to and mounting on the vehicle. This function is normally performed outside in various types of terrain and weather conditions.



**Removing ladder
from vehicle**



**Carrying ladder to
and from job site**



**Extending and
collapsing ladder**

Risk Factors	Body Segment	Contributing Factors
Forces on the Spine	Back	Weight of Ladder (35-90 lbs. or more depending on size) Icy, Slippery Conditions, Unknown Terrain, Windy Conditions
Awkward Shoulder Postures	Shoulder	Methods of carrying the ladder
Force on the Hand	Hand	Pulling rope and placing ladder into position

Recommended Solution Strategy - Short Term

Use a two – person carry method for ladders over 28'



Use a hand line over strand or comparable procedures to raise and lower ladder on windy days



Use a pad on the shoulder or use a LadderTote (see resources)

Place indicator on ladder to show the center of balance to the employee

Suitcase handle on the side of ladder (Werner)

Recommended Solution Strategy - Long Term

Rotational (Swing down) ladder racks (see resources)

Handle on the rear of the vehicle to assist employee's stability while accessing the ladder

Lighter weight ladders

Use a "ladder trolley" where terrain or conditions permit (see resources)

Use wheel steps or other "step-up" designs for better access to the ladder when in the rack (see resources)

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

LadderTote

<http://www.independenttech.com/>



Swing-Down Ladder Rack

www.primedesign.net

www.masterack.com



Ladder Trolley Sur-Loc
Industries

www.surloc.com



Wheel Steps

Curtis Industries

1-800-555-2878



Job Function: Handling Lashing Machine

Description of Work Environment

This function involves using a lashing machine, which typically weighs 50 to 100 lbs. and secures telephone cable to steel support strand. The typical job involves transferring by hand, the lasher from the truck to a worker in a bucket or using a handline to pull the lasher up a pole to the working height. Once the lasher is at the working height, it is placed on the strand and can be pulled along either by hand or mechanical means (i.e. line truck) to secure the cable. The lasher must be lifted and transferred around poles or other obstructions. Use of a lasher is along a pole line and typically adjacent to a roadway. The lashing machine can be used during most weather conditions, however it is typically used during non-inclement conditions.



Lasher hoisted to worker in bucket



Lasher is placed onto cable and pulled along by a ground worker



Lasher is taken from cable and placed in bucket and lowered to ground

Risk Factors	Body Segment	Contributing Factors
Pulling forces Twisting of the lower back High speed/jerking movements Forward Bending	Back	Weight of the lashing machine (weight can range from 50 to over 100 lbs.) Manual pulling of lashing machine by hand Requirement of manually transferring the lashing machine Restricted movement in the bucket or on the pole Must bend at the waist to access lasher
Awkward shoulder movements (reaching)	Shoulders	Handling lasher away from the body (i.e., arms extended)
Force	Hands	Setting up lasher, connecting towing ring snap hook, clamp openings, pulling gate.

Recommended Solution Strategy - Short Term

Use good body mechanics and lifting techniques whenever possible.

Recommended Solution Strategy - Long Term

Investigate employing a mechanical lifting device to assist in lasher handling.

Consider attaching a hoist to the bucket. One conception of the hoist would be to hang the lasher from a cable attached to the powered winch and a retractable boom. The retractable boom would allow the worker to guide the lasher around poles. This hoist could be used to lift other equipment to the bucket.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Contact appropriate vendors for mechanical/powered lifting device possibilities.

<http://www.littlehercules.com/>

<http://www.superwinch.com/>

Job Function: Removing and Replacing Manhole Covers

Description of Work Environment

In this task, the technician uses a tool with a hook on one end to unseat the manhole cover. This enables the technicians to pull and drag the cover away from the opening. There are a variety of different tools used to unseat the cover such as the J-Hook (a.k.a. B manhole cover hook) and the Easy Pull (Fulcrum bar). This task is normally performed out doors and can be affected by the environmental conditions such as rain, ice, snow, etc.



Employee using easy pull
tool to unseat the manhole
cover



Employee using the J-Hook
tool to unseat the manhole
cover



Employee using easy pull
tool to unseat the manhole
cover

Risk Factors	Body Segment	Contributing Factors
Excessive pulling forces	Back / neck / shoulders / lower limbs	Weight of the manhole cover (varies between 100 to 500 lbs.).
Heavy lifting	Hands / wrists / arms	Environmental conditions can reduce footing such as snow, ice or other surface conditions.
Forceful exertion		Frozen conditions make the manhole more difficult to remove.
High speed jerking movements		Two person removal for Type "A" manhole covers.
Awkward postures		Using a wooden block and heavy hammer to loosen manhole cover that cannot be readily lifted.

Recommended Solution Strategy - Short Term

Provide training to employees about positioning themselves in the proper posture lifting and while dragging the manhole cover.

Use the Easy Pull or Fulcrum Bar since a Liberty Mutual Research Center study has shown that there are 50% less forces on the spine if employees use the Easy Pull rather than the J- Hook.

Recommended Solution Strategy - Long Term

None at this time

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Use the Easy Pull or Fulcrum Bar since a Liberty Mutual Research Center study has shown that there are 50% less forces on the spine if employees use the Easy Pull rather than the J- Hook.

Job Function: Splicing Cable

Description of Work Environment

The job of splicing cable involves reconnecting or connecting cable wires using a crimping tool. The process involves opening up the sheath around the cable (also called ringing the cable), separating and tagging the wires, placing wires into the crimping tool, placing a connector into the tool, and squeezing the tool to join the wires. Cable splicing is done in all types of weather and terrain. The job function of cable splicing takes place at pedestals, trenches, splice pits, manholes and aerial cable applications. The technician normally sits for long periods of time on what's commonly called a "butt box."



Employee separating the
wires



Employee using a
crimping tool



Employee sitting on a
"butt box"

Risk Factors	Body Segment	Contributing Factors
Forceful exertion	Hands/Wrists	Force required to squeeze the crimping tool
Repetitive wrist movements		Stripping the wire
Repetitive pinch grips		Twisting the wires
Awkward posture		Placing wires and connectors into the crimping tool
		Wide span required to grasp the crimping tool
Awkward posture – Continuous forward leaning.	Back/Neck Buttocks	Sitting on box with no back support
Seated task without lower back support and unpadded butt box		Height of wire bundle and splicing tool
		Restricted space in some cases
		Unpadded butt box
Continuous and static reaching in front of body	Shoulders	Height of wire bundle and splicing tool Lack of support for the arms
External pressure to legs	Lower Limbs	Sitting on unpadded butt box for long periods of time

Recommended Solution Strategy - Short Term

Position yourself so that the cable wire cluster is at a height and distance from the body, which offers maximum comfort. The height of the cable should be about elbow height or slightly higher. The cable should be in close to the body so that the arms are not fully extended.

Investigate the use of a mechanical clamping device for squeezing the crimping tool. This could be a foot-activated device or air powered tool.

Use a seat pad or padded seat when sitting on a butt box.

Ensure the tools are well maintained in order to reduce the force required to perform the task.

Provide ergonomic training for proper body mechanics.

<http://www.spineuniverse.com/displayarticle.php/article895.html>

http://www.healthnetfederalservices.com/bene/bh6_4_3_tip3.asp

<http://www.osha.gov/SLTC/ergonomics/index.html>

Recommended Solution Strategy - Long Term

Work with a vendor or manufacturer of crimping tool to explore modifications. Modifications might include reduction in grip span, reduction in force required to actuate tool, mechanical assistance.

Investigate the use of improved seating for performing splicing tasks. There are seats available that are padded, height adjustable and have backrests.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Hydraulic crimping tools

<http://www.3m.com/> – 3M 4030 Air/Hydraulic Crimping Unit

<http://www.amp.com>

<http://www.uteck.com/>

Padded 'butt box'

U – Teck work center ergo seat

AMP VS3 hand tool retrofit



Padded Butt Box



U – Teck work center ergo seat

Job Function: Placing Equipment Into and Out of a Manhole

Description of Work Environment

Placing equipment into and out of a manhole involves lifting, lowering, pushing or pulling items into or out of a manhole. Examples of potential injury causing activities include: lifting a pulley or “bull” wheel out of a manhole, lifting sleeves from a manhole, and transferring a water pump into or out of a manhole. Prior to placing equipment into and out of a manhole, the manhole cover needs to be removed. For more information about removing and replacing a manhole cover, refer to the section “Removing and Replacing Manhole Covers.”



Handling equipment in awkward positions



Overhead reaching and other awkward positions

Risk Factors	Body Segment	Contributing Factors
Excessive lifting forces	Back / Arms / Shoulders	Weight of the item handled
High speed/jerking movements	Back / Lower Limbs	Lack of adequate hand holds Icy & snowy conditions can reduce footing and make item more difficult to handle
Excessive force	Hand	Gripping a rope or equipment while transferring within a small space.
Awkward postures	Back and shoulders	Restricted space through manhole Standing on ladder or crouching above manhole

Recommended Solution Strategy - Short Term

Use a hand line to lower equipment into the manhole preventing the person in the manhole from having to lift or reach overhead.

If possible, dismantle or separate a piece of equipment into its component parts to make it lighter.

Use good body mechanics and lifting techniques as practical.

<http://www.spineuniverse.com/displayarticle.php/article895.html>

http://www.healthnetfederalservices.com/bene/bh6_4_3_tip3.asp

<http://www.osha.gov/SLTC/ergonomics/index.html>

Provide ergonomic training for proper body mechanics.

Recommended Solution Strategy - Long Term

Use a simple rope and pulley system or hoist for lowering heavy equipment through a manhole opening. The use of a manual winch system or powered hoist could be used in lieu of a manual hoist system.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Contact appropriate vendors for mechanical/powered lifting device possibilities.

Job Function: Handling Cable Reels

Description of Work Environment

Handling cable reels involves transferring cable and strand reels from staging areas to the back of a truck or onto a trailer. This task involves pushing heavy reels, which can weigh several hundred pounds to several thousand pounds. The orientation of a reel is changed often in order to prepare it for loading. Sometimes one reel must be moved manually to access another. A reel must be unloaded from the transport vehicle when it is empty. Hydraulic power and winches may be available for the actual lifting of the reel but rotation and some pushing of large reels is often required of the employee during loading and staging.



Pushing a cable reel



Maneuvering a
Cable reel



Cable reels in a
storage area

Risk Factors	Body Segment	Contributing Factors
Heavy pushing forces (60-70 pounds or higher)	Back / Neck / Legs	Weight of the reel (some reels can weigh from a few hundred pounds to a few thousand pounds) Types of terrain may contribute to more force.
Twisting of the lower back	Back / Shoulders	Requirement of manually maneuvering reels
High speed/jerking movements	Lower Limbs	Arrangement of reels in staging area
Forward bending	Back	Must bend at the waist to handle smaller reels

Recommended Solution Strategy - Short Term

Use proper body mechanics and safe handling procedures when performing manual pushing tasks involving cable reels. Emphasize that reels should not be pulled because of the safety issues.

<http://www.spineuniverse.com/displayarticle.php/article895.html>

http://www.healthnetfederalservices.com/bene/bh6_4_3_tip3.asp

<http://www.osha.gov/SLTC/ergonomics/index.html>

Use two people to move a larger reel (i.e., 6-foot diameter reels).

Investigate re-arranging and/or redesigning the reel staging areas so that the trucks can back up to the desired reel with out having to move the reel to the truck.

Arrange reels so sides face each other so truck can access both sides.

Use any existing hydraulics or power winches for lifting.

Use wooden 2 X 4 as a fulcrum or pry bar to turn the cable reel.

Recommended Solution Strategy - Long Term

Investigate the use of a mechanical lifting device such as a forklift or crane to transfer reels.

Have the supplier drop ship the cable reel to the actual job site which eliminates the need for a staging area.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Contact appropriate vendors for possible lifting devices.

Job Function: Collecting Coin Boxes

Description of Work Environment

General Tasks of a Coin Collector Include:

1. Driving a company vehicle (Panel Truck/Van), safely and courteously, over various assigned routes.
2. Extracting and transporting coin boxes from coin telephones.
3. Inspecting and testing coin stations and referring service troubles to appropriate company personnel.
4. Replacing directories and dialing instruction cards and performing minor maintenance on coin stations.
5. Equipping new stations with necessary security devices.
6. Moving coin boxes from the inside of a collection vehicle to a secure area/storage vault.



Getting in and out of a
vehicle



Extracting a coin box from
the payphone



Carrying coin boxes

Risk Factors	Body Segment	Contributing Factors
Driving –up to 50% of coin collectors’ time can be spent driving to work locations.	Back	Traffic safety hazards; potential for vehicle accident; potential for back pain from long term sitting; hazard in inclement weather getting in and out of vehicle – ice and snow.
Forceful Exertions, Extracting and Carrying Coin Cans – up to 25% of a coin collectors time can be spent walking to van carrying full can to truck. (Can could weigh up to 15lbs. when full)	Arms, Hands, Back	<p>Wrist exposure due to repetitive forces applied by the hand (force required to remove and install coin boxes from/to the phone by banging with hand, carrying full can of coins) Exposure to hard metal edges. (coin boxes, pay phones)</p> <p>Awkward wrist posture when extracting coin boxes from pay phone</p> <p>Repetitive wrist movements (i.e., unlocking coin telephone set with electronic key, opening vault door, using bar code reader wand etc.)</p> <p>Repetitive pinch grip (using electronic key, pulling on coin can, pay phone vault door, coins stuck in top of coin box)</p>
Awkward Repetitive Positions - getting in and out of vehicles, which may have limited or awkward entrance/exit design.	Back, Upper Torso	Sometimes the coin collector is required to pick up more than one can. Maximum number of cans to that can be picked is six with an approximate weight of 90 lbs. Coin collectors are required to walk up and down stairs to reach public pay phones.
Contact Pressure	Hand / Finger	<p>Coins are placed in handcart or carried by hand.</p> <p>Entering and exiting vehicle repeatedly</p> <p>Contact pressure on the finger (s) used to extract the coin box from the pay phone.</p>

Recommended Solution Strategy - Short Term

Contact Pressure while extracting the coin box can be reduced by using padded gloves.

While carrying coin boxes consider decreasing the quantities carried or consider the use of a small two-wheeled cart.

To avoid awkward repetitive positions while entering the service area (rear or side doors) of the vehicle, crawl into the vehicle instead of bending forward at the waist. Kneepads may be of benefit if the employee is required to work on his/her knees placing coin boxes into the vehicle.

Since driving a vehicle for long periods of time is part of the job of a coin collector, consider providing training to employees on the correct sitting posture in a vehicle and the importance of changing postures throughout the day.

Recommended Solution Strategy - Long Term

Forceful Exertions – consider optional tools or ergonomic designed coin box extractor (T-hook) to reduce force on the hand.

To avoid awkward postures getting in and out of vehicles, consider redesigning coin collector vehicles for easy exit and entry.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Padded Gloves:

Safeguard: www.safeguard.com

Alimed: www.alimed.com

Job Function: Pole Climbing – Unstepped

Description of Work Environment

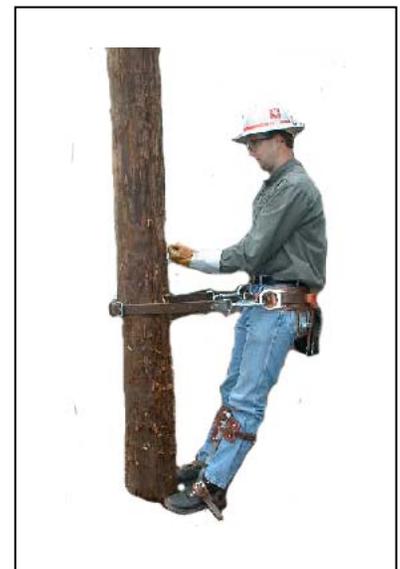
This function involves a technician climbing an unstepped pole. In this task, the employee safely ascends, maneuvers and descends unstepped poles using climbing gaffs and wearing a tool belt with approximately 25 lbs of tools. The technician must be able to transfer around the pole or other obstructions. Climbing an unstepped pole with gaffs can be done during most weather conditions.



**Employee securing the
gaff to the leg**



Climbing a pole



**Working while secured
to the pole**

Risk Factors	Body Segment	Contributing Factors
Awkward Postures	Hands/ Wrist Arms/ Shoulders/ Knees/ Legs/ Feet/ Lower Back	Coordination of the hand and leg movements together with the shifting of one's body weight while maintaining body balance as the employee safely ascends, maneuvers or descends an unstepped pole.
Force	Hands/ Wrist Arms/ Shoulders/ Knees/ Legs/ Feet/ Lower Back	<p>Excessive forces applied to joints, tendons and muscles associated with employee ascents, maneuvers and descents of an unstepped pole.</p> <p>Loose or dull gaffs will contribute to the employee applying excessive force while climbing.</p>
Joint Stress	Knees	<p>"Locked Knee" refers to when the leg is fully extended and the knee is rigid or locked back to prevent the leg from bending at the knee.</p> <p>The weight of the employee can contribute to joint stress.</p>

Recommended Solution Strategy - Short Term

Use alternative methods to ascend unstepped telephone poles such as stepped poles, extension ladders and bucket trucks.

Provide stirrups that fit properly and are comfortable as this affects a technician's ability to climb.

Keep gaffs sharp and inspected for fractured or cracked gaffs or leg irons, loose or dull gaffs, broken straps or buckles. This helps to reduce forces on the technician's joints when climbing.

For people with small feet and/or have a small stature, supply narrow stirrup that provides a snug fit for technicians.



Recommended Solution Strategy - Long Term

Eliminate the use of utility poles and place telephone cables below grade to reduce the need to climb unstepped poles.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Pole climbing gear

<http://www.buckinghammfg.com/linemen/pcpc.html>

<http://www.klein-tools.com/index.html>

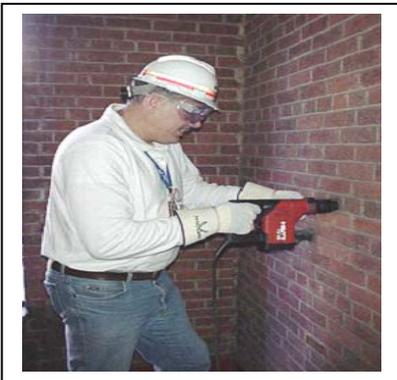


Job Function: Power Tools

Description of Work Environment

A technician's job function involves using various power assisted hand tools. In these tasks, the technician can use tools such as the hammer rotary drill, hammer demolition drill, hand held electric drills, pneumatic air hammers, lead cutters, impact wrenches, chain saws, etc. These tools are powered by several methods such as pneumatics, hydraulics, gasoline or electrical sources. The power tools are used to attach or remove equipment during placing or removal operations. Power tools can be used in various locations such as in the underground, aerial, and ground settings.

The weight of the tool will vary according to its size. Power tools can be used during most weather conditions.



**Technician using a
rotary hammer drill**



**Technician using small
battery drill**



**Drilling holes in splice case
end for cables**

Risk Factors	Body Segment	Contributing Factors
Unbalanced tools	Hands/ Arms/ Tendons/ Shoulders	Unbalanced tools can put stress on the small muscles and tendons in the arm and hands. These unbalanced tools also stress the shoulders if used above chest height.
Vibrating Tools	Hands/ Arms/ Tendons/ Shoulders	Vibrating tools reduce blood flow by constricting blood vessels, cause motion and torque which require a firmer grip and certain vibration frequencies can cause nerve damage.
Excessive Torque	Hands/ Arms/ Tendons/ Shoulders	Shock and impact to hands and arms from using power hammers.
Grip Force Requirements	Hands	Forceful tool grip
Cold Temperatures	Hands	Cold temperatures reduce blood flow by constricting blood vessels.

Recommended Solution Strategy - Short Term

- Make available gloves with vibration-damping materials in palms and fingers.
- Be sure tools are well maintained. They should be kept sharp, lubricated, and tuned.
- Train employees on proper use of equipment and safety precautions on the effects of vibration and methods for reducing exposure.
- Allow the tool to do the work by using a grip light enough to maintain control.
- Take rest breaks as needed.

Recommended Solution Strategy - Long Term

Purchase power tools that are well balanced, have vibration-reducing features, and handles that are smooth but not slippery.

Power tools should be made available with torque converters to reduce the chance of sudden stops.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Anti-vibration gloves

<http://www.2protect.com/vibrate.cfm>

http://www.jackhammer.com/accessories_safetysupplies_home.htm

<http://alphasourceintl.com/sp/gloves/antivibration.htm>



Tool wrap

<http://www.viscolas.com/handgrip/handgrip.html>



Job Function: Jackhammer

Description of Work Environment

Jackhammers are used to break asphalt, crack concrete, stone, or other pavement; loosen earth, dig clay, or break rock, to trim bottom or sides of trenches or other excavations; drill holes in concrete; reduce the size of large stones; or tamp earth in backfills.

The jackhammer employed by the technicians can weigh between sixty and one hundred pounds. The typical job involves the technician breaking, cutting or cracking pavement and or tamping soil while they lean on the jackhammer to force the drill into the solid material. The technician can insert either an asphalt cutter, chisel point or tamper drill into the chuck to complete these tasks. Taller workers may need a longer blade than the standard asphalt cutter.

The jackhammer must be lifted and transferred to the area where work is being performed from the vehicle or tow behind compressor. While cutting, cracking or tamping with the jackhammer, it needs to be lifted and moved repeatedly to complete the task. The jackhammer can be used during most weather conditions, however it is typically not used during inclement conditions. The use of this equipment varies according to job title. Some employees may be assigned to using this equipment fulltime while others will use it intermittently.



Lifting jackhammer from storage well on tow behind compressor

Shock and impact to hands and arms from using jackhammer

When carrying, loading, and unloading, do use a two-person lift in standard

Risk Factors	Body Segment	Contributing Factors
Unbalanced jackhammer	Hands/ Arms/ Tendons/	Unbalanced jackhammer will put stress on the small muscles and tendons in the arm and hands.
Vibration	Shoulders Lower Back/ Legs/ Feet	Vibration related to jackhammer use can reduce blood flow by constricting blood vessels, cause motion and torque which require a firmer grip and certain vibration frequencies can cause nerve damage.
Excessive Torque	Hands/ Arms	Shock and impact to hands and arms from using jackhammer.
Grip Force Requirements	Hands	Forceful grip
Forceful exertion	Hands/ Arms/ Tendons/ Shoulders Lower Back/ Legs/ Feet	Lifting and moving jackhammer into operating position repeatedly. The weight of the tool and the distance the jack hammer is to be carried.

Recommended Solution Strategy - Short Term

Make available gloves with vibration-damping materials in palms and fingers.

Be sure jackhammers are well maintained. Bits are kept sharp, lubricated, and tuned.

Train employees on proper use of equipment and safety precautions on the effects of vibration and methods for reducing exposure.

Allow the tool to do the work by using a grip light enough to maintain control.

Let the weight of the jackhammer do the work for you.

Take rest breaks as needed.

Prevent back injuries by using the leg muscles to lift the jackhammer into operating position.

When breaking pavement, reduce jack hammering by scheduling saw cuts, scheduling the use of a bobcat with a power point to let the machine take the stress, and using a backhoe or trencher to score and rip soft, thin asphalt.

When carrying, loading, and unloading, use a two-person lift in and out of the standard storage bin on a truck.

Recommended Solution Strategy - Long Term

Purchase lightweight jackhammers

Purchase jackhammers that are well balanced, have vibration-reducing features and handles that are smooth but not slippery.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Anti-vibration gloves

<http://www.2protect.com/vibrate.cfm>

http://www.jackhammer.com/accessories_safetysupplies_home.htm

<http://alphasourceintl.com/sp/gloves/antivibration.htm>



Knee pads

<http://www.2protect.com/impact.cfm>

<http://doityourself.com/store/kneepads.htm>

http://www.toolrealm.com/k/Knee_Pads/



Tool wrap

<http://www.viscolas.com/handgrip/handgrip.html>



Central Office Environment



Job Function: Wire Wrapping / Unwrapping

Description of Work Environment

The job function of wire wrapping involves using a wire-wrapping tool in the central office environment. The wire-wrapping tool rotates a wire around a small connector on the block of a frame. Various wire wrapping tools exist; manual, battery operated, and electric. In order to unwrap the wire, the wire has to reverse from the connector on the frame. Again, various tools exist to perform this function.



**Wire Wrapping using a
manual wire-wrapping
gun**



**Wire wrapping using a
battery operated wire-
wrapping gun**



**Wire unwrapping using
the traditional unwrap
tool**

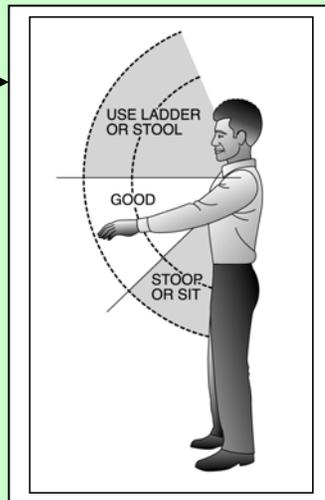
Risk Factors	Body Segment	Contributing Factors
Awkward Posture	Hand / forearm/ elbow and shoulder	The wire wrapping tools are limited to one size. The grip span may be too large for smaller hand sizes.
Force		Awkward posture can occur when a worker positions their body too high or too low in relationship to the wire that needs to be wrapped.
Repetition		If the wire-wrapping tool is not well maintained, the force needed to initiate the wrap will increase.
		The number of wire wraps or unwraps performed in a day varies depending on the load of the central office. Some days the load can be very high increasing the repetitive movement.

Recommended Solution Strategy - Short Term

Positioning your body in the proper position as it relates to the height of the work is very important.

Tool maintenance is very important to reduce the amount of force used to activate the wire-wrapping tool. Ensure a tool maintenance program is in place and encourage employees to report malfunctioning tools.

In situations where repetition is high, consider acquiring a battery operated wire-wrapping tool that wraps and unwraps with ease.



Recommended Solution Strategy – Long Term

Encourage manufacturers to produce tools with different size tool handles.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

OK Industries - <http://www.okindustries.com/>

Job Function: Wire Stripping

Description of Work Environment

The central office job function of wire stripping involves using a tool (needle nose pliers, wire stripper, or the bradley) to take off the outer case of the wire. Taking the outer case off the wires exposes the inner wires which are then threaded into the wire-wrapping tool. The wire-wrapping tool rotates a wire around a small connector on the block of a frame.



**Wire Stripping with
Needle nose Pliers**



**Stripping wire with the
Bradley tool**

Risk Factors	Body Segment	Contributing Factors
Awkward Posture	Hand / forearm/ elbow and shoulder	<p>When wire stripping many people fling their wrists unnecessarily which causes awkward wrist posture.</p> <p>Awkward posture can occur when a worker positions their body too high or too low in relationship to the wire that needs to be stripped.</p>
Force		<p>Forceful exertion occurs when the wire stripping tool is poorly maintained contributing to the forces people apply while using the tool. In addition, some forceful exertion is observed in the hand opposite of the hand manipulating the wire-stripping tool. Often times, the opposite hand is used to provide leverage or tension to the wire while performing the function of wire stripping thus leading to forceful exertion of the opposing hand.</p>
Repetition		<p>The number of wire stripping functions performed in a day varies depending on the workload of the central office. Some days the load can be very high increasing the repetitive movement.</p>

Recommended Solution Strategy - Short Term

Positioning your body in the proper position as it relates to the work is very important. Locate the work as close to your body as possible in order to reduce excessive reaches.

Tool maintenance is very important to reduce the amount of force used while wire stripping. Ensure a tool maintenance program is in place and encourage employees to report malfunctioning tools.

To reduce forceful exertion of the opposing hand, gently wrap the wire on a stable block on the frame in order to function as the tension provider.

Consider purchasing spring loaded needle nose pliers or hand tools with cushioned handles (see resources). It's strongly recommended that these tools be tested for application to the central office environment prior to implementation.

Recommended Solution Strategy - Long Term

None at this time.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Hand tools:

<http://www.alimed.com/>

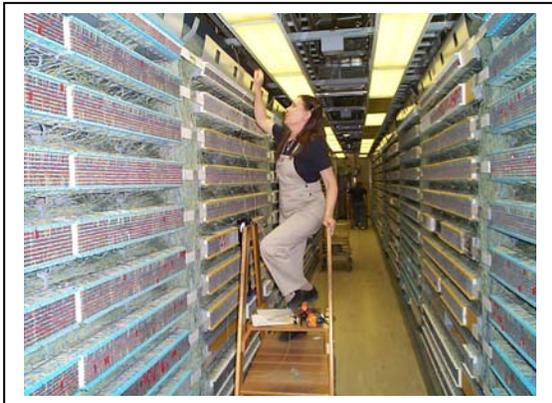
Accu-Lite Ergonomic pliers

<http://www.wassco.com/acercutandpl1.html>

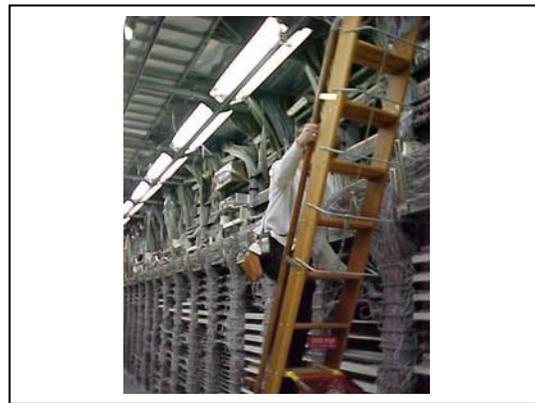
Job Function: Working on a Ladder in the Central Office

Description of Work Environment

Working on a ladder in the central office environment is a job function performed continuously throughout a workday. The ladder is typically a wooden rolling ladder suspended from the ceiling or a stand-alone rolling ladder.



Employee working on stand-alone
rolling ladder



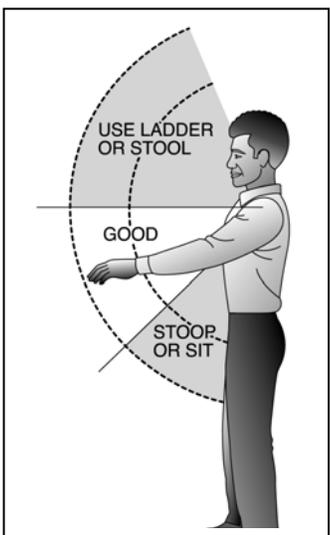
Employee climbing a rolling ladder

Risk Factors	Body Segment	Contributing Factors
Awkward Posture	Hand / forearm/ elbow and shoulder	Awkward posture of the upper extremity can occur while working on the ladder when an employee doesn't properly position his or her body in relationship to the work. When the body is positioned lower than the work, then the employee is reaching up towards the work. If the body is positioned higher than the work, then the employee is reaching down.
Static Posture	Back / Knee / Shoulder	Static posture can occur when employees work for long periods of time on the ladder.
Repetition	Back / Knee	The number of times that an employee climbs a ladder in a central office can vary from day to day. Some days the number of times that an employee climbs a ladder can be very high.

Recommended Solution Strategy - Short Term

Use a ladder seat if the work requires a long period of time standing on a ladder.

Positioning your body in the proper posture as it relates to the work is very important.



Organize your work at the proper height.



Neutral Posture



Awkward posture
The work is too high causing the shoulders to be abducted.

Recommended Solution Strategy - Long Term

Redesign the position of the wire on the frame so that the wires are more accessible with less awkward posture.

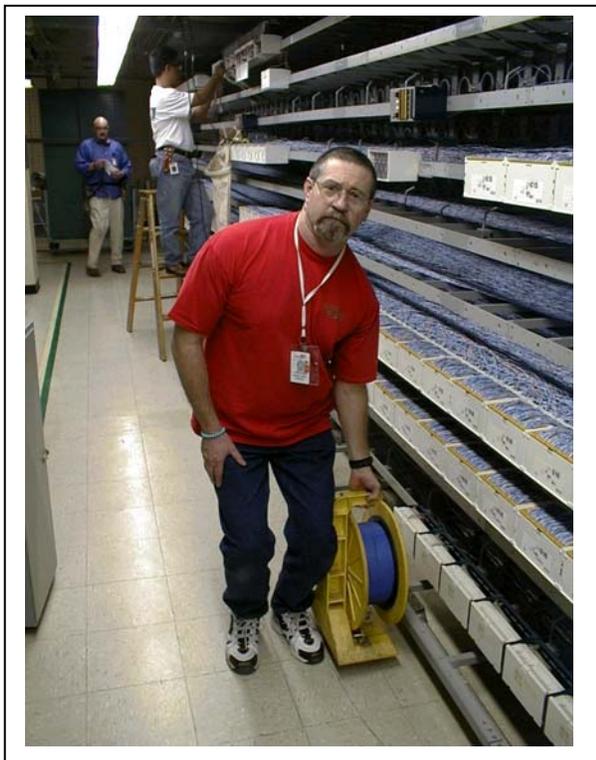
Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

None identified at this time.

Job Function: Handling Wire Reels

Description of Work Environment

Wire is an essential tool in the central office. Many central offices use multiple colors and types of wires to designate the type of services on the line. This means that there are many spools of wire being handled by the employee. The wire reel is generally delivered to the central office in a box and then unloaded by the employee. The wire reel is then placed either on the frame or on a portable wire reel. The portable wire reel is moved along the frame to the location the wire is needed.



Employee lifting
portable wire reel



Employee lifting wire reel to
place on the frame

Risk Factors	Body Segment	Contributing Factors
Force	Back / Arms / Shoulders	Weight of the wire reel handled and the height that the wire reel needs to be lifted contributes to the force exerted on the back, arms, and shoulders.
Repetition	Back / Arms / Shoulders	The busier central offices are constantly maneuvering and loading wire reels.
Awkward postures	Back / Arms / Shoulders	The higher the wire reel needs to be situated on the frame the more awkward the posture is for the employee.

Recommended Solution Strategy - Short Term

Use good body mechanics and lifting techniques as practical.

Provide ergonomic training for proper body mechanics.

Recommended Solution Strategy - Long Term

Work with the vendor of the wire reel to reduce the weight of the spool.

Investigate a rolling portable wire reel holder.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Use good body mechanics and lifting techniques as practical.

<http://www.spineuniverse.com/displayarticle.php/article895.html>

http://www.healthnetfederalservices.com/bene/bh6_4_3_tip3.asp

<http://www.osha.gov/SLTC/ergonomics/index.html>

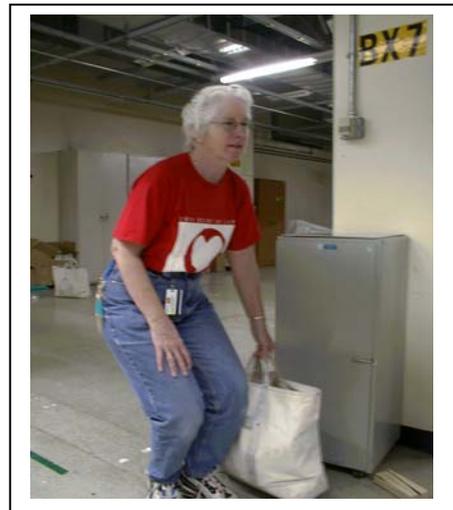
Job Function: Pushing, Dragging, and Lifting Material

Description of Work Environment

The job function of pushing, dragging, and lifting material while working in the central office involves moving material such as wire reels, bags full of wire scraps, rolling ladders, and boxes. The frequency of moving material varies by location and is typically dependent upon the volume of work in a particular central office. The weight of the items to be moved may vary from 10 to 50 pounds and may be awkward in shape and size. The distance that the objects are to be moved may also vary by the central office and may include movement up or down stairs.



Employee dragging a full
bag of wire



Employee lifting a bag
of tools and supplies

Risk Factors	Body Segment	Contributing Factors
Awkward Posture	Hand / forearm/ Back/ elbow and shoulder	Awkward posture of the upper extremity can occur while dragging and pushing material because of a twisting of the upper extremity, shoulder, and arms.
Forceful Exertion	Hand/ Arm/ Back	Forceful exertion can occur as a result of tightly gripping the material being pushed or dragged. The amount of forceful exertion is directly related to the weight of the object being moved and the grip used. The force applied to the back is a result of the weight and awkwardness of the object.
Repetition	Hand / forearm/ Back/ elbow and shoulder	The number of times that an employee moves material in a central office can vary from day to day. There are days when material is moved frequently and some days infrequently.

Recommended Solution Strategy - Short Term

When moving wire bags, drag the bag to the desired location if possible and use a handle. The picture below shows a handle built out of scrap wire.



Use proper body positioning and safe handling procedures while lifting, pushing, or dragging material.

Provide ergonomic training to employees about proper body mechanics.

Avoid overloading the weight of the object to be moved, if possible. When loading the scrap wire bin or container, avoid over-filling the bag so that the bag is easier to separate from the metal bin and easier to maneuver.

Divide the load into smaller portions, if possible.

Acquire assistance for lifting, dragging or pushing heavy and / or large objects or use a mechanical device.

Recommended Solution Strategy - Long Term

Investigate rolling cart for scrap wire bags.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Contact appropriate vendors for mechanical/powered lifting device possibilities.

www.alimed.com

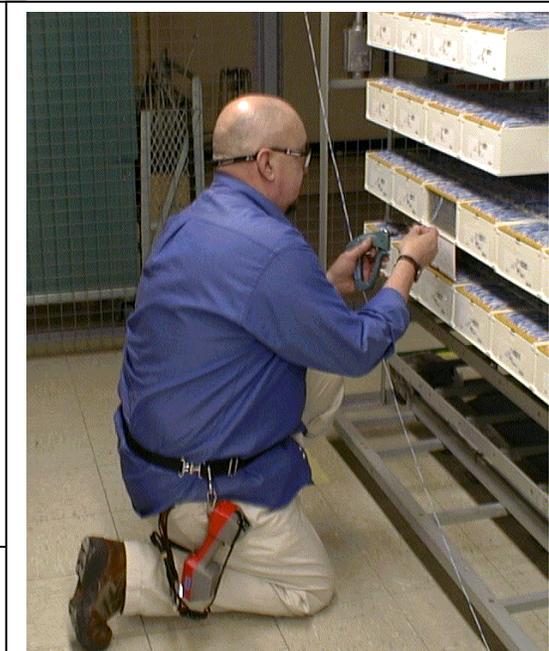
Job Function: Kneeling While Working

Description of Work Environment

Kneeling while working in the central office is a common occurrence. The employee often has very little control over the placement of the work along the frame. This means that at times the work may be situated along the lower racks of the frame thus requiring the employee to work on their knees.



Employee using kneeling
pad while working
on the frame



Kneeling while working
on the frame

Risk Factors	Body Segment	Contributing Factors
Contact pressure	Knees / ankles / feet	Weight of the individual contributes to the contact pressure Type of surface that the knees rest upon
Time	Knees / ankles / feet / back	The amount of time spent on the knees
Awkward postures	Knees / ankles / feet / back	Maneuvering to a kneeling position places people in awkward positions Limited space in the aisles.

Recommended Solution Strategy - Short Term

Use good body mechanics as practical.

Provide training on the proper way to move into and out of a kneeling position.

Use knee pads or a kneeling mat to kneel on especially if the work is over a few minutes.

Limit the amount of time kneeling on a hard surface, if possible.

Sit down instead of kneeling if the work requires a long period of time kneeling.

Recommended Solution Strategy - Long Term

Work with the engineering department of the telecommunications company to locate equipment at a height that would allow the worker to either sit or stand.

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Good body mechanics

Spine Universe <http://www.spineuniverse.com/displayarticle.php/article895.html>

Health Net http://www.healthnetfederalservices.com/bene/bh6_4_3_tip3.asp

OSHA <http://www.osha.gov/SLTC/ergonomics/index.html>

Knee pads

Garden Scape <http://www.gardenscape.ca/pages/0310Knee.htm>

Soft Knees <http://www.softknees.com/>

Alimed <http://www.alimed.com>

Office Environment



Job Function: Typing

Description of Work Environment

During the last one and one half to two decades, the administrative office environment has undergone dramatic changes. The introduction of the personal computer as well as changes in work processes and budgetary pressures, have had a significant impact on the way the traditional office looks and operates.

Typing on a computer keyboard is now a significant aspect of working in an office environment. Typing is typically performed in all of the four basic types of office spaces (Standard Office, Modular Office/Cubes, Telemarketing/Customer Service, and Lap Tops).

The amount of typing varies depending on the type of job being performed. While typing typically involves both letters and numbers, many keyboards have an area that is designed for numerical entries, which is often used in data entry.



Typing
The inputting of letters and
numbers on a keyboard.

Risk Factors	Body Segment	Contributing Factors
Repetitive Motion	Hand / Wrist / Arm	<p>Repetitive motion is simply defined as performing the same act or motion over and over again. Repetitive motions utilize the same body parts frequently without allowing time for those body parts to rest or recover. In typing, fingers are used to depress keys to spell out a combination of words or numbers.</p> <p>Contributing factors include:</p> <ul style="list-style-type: none">• The keyboard's design, size, and configuration.• Speed of typing (often measured in words per minute, or key punches per minute)• Length of time spent typing per day or without breaks.
Localized Mechanical Pressures	Hand / Wrist / Arm	<p>Localized mechanical pressure result from exerting or resting the body against a hard or sharp work object for a prolonged period. Some areas of the body are more sensitive than others because tendons, nerves and blood vessels are located close to the surface of the body. These areas include the center and sides of the palm, the base of the wrist and the elbow. Frequently, it is these body parts that come in contact with work surfaces during typing.</p>
Force	Hand / Wrist / Arm	<p>Force risk factors involve excessive pressure on muscles and joints. Though more frequent in industrial settings, force is used unnecessarily in many office environments. Using excessive force while typing on the keyboard (pounding or clacking the keys) can place unnecessary demands on the hands and wrists. Most current keyboards require very little force to depress the keys.</p>

Risk Factors	Body Segment	Contributing Factors
Posture	Hand / Wrist / Arm-	<p>Poor posture involves positioning parts of the body in unnatural stance such that more muscle and tendon force is required to perform tasks than would otherwise be necessary. In addition, unnatural postures can result in the compression or stretching of body tissues such as nerves or tendons. Unnatural postures related to typing include elevated wrists (significantly above elbow height), wrist extension (lifting the fingers and hands up and back), wrist flexion (the dropping forward of the wrists), ulnar deviation (inclining the hand toward the little finger) and radial deviation (inclining the hand inward toward the thumb. Also related to posture is static loading, which occurs when a body part, such as an arm or neck, is held in the same position through continuous muscular exertion. An example would be holding your hands and arms over a keyboard, rather than resting them on a wrist/palm rest while not typing.</p>
Non-occupational Factors	Hand/Wrist/Arm	<p>Non-occupational risk factors associated with typing include certain diseases (i.e., arthritis, diabetes, obesity, etc.), personal activities that affect the hands/wrists and arms (i.e., knitting, sewing, gardening, woodworking, sports such as tennis or golf), previous injuries, pregnancy, poor nutrition, sedentary lifestyle, and the aging process. Typing away from the typical work office should be considered, whether it is working in a home office, or using financial/tax or other software, writing emails or word processing, or playing computer games</p>

Recommended Solution Strategies - Short Term

Awareness Training

Training Elements Should Include:

- Recognition of Hazards
- Activities to Mitigate and Manage Hazards
- How to Report Injuries
- How to Request Assistance

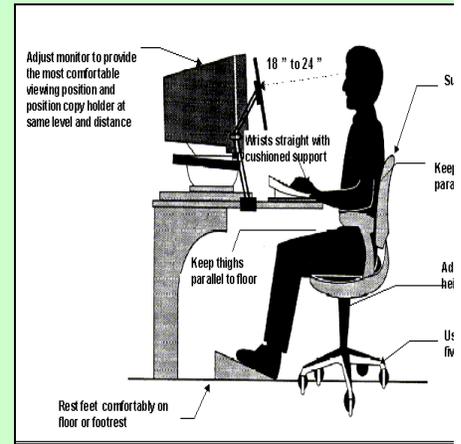
Positioning the Body, Furniture & Equipment

Adjust Workstation and Body for Optimum Work Position.

- Move/realign keyboard

Other related adjustments may include:

- Move CPU
- Rearrange work area
- Adjust chair
- Adjust monitor (raise, lower, tilt)
- Align monitor and chair



Ergonomics Exercises

Include:

- Shoulder rolls
- Elbow squeezes.
- Arm stretches
- Hand stretches
- Wrist stretches

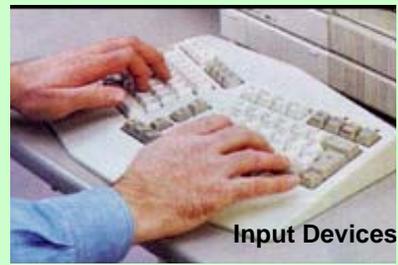


Recommended Solution Strategies - Long Term

Use accessories and furniture to supplement adjustability:

Computer Accessories

- Keyboard/mouse wrist/palm rest – to provide soft surface for resting the palm while not typing
- Split or alternative keyboard – for special needs related to the wrist and hand



Furniture

- Adjustable WorkStation – to provide adjustability to fit multiple users or other special needs
- Addition or replacement of adjustable keyboard tray
- Wider Keyboard Tray – to bring keyboard and mouse at same level and eliminate reaching



Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Technical Information

Center for Office Technology (COT) <http://www.cot.org/>
Cornell University Ergonomics <http://ergo.human.cornell.edu/>
ERGOWORLD <http://www.interface-analysis.com/ergoworld/>
Glossary / Definitions – RSI <http://rsi.about.com/health/rsi/library/bldefinitions.htm>
Injury Prevention Web - <http://www.injurypreventionweb.org/>
Office Ergonomics – Dr. Chris Grant <http://www.office-ergo.com/>
Oklahoma State University Online Environmental, Health & Safety Library
<http://www.pp.okstate.edu/ehs>
Safety Info.Com <http://www.safetyinfo.com/>
Safety On Line <http://www.safetyonline.com>

Sources of Ergonomic Products

Best's Safety Directory <http://www.ambest.com/safety>
Typing Injury Frequently Asked Questions (TIFAQ) <http://www.tifaq.com>

Ergonomic Training Information

OSHA E-Tool for Computer Workstations
http://www.osha.gov/SLTC/computerworkstations_ecat/index.html

Job Function: Mousing and Alternative Input Devices

Description of Work Environment

During the last one and one half to two decades, the administrative office environment has undergone dramatic changes. The introduction of the personal computer as well as changes in work processes and budgetary pressures, have had a significant impact on the way the traditional office looks and operates.

Using a mouse or an alternative input device with a computer keyboard is now a significant aspect of working in an office environment. Mousing is typically performed in all of the four basic types of office spaces (Standard Office, Modular Office/Cubes, Telemarketing/Customer Service, and Laptops).

The amount of mousing varies depending on the type of job being performed. Certain software requires a significant amount of using a mouse or other input device, and others require very little. Input devices include mouse or mice, trackball, touch pad, light pen, etc.



Mousing and Alternative Input Devices

Risk Factors	Body Segment	Contributing Factors
Repetitive Motion	Hand / Wrist / Arm	<p>Repetitive motion is simply defined as performing the same act or motion over and over again. Repetitive motions utilize the same body parts frequently without allowing time for those body parts to rest or recover. In mousing, fingers are used to depress buttons (clicks) on a mouse, to perform various functions. Contributing factors include:</p> <ul style="list-style-type: none"> • The input device's design, type and size. • Required movement of mouse. • Number of clicks. • Length of time spent using a mouse per day. • Position of Mouse
Localized mechanical Pressures	Hand / Wrist / Arm	<p>Localized mechanical pressure result from exerting or resting the body against a hard or sharp work object for a prolonged period. Some areas of the body are more sensitive than others because tendons, nerves and blood vessels are located close to the surface of the body. These areas include the center and sides of the palm, the base of the wrist and the elbow. Frequently, it is these body parts that come in contact with work surfaces during mousing.</p>
Force	Hand / Wrist / Arm	<p>Force involves excessive pressure on muscles and joints. Though more frequent in industrial settings, force is used unnecessarily in many office environments. Using excessive force while using an input device (pounding on the mouse buttons or gripping the mouse tightly for extended periods) can place unnecessary demands on the hands and wrists. Most current input devices have software that allows you to control their features, and they require very little force to depress the buttons.</p>

Risk Factors	Body Segment	Contributing Factors
Posture	Hand / Wrist / Arm-	<p>Poor posture involves positioning parts of the body in an unnatural stance such that more muscle and tendon force is required to perform tasks than would otherwise be necessary. In addition, unnatural postures can result in the compression or stretching of body tissues such as nerves or tendons. Unnatural postures related to mousing include elevated wrists (significantly above elbow height), wrist extension (lifting the fingers and hands up and back) to hold the mouse, wrist flexion (the dropping forward of the wrists), long and awkward reaches to use the input device, ulnar deviation (inclining the hand toward the little finger) and radial deviation (inclining the hand inward toward the thumb). Also related to posture is static loading, which occurs when a body part, such as an arm or neck, is held in the same position through continuous muscular exertion. An example would be holding your hand and arm over a mouse or input device, rather than resting them on a wrist/palm rest while not using the device.</p>
Non-occupational Factors	Hand/Wrist/Arm	<p>Non-occupational risk factors associated with input devices include certain diseases (i.e., arthritis, diabetes, obesity, etc.), personal activities that affect the hands/wrists and arms (i.e., knitting, sewing, gardening, woodworking, sports such as tennis or golf), previous injuries, pregnancy, poor nutrition, sedentary lifestyle, gender, and the aging process. Using input devices away from the typical work office should be considered, whether it is working in a home office, or using financial/tax or other software, writing emails or word processing, or playing computer games.</p>

Recommended Solution Strategy - Short Term

Awareness Training

Training Elements Should Include:

- Recognition of Hazards
- Activities to Mitigate and Manage Hazards
 - Engineering Controls
 - Administrative Controls
 - Work Practice Controls
- How to Report Injuries
- How to Request Assistance

Adjust Workstation and Body for Optimum Work Position.

Positioning the Body, Furniture & Equipment



Move/realign mouse or input device. A keyboard or mouse that is not directly in front of or close to the body forces the employee to repeatedly reach during use.

The mouse should be positioned at the operator's side with his or her arm close to the body. A straight line should be maintained between the hand and the forearm. The upper arm should not be elevated or extended while using the mouse. The employee should not have to reach to use the mouse.

Other considerations include switching the mouse to the opposite hand/side of the keyboard (giving the dominant hand an opportunity to rest); using the corresponding keystrokes to perform traditional mouse activities; and using the larger muscles of the arm to navigate the mouse rather than twisting the wrist back and forth.

Other related adjustments may include:

- Move CPU
- Rearrange work area
- Adjust chair
- Adjust monitor (raise, lower, tilt)
- Align monitor and chair

Ergonomics Exercises

Include:

- Shoulder rolls
- Elbow squeezes
- Arm stretches
- Hand stretches
- Wrist stretches



Recommended Solution Strategy - Long Term

Use accessories and furniture to supplement adjustability:

Computer Accessories



Mouse wrist/palm rest – to provide soft surface for resting the wrist while not mousing



Consider using an alternative input device (trackball, touchpad, light pen, etc.) – for special needs related to the wrist and hand



Consider switching to a different mouse – they come in a variety of shapes and sizes, left or right handed, with various buttons and other controls

Furniture

- **Adjustable WorkStation** – to provide adjustability
- **Addition or replacement of adjustable keyboard/mouse tray**
- **Wider Keyboard Tray** – to bring keyboard and mouse at same level and eliminate reaching



Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

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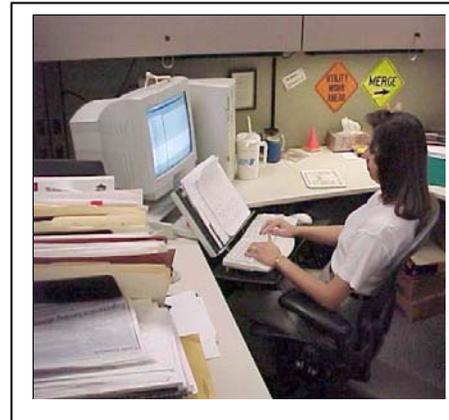
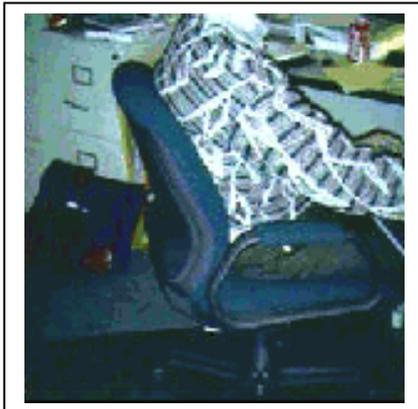
Ergonomic Training Information

OSHA E-Tool for Computer Workstations
http://www.osha.gov/SLTC/computerworkstations_ecat/index.html

Job Function: Sitting

Description of Work Environment

Sitting is the primary posture at a workstation, and usually occurs for the majority of a workday in the office environment. The primary causes of sitting problems experienced are lack of training or applicability of training to existing equipment, or lack of chair adjustability.



Sitting

Remaining in a seated position for long periods of time in a chair that may not fit the user.

Sitting

Remaining in a seated position for long periods of time with little variation in movement

Risk Factors	Body Segment	Contributing Factors
Localized Mechanical Pressures	Legs/Buttocks/ Back	Localized mechanical pressures result from exerting or resting the body against a hard or sharp work object for a prolonged period. Some areas of the body are more sensitive than others because tendons, nerves and blood vessels are located close to the surface of the body. These hazard areas include the lower back and the backside of the thighs, caused by a chair with improper lumbar support and improper seat depth and height. Discomfort occurs when these body parts improperly come in contact with the chair while sitting at the workstation.
Posture	Neck/Shoulder- Back / Trunk / Hip Leg / Knee / Ankle	Posture risk factors involve positioning parts of the body in unnatural postures such that more muscle and tendon force is required to perform tasks than would otherwise be necessary. Unnatural postures related to sitting include twisting of the neck, elevation of one shoulder, twisting of the legs due to inadequate legroom, leaning forward without adequate back support, and reclining too far back in the chair.
Non-occupational Factors	Neck/ Shoulder- Back / Trunk / Hip Leg / Knee / Ankle Hand/Wrist/Arm	Non-occupational factors associated with sitting and typing at a workstation include certain diseases (i.e., arthritis, diabetes, obesity, etc.), personal activities that affect the hands/wrists and arms (i.e., knitting, sewing, gardening, woodworking, sports such as tennis or golf), previous injuries, pregnancy, poor nutrition, sedentary lifestyle, and the aging process. Proper ergonomics while sitting and typing away from the typical work environment should be considered, whether it is working in a home office, or using financial/tax or other software, writing emails or word processing, or playing computer games.

Recommended Solution Strategy - Short Term

Awareness Training

Training elements should include:

- Recognition of Hazards
- Activities to Mitigate and Manage Hazards
 - Engineering Controls
 - Administrative Controls
 - Work Practice Controls
- How to Report Injuries
- How to Request Assistance

Positioning the Body, Furniture & Equipment

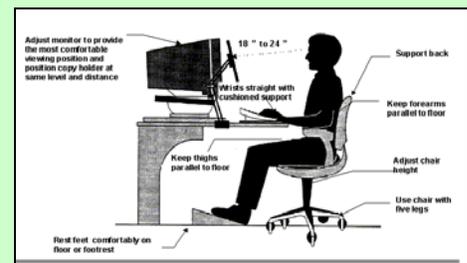
Adjust Workstation and Body for
Optimum Work Position.

Adjust chair so that:

- Thighs are parallel to floor
- Lower legs are perpendicular to floor
- Feet rest flat on floor, or supported by a stable foot rest

Other related adjustments may include:

- Align monitor and chair
- Move CPU
- Rearrange work area
- Adjust monitor (raise, lower, tilt)



Ergonomics Exercises

Include:

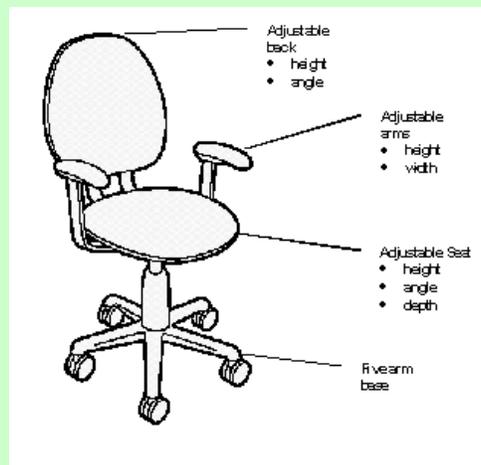
- Shoulder rolls
- Elbow squeezes
- Arm stretches
- Upper and lower back stretches



Recommended Solution Strategy - Long Term

Adjustable Chair

- Includes adjustable:
 - Arm rests
 - Seat back (height, angle, tension)
 - Seat cushion height
 - Also, includes
 - Five wheels on base
 - Swivel seat
 -
- Some chairs may have additional features.



Other Furniture

- **Adjustable WorkStation or Keyboard Tray** – to provide adjustability as chair is adjusted



Accessories

- **Backrest** – to provide proper support for lumbar area
- **Footrest** – to support legs and bring into alignment and alleviate pressure on back of leg



Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Technical Information

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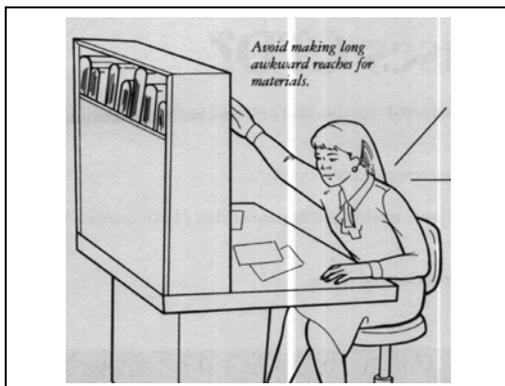
Job Function: Reaching

Description of Work Environment

American office workers continue to find themselves caught up in the shift from a "paper-based" to a "computer-based" work environment. In some cases, attempts are made to retrofit traditional paper-based environments to accommodate computer equipment. In other instances, computer workstations are purchased to handle the change. However, in both cases, the need to access both computer and reference materials is very much a reality and can present the office worker with some unique challenges.

These challenges require users to evaluate their daily tasks in order to minimize the reach distance, and thus, avoid injury. One way they can do this is to classify work materials into three categories: frequently used; occasionally used; and rarely used. Those items used frequently should be placed in easy reach (i.e., the distance from the elbow to the hand). Items used on an occasional basis should be placed within an arm's reach (i.e., the arm fully extended). And finally, those items that are rarely used may require the user to stand in order to retrieve them.

Continuous reaching creates an internal force on soft tissues such as muscles, tendons and blood vessels. When muscles continuously contract, the flow of blood, oxygen and nutrients to affected body parts is seriously compromised. In addition, the removal of metabolic waste is restricted. In turn, this slows muscle recovery and limits the duration of muscle activity.



Extension of the arm above shoulder height to obtain reference materials (i.e., shoulder abduction).



Extension of the arm to reach an input device such as a mouse or keyboard or the telephone.

Risk Factors	Body Segment	Contributing Factors
Repetitive Motion	Arm / Shoulder / Neck / Back / Hand / Wrist /	Frequent reaching may result in compression of nerves and blood vessels in the neck, shoulder, elbow and forearm. In addition, continuous extension of the arm may overload several muscle groups.
Awkward Posture	Arm / Shoulder / Neck / Back / Hand / Wrist /	<p>When frequently used items are located outside the individual's easy reach range such as a mouse located on another desk surface.</p> <p>When an object such as a trash can or computer hard drive is situated under the work surface it can lead to an awkward reaching posture.</p>
Force	Arm / Shoulder / Neck / Back / Hand / Wrist /	Overextending the arm to reach the mouse or keyboard, or continuously reaching above shoulder height to retrieve reference materials are a few examples of internal force.

Recommended Solution Strategy - Short Term

Positioning the Body, Furniture & Equipment

- Classify work materials into three categories:
1. Frequently used materials should be placed within easy reach (the distance from the elbow to the hand).
 2. Occasionally used materials should be placed within an arm's reach (the arm fully extended).
 3. Rarely used items may require the user to stand or reposition themselves in order to retrieve them.



Ergonomics Exercises

For frequent computer users, ensure the keyboard and mouse are within an easy reach – the user should not have to extend their arm to use these input devices.

- Neck Stretch
- Upper Back Stretch
- Shoulder Shrug & Roll
- Finger Fan
- Wrist Stretch
- Side Stretch

Recommended Solution Strategy - Long Term

Implement software enhancements that include job aid and drop-down/pop-up text boxes rather than relying on manuals that might require continuous reaching.

Workstation Ancillaries

Wider Keyboard Tray – will bring the keyboard and mouse to the same level and eliminate reaching while providing the user with additional desk space.

Headset – use of a telephone headset will avoid continuous reaching for the telephone.

Forearm Supports – padded forearm supports may help alleviate stress on the neck and upper shoulders.

Additional Furniture – some workspaces may benefit from additional cabinets or bookcases that would reduce reaching for reference documents.



Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

Office Ergonomics Websites:

Technical Information

Cornell University Ergonomics - <http://ergo.human.cornell.edu/>
ERGOWORLD Office - <http://www.interface-analysis.com/ergoworld/office.htm>
Office Ergonomics – Dr. Chris Grant <http://www.office-ergo.com/>
Computer Related Repetitive Strain Injury - <http://eeshop.unl.edu/rsi.html>
Oklahoma State University Online - Ergonomics
<http://www.pp.okstate.edu/ehs/ergonomics.htm>
University of Virginia – Ergonomics - <http://keats.admin.virginia.edu/ergo/home.html>

Sources of Ergonomic Products

Best's Safety Directory <http://www.ambest.com/safety>
Ergonomic Accessory Vendors

Ergonomic Training Information

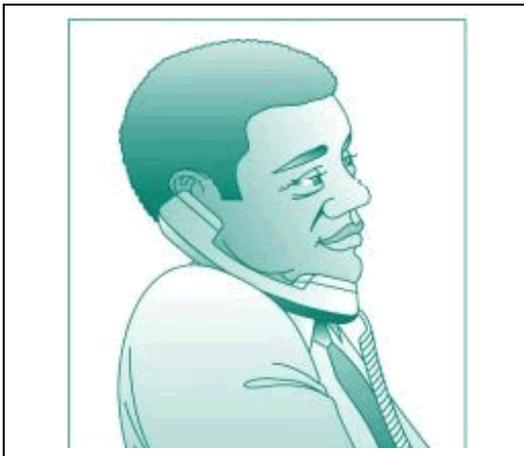
OSHA E-Tool for Computer Workstations
http://www.osha.gov/SLTC/etools/computerworkstations/wkstation_enviro.html

Job Function: Phone Use

Description of Work Environment

There are different types of phones in use today. These include the standard handset with attached cord, cordless and wireless phones, phone headsets, and phones with speaker phone functions.

It is very common practice to use the telephone in conjunction with the computer in the office today. When improperly used, the phone presents ergonomic risk factors, which can lead to neck and shoulder soreness, and potential injury. Using the phone properly is essential to minimize these hazards and injuries.



**Improper Posture
while using the phone**



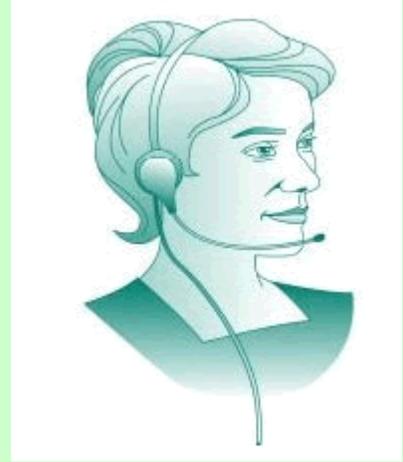
Phone Equipment

Risk Factors	Body Segment	Contributing Factors
Repetitive Motion	Neck Shoulder Arm Upper Back	Constant reaching for the telephone.
Localized Mechanical Pressures	Neck Shoulder Arm Hands Fingers	The phone receiver pressed against the neck and shoulder. Holding the phone up to the ear for an extended period will have a similar affect.
Awkward Posture	Neck Shoulder Arm	The elbow may experience mechanical pressure from resting the arm on a hard desk surface while holding the phone with the hand. Cradling the phone with the head, neck and shoulder or hunching or elevating the shoulder Holding the phone with the hand.
Static Posture	Neck Shoulder Arm	The size of the handset of the phone affects the posture; the smaller the handset the more awkward the posture. Cradling the phone between the shoulder and the head while on a long call. Holding the phone handset for long periods of time.

Recommended Solution Strategy – Short Term

Adjust the workstation and the body for optimum work position.

- Phone Headset - This is a lightweight device that fits over the head to allow the phone user to talk without the need of a handset, thereby eliminating any localized hazard to the neck, shoulder, arm, hands or fingers
- When available or appropriate, use a speakerphone or hands free mode on telephone to totally eliminate stressors to the neck, shoulder, arm and upper back
- Equally important is varying the position of the phone, switching from ear to ear, and hand to neck



Ergonomics Exercises

Deep breathing and shoulder shrugs
Neck stretches
Shoulders rolls
Elbow squeezes
Arm stretches



Recommended Solution Strategy - Long Term

Upgrading the phone to include a speakerphone capabilities

Resources Which May Be Of Assistance For Ergonomic Design or Accommodation

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University of Virginia – Ergonomics - <http://keats.admin.virginia.edu/ergo/home.html>

Sources of Ergonomic Products

Best's Safety Directory <http://www.ambest.com/safety>
Ergonomic Accessory Vendors

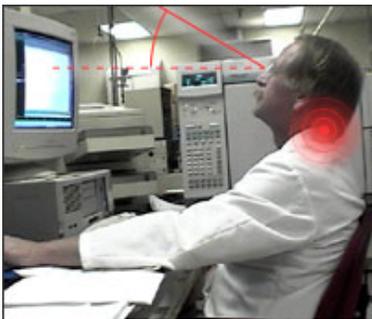
Ergonomic Training Information

OSHA E-Tool for Computer Workstations
http://www.osha.gov/SLTC/etools/computerworkstations/wkstation_enviro.html

Job Function: Viewing Monitor

Description of Work Environment

There are a variety of different types and sizes of monitors in the office environment. Some work environments have multiple monitors in use simultaneously. Laptop or notebook computers are also in widespread use. Although viewing the monitor seems like a static task with very few hazards, several aspects of this activity can lead to possible injuries if improper positions are used for long periods of time.



Monitor in wrong position or using bifocals can cause the user to tilt their head awkwardly causing neck strain

Monitor not positioned properly, causing twisting of the neck and upper torso.

Glare can cause the user to reposition themselves resulting in awkward posture

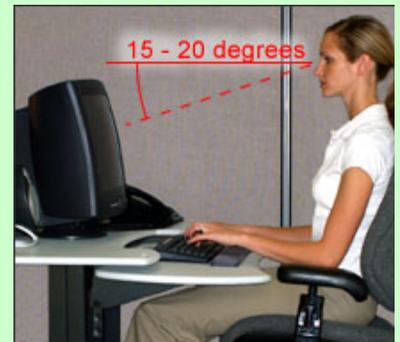
Risk Factors	Body Segment	Contributing Factors
Awkward Posture	Neck/Shoulder- Upper Back Arms	Over, undersized and improperly positioned monitors (too high, too low, off center, too close or too far) can cause unnatural postures related to viewing the screen and keyboarding. These postures may include twisting or bending the neck, which has a negative impact on the shoulder and upper back. Additionally, pushing the chair away from the screen causes extension of the arm.
Static Posture	Neck/Shoulder/ Back	Viewing monitor for long periods while sitting in unnatural positions.
Eye Strain	Eyes	<p>Poor quality of lighting or improper lighting for the task</p> <p>Light levels that are either too bright or too dim</p> <p>Screen glare</p> <p>Improper eyewear</p> <p>Undesirable viewing distances to the computer screen or documents</p> <p>Uncorrected vision problems</p> <p>Illegible characters</p> <p>Inappropriate screen colors</p> <p>Dust, dirt and smudges</p>

Recommended Solution Strategy - Short Term

Positioning the Body, Furniture & Equipment

Adjust Workstation and Body for Optimum Work Position and Glare Reduction.

- Adjust monitor (raise, lower, tilt, align)
- Adjust the top of the monitor at or slightly below eye level (15 to 20 degrees below the horizontal line of sight)
- Position the monitor at a distance that is comfortable (20-40 inches between the eye and front of screen)
- Adjust brightness and contrast to eliminate or reduce glare
- Maintain the highest contrast ratio of the characters on the screen by using a light background with dark letters.
- Open/close window treatments to control glare
- Change visual fields regularly throughout the day (focus on distant objects periodically and blink regularly)
- Position monitor so brightest sources of light are off to either side – not in front or back of the screen.
- Clean the screen regularly to remove dust and fingerprints.



Recommended Solution Strategy - Long Term

Ergonomics Exercises

Include:

- Deep breathing
- Shoulder shrugs
- Neck stretches
- Shoulders rolls
- Elbow squeezes
- Arm stretches



Use furniture and accessories to ensure appropriate position

- Appropriately sized monitor
- Flat screen monitor (increases legibility and reduces glare and increases surface area of workstation)
- Monitor riser – to bring monitor to the recommended height
- Laptop Riser to bring monitor to the recommended height
- Document holder – to bring documents in line with computer and reduce twisting
- Glare guard/screen – to reduce glare
- Computer glasses – help reduce eye strain by accounting for the distance between the eyes and monitor for each user. Bifocal wearers may also experience less neck strain.



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VuRyte: www.vuryte.com

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Appendix

Alliance between OSHA and the Telecommunications Safety
Panel (NTSP)

OSHA News Release “National Telecommunications Safety
Panel Aligns with OSHA”



News Release

U.S. Department of Labor
Occupational Safety and Health Administration
Office of Communications
Washington, D.C.

For Immediate Release
February 26, 2004
Contact: Bill Wright
Phone: (202) 693-1999

National Telecommunications Safety Panel Aligns with OSHA *Alliance to Focus on Ergonomics Issues in the Telecommunications Industry*

WASHINGTON—Workers in the telecommunications industry will reap the benefits of an Alliance between the Occupational Safety and Health Administration (OSHA) and the National Telecommunications Safety Panel, OSHA Administrator John Henshaw announced today.

"Thousands of workers in the telecommunications industry can benefit from the collaborative relationship we're establishing today," Henshaw said. "We're excited about working with this group of safety professionals who are dedicated to safe workplaces throughout the industry."

Added NTSP Chairman Chuck Slagle: "The NTSP looks forward to collaborating with OSHA in this ergonomic Alliance to encourage companies in the telecommunications industry to address ergonomics issues in the workplace."

The Alliance will focus on providing workers in the telecommunications industry with information, guidance and access to training resources, and sharing best practices and technical knowledge to address ergonomics concerns. Training on ergonomics for the industry will be jointly delivered by OSHA and NTSP at the annual International Telecommunications Safety Conference.

The Alliance calls for cross-training OSHA personnel and industry safety and health professionals in NTSP ergonomic best practices or effective approaches, and encourages liaison with other Alliance participants who are currently addressing the topic.

OSHA and NTSP will develop and share ergonomics information through both print and electronic media and from the organizations' respective websites, and will also participate in forums and stakeholder meetings on ergonomic issues in order to help forge innovative solutions in the workplace.

NTSP and OSHA will share information on ergonomic case studies performed within the telecommunications industry and then publicize those results. Finally, OSHA will encourage State Plan States' and OSHA Consultation Projects' participation on the Alliance implementation team, while NTSP will encourage its membership companies to provide input and feedback on workplace safety and health success stories.

The National Telecommunications Safety Panel is a consortium of telecommunications safety professionals that promotes employee safety and health and preventing accidents throughout the telecommunications industry. The Panel works with federal and state agencies and provides comments and recommendations on safety standards and guidelines that affect the varied businesses within the industry.

OSHA is dedicated to assuring worker safety and health. Safety and health add value to business, the workplace and life. For more information, visit www.osha.gov.

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This news release text is on the Internet at <http://www.osha.gov>. Information on this release will be made available to sensory impaired individuals upon request. Voice phone: (202) 693-1999.

AGREEMENT ESTABLISHING AN ALLIANCE
BETWEEN
THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
U.S. DEPARTMENT OF LABOR
AND
THE NATIONAL TELECOMMUNICATIONS SAFETY PANEL

The Occupational Safety and Health Administration (OSHA) and National Telecommunications Safety Panel (NTSP) recognize the value of establishing a collaborative relationship to encourage safer and more healthful American workplaces. OSHA and the NTSP¹ hereby form an Alliance to provide telecommunications employees with information, guidance and access to training resources and to share best practices and technical knowledge to address ergonomic issues in the telecommunications industry. In developing this Alliance, OSHA and NTSP recognize that OSHA's State Plan and Consultation Project partners are an integral part of the OSHA national effort.

OSHA and the NTSP will work together to achieve the following training and education goal:

- Develop training on ergonomics in the telecommunications industry to be jointly delivered, by NTSP and OSHA, at the annual International Telecommunications Safety Conference.

OSHA and the NTSP will work together to achieve the following outreach and communication goals:

- Develop and share ergonomics information through print and electronic media, including links from the OSHA and NTSP Web sites.
- Speak, exhibit, or appear at conferences such as the International Telecommunications Safety Conference, local meetings, or other events.
- Cross-train OSHA personnel and industry safety and health professionals in NTSP ergonomic best practices and/or effective approaches, as jointly determined by OSHA and NTSP.
- Share information on ergonomic best practices, as jointly determined by OSHA and the NTSP, with others in the industry through outreach by NTSP.
- Work with other Alliance participants who are addressing ergonomics, especially in the telecommunications industry.

¹ NTSP member companies supporting the Alliance with OSHA include SBC, Verizon, Qwest, Sprint, BellSouth, AT&T, Cincinnati Bell, ALLTEL, AT&T Wireless, Cingular Wireless, McLeod USA.

Ergonomic Guidelines for Common
Job Functions Within The
Telecommunications Industry

OSHA and the NTSP will work together to achieve the following goals related to promoting the national dialogue on workplace ergonomics:

- Raise others' awareness of and demonstrate their own commitment to workplace ergonomics whenever NTSP leaders address groups.
- Share information on ergonomic case studies performed within the telecommunications industry and publicize the results.
- Convene or participate in forums, round table discussions, or stakeholder meetings on ergonomics issues to help forge innovative solutions in the workplace.

OSHA's Alliances provide parties an opportunity to participate in a voluntary cooperative relationship with OSHA for purposes such as training and education, outreach and communication and promoting a national dialogue on workplace safety and health. These Alliances have proved to be valuable tools for both OSHA and its Alliance participants. By entering into an Alliance with a party, OSHA is not endorsing any of that party's products or services; nor does the Agency enter into an Alliance with the purpose of promoting a particular party's products or services.

An implementation team made up of representatives of both organizations will meet to develop a plan of action, determine working procedures, and identify the roles and responsibilities of the participants. In addition, they will meet and/or teleconference at least quarterly to track and share information on activities and results in achieving the goals of the Alliance. Team members will include representatives of OSHA's Directorate of Cooperative and State Programs and any other appropriate offices. OSHA will encourage State Plan States' and OSHA Consultation Projects' participation on the team. The NTSP will also encourage membership companies with union employees to solicit input and feedback on success stories for work procedures and processes from union leadership.

This agreement will remain in effect for two years. Either signatory may terminate it for any reason at any time, provided they give 30 days written notice. This agreement may be modified at any time with the concurrence of both signatories.



John Henshaw
Assistant Secretary
Occupational Safety and
Health Administration

~~2/24/04~~
Date



Charles R. Slagle
Chair
National Telecommunications
Safety Panel

2/24/04
Date