

COUNTY OF RIVERSIDE
STANDARD SAFETY OPERATIONS MANUAL

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SUBJECT:	REPETITIVE MOTION INJURIES	EFFECTIVE DATE:	05/03/93
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PURPOSE: This program has been established to provide guidelines and control measures designed to minimize employee exposure to work-related musculoskeletal disorders that are caused or aggravated by occupational exposure to ergonomic risk factors.

POLICY: It is the policy of the County of Riverside to meet or exceed the requirements of Title 8, California Code of Regulations, Article 106 Ergonomics, Section 5110 Repetitive Motion Injuries.

OBJECTIVES: To provide general safety guidelines to assist managers, supervisors, and employees in working in a safe and healthy manner.

SCOPE: All employees who may be exposed to RMIs.

REFERENCES: California Code of Regulations (CCR) Title 8, General Industry Safety Orders Sections 5110

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INTRODUCTION

The County of Riverside has adopted this ergonomics program to minimize repetitive motion injuries (RMI's) through (a) worksite evaluations, (b) adoption of control measures and (c) training of employees.

I. DEFINITIONS

- **Ergonomics** - The designing of machines, tools, and equipment to fit the human body in such a manner that does not create physical or mental stress.
- **OSHA** - Occupational Safety and Health Act.
- **VDT** - Video Display Terminal.
- **Workstation** - The furniture and equipment which is used to perform your duties, i.e.(chair, desk, VDT, etc).
- **Analysis** - A survey or inspection of the job performed to identify the cause of the injury or illness.
- **Tracking** - To keep an ongoing record of symptoms or detection of possible VDT ergonomic problems.
- **Controls** - Methods in which RMI Ergonomics can be resolved.
- **Overexertion** - Physically strain the human body beyond physical limits.
- **Repetitive Motion** - To perform task or job repeatedly over and over.
- **Static Load** - To exert stress on the body by restricted movement, i.e.(sitting or staring in one position for long periods of time).

II. RESPONSIBILITIES

A. County Safety Division is responsible for:

1. Providing training (mandatory) to all County employees.
2. Providing training to individuals who will be conducting ergonomic worksite evaluations.
3. Assisting organizations in evaluating work-related RMI exposures and conducting ergonomic worksite evaluations, upon request.
4. Making appropriate recommendations for control measures for exposures to RMI's.
5. Evaluating the effectiveness of control measures for exposures to RMI's.
6. Making recommendations for continuous process improvement as technology improves.
7. Updating this program as required.

B. Departmental Safety Representatives are responsible for:

1. Ensuring that the requirements of Title 8 CCR 5110 and this program are implemented.

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III. RESPONSIBILITIES - continued

2. Determining if jobs, processes or work activities in their department may cause RM'Is.
3. Conducting and/or coordinating ergonomic worksite evaluations.
4. Ensuring that individuals have received the appropriate training before conducting ergonomic workstation evaluations and/or training.
5. Ensuring that appropriate and effective control measures for exposures to RMI's are determined and implemented in a timely manner.
6. Providing and/or coordinating ergonomics training for all affected employees.
7. Ensuring that a procedure is in place for employees to report symptoms and perceived work-related ergonomic risk factors to supervision or management.
8. Ensuring that accurate records are maintained in accordance with the recordkeeping section of this program and providing documentation to the County Safety Division, or representative of CAL/OSHA, upon request.
9. Monitoring the effectiveness of their department's ergonomic program on a on-going basis.

C. Managers and Supervisors are responsible for:

1. Ensuring that employees are provided with and use the appropriate tools, equipment, parts and materials required for the job.
2. Ensuring that employees know and understand how to report safety suggestions, hazard observations (including ergonomic hazards) and, signs or symptoms of injury that may be related to a work-related RMI.
3. Attending ergonomics training to familiarize themselves with the recognition and prevention of work-related ergonomic risk factors, and the signs and symptoms of employee exposure to RM'Is.
4. Ensuring that all employees attend ergonomic training.
5. Conducting or participating in ergonomic worksite evaluations, as required.
6. Assisting in the determination and/or implementation of effective control measures for exposures to work-related RMIs, as required.

D. Employees are responsible for:

1. Using the appropriate tools, equipment, parts and materials in the manner established by the supervisor, departmental safety representative, treating physician, and/or the manufacturer.
2. Following established procedures to ensure that equipment is properly maintained in good condition.

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III. RESPONSIBILITIES - continued

3. Attending ergonomics training, as required, and applying the knowledge and skills acquired to actual job tasks, processes or work activities.
4. Reporting damaged, malfunctioning tools, equipment, or materials to supervision.
5. Reporting signs and symptoms of RMI's and perceived work-related ergonomic hazards to supervision.

III. ERGONOMIC RISK FACTORS

A. Ergonomic risk factors are the physical stressors and workplace conditions that may pose a risk of injury to the musculoskeletal system of an employee. Because these factors occur during work performance or during the interaction of an employee with the work environment, they are referred to as "work-related ergonomic risk factors". Such Risk Factors include:

1. Repetitive motions
2. Awkward or sustained postures
3. Forceful exertions (including lifting, pushing, and pulling)
4. Mechanical or contact stresses
5. Vibration
6. Cold / Hot Temperatures

B. Work-related ergonomic risk factors may produce significant adverse effects on certain employees' functional ability, work performance, comfort and health. Causes may include:

1. Tools, machines, parts and materials required for the job (i.e., hand tools, power tools, computer terminals, and keyboards).
2. Improper design or adjustment of workstations (i.e., desks, tables, benches, chairs, stools, computer terminals, and keyboards).
3. Physical environment (i.e., lighting, noise levels, air quality, temperature, or ventilation).
4. Task requirements (i.e., lack of task variety, excessive work duration, inadequate work-to-rest ratios, and improper workflow).

IV. ERGONOMIC WORKSITE EVALUATIONS

A. The purpose of conducting an ergonomic worksite evaluation is to:

1. Identify the task requirements and any work-related ergonomic risk factors of job, processes or work activities that may cause or contribute to the development of RMI's.

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V. ERGONOMIC WORKSITE EVALUATIONS - continued

2. Determine any feasible engineering and/or administrative control measures to reduce or prevent employee exposure to RMI's.
3. Identify appropriate types of personal protective equipment where effective engineering or administrative controls are not feasible (i.e., devices worn on or attached to the body such as: padding, anti-vibration gloves, corrective lenses for work with video display terminals).

NOTE: Wrist braces / splints are **not** considered personal protective equipment and **must** only be worn if prescribed by a licensed physician.

- B. Ergonomic worksite evaluations **shall** be conducted when one or more employee(s) is diagnosed within the last 12 months by a licensed physician with an objectively identified work-related RMI.
- C. Ergonomic worksite evaluations are also recommended:
 1. When an employee reports a symptom that may be related to the development of a work-related RMI.
 2. For jobs, processes or work activities where work-related ergonomic risk factors have been identified that may cause or aggravate potential RMI's.
 3. Before and after implementation of new jobs, tasks, tools, equipment or processes.
- D. Ergonomic worksite evaluations should be conducted by trained personnel such as departmental safety representative, supervisors/managers or County Safety Division Personnel. The Safety Division will conduct evaluations upon request(s) of a department, Workers' Compensation Division or where a 5020 identifies a possible RMI.

V. PREVENTION AND CONTROL OF EXPOSURES TO RMI's

- A. Preventing or reducing ergonomic risk factors is frequently difficult because several factors may combine to create a hazard. Control measures that address only a single risk factor may not eliminate the overall risk. Effective interventions implemented in one situation may be ineffective in other settings. Ergonomic solutions will typically require a series of adjustments or trial periods. Most effective ergonomic solutions are accomplished through incremental and cumulative improvements in the workplace rather than from a single, major workplace modification.
- B. Any exposures that have been identified as causing objectively identified work-related RMI's of musculoskeletal system by a licensed physician within the last 12 months shall be corrected or, if not capable of being corrected, have the exposures minimized to the extent feasible.
- C. Exposures to work-related RMI's **shall** be controlled to the extent feasible through a three-tier hierarchy of control (in order of preference):
 1. **Engineering Controls** – ergonomic design controls apply to equipment, tools, workstations, work methods, or other aspects of the workplace (i.e., redesigning workstation layout, using mechanical assist devices, providing fully adjustable equipment, using lighten-weight containers).

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VI. PREVENTION AND CONTROL OF EXPOSURES TO RMI's - continued

2. **Administrative Controls** – management policies or work practices used to prevent or control the work schedule or manner in which work is performed (i.e., rotating workers through several jobs with different physical demands to reduce various body stresses, allowing more rest breaks to allow for rest and recovery, adjusting the work place to relieve repetitive motion risks).
3. **Personal protective equipment** – equipment that provides a barrier between the employee and the ergonomic hazard where effective engineering or administrative controls are not feasible (i.e., devices worn on or attached to the body such as padding, anti-vibration gloves, corrective lenses for work with video display terminals).

NOTE: Wrist braces / splints are **not** considered personal protective equipment and **must** only be worn if prescribed by a licensed physician.

- D. Regular monitoring, positive reinforcement, and feedback are necessary to ensure that control measures are not circumvented for convenience, schedule, or production.

VI. EMPLOYEE TRAINING

- A. Training is intended to enhance the capacity of management and employees to effectively recognize work-related ergonomic risk factors and to understand and apply appropriate control strategies. **RMI Training is Presented by the County Safety Division and attendance is mandatory for all Supervisors, Managers and Employees.**
- B. Job/Risk specific training shall be provided to all employees who have the same job process or operation of identical (work activity at the same workplace location when one or more employee(s) is diagnosed within the last 12 months by a licensed physician with an objectively identified work-related RMI.
- C. Job/Risk specific training for affected employees and supervisors shall include an explanation of:
 1. The content and scope of T8 CCR, Article 106, Ergonomic, Section 5110.
 2. The contents of this program.
 3. Work-related ergonomic risk exposures that have been associated with the development of RMI's.
 4. Systems and consequences of musculoskeletal injuries caused by RMI's.
 5. The importance of reporting symptoms and injuries to supervision and control measures used to prevent or minimize employee exposures to RMI's.
- D. Upon the completion of Job / Risk specific training, employees and supervisors should be able to demonstrate and provide understanding of the:
 1. Tasks or operations associated with jobs that pose ergonomic risks.
 2. Proper use and adjustment of tools, devices, equipment and ergonomic accessories provided to control identified risks.

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VII. EMPLOYEE TRAINING - continued

3. Prevention and control measures available for correcting or minimizing identified risks.
 4. Procedures for early reporting to supervision of symptoms of RMI's and any perceived work-related ergonomic risks.
- E. Supervisors will be provided with general ergonomics awareness training in order to familiarize themselves with the:
1. Potential work-related ergonomics risk factors those employees under their direct control may be exposed to.
 2. Signs and symptoms of RMI's.
 3. Prevention and control measures for preventing or minimizing exposures to RMI's.
- F. General ergonomics awareness training is mandatory for all employees, with special emphasis being placed on employees who:
1. Report a symptom that may be related to the development of a work-related RMI of the musculoskeletal system.
 2. Whose jobs or work activities have been identified where work-related ergonomic risks factors may cause or aggravate the development of RMI's.
 3. Before and after implementation of **new** jobs, tasks, tools, equipment or processes where work-related ergonomic risk factors may cause or aggravate the development of RMI's.
 4. Use a video display terminal regardless of the time used.

VIII. RECORDKEEPING

- A. Accurate records should be maintained by each organization of all:
1. Reports from employees of symptoms of RMI's and any perceived work-related ergonomic risks.
 2. Ergonomic worksite evaluations conducted in the workplace.
 3. Prevention or control measures implemented to prevent or minimize employee exposure to work-related ergonomic risk factors.
 4. Training records, including date(s), name of instructor(s), training materials / curriculum used, and list of attendees (with signatures).

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IX. APPENDIX I:

A. General Workstation Design Principles

1. Make the workstation adjustable, enabling both large and small persons to fit comfortably and reach materials easily.
2. Locate all materials and tools in front of the worker to reduce twisting motions. Provide sufficient workspace for the whole body to turn.
3. Avoid static loads, fixed work postures, and job requirements in which operators must frequently or for long periods:
 - a. Lean to the front or the side
 - b. Hold a limb in a bent or extended position
 - c. Tilt the head forward more than 15 degrees
 - d. Support the body's weight with one leg
4. Set the work surface above elbow height for tasks involving fine visual details and below elbow height for tasks requiring downward forces and heavy physical effort.
5. Provide adjustable, properly designed chairs with the following features:
 - a. Adjustable seat height,
 - b. Adjustable up and down back rest
 - c. Padding that will not compress more than an inch under the weight of a seated individual.
 - d. Chair that is stable to floor at all times (5-leg base)
6. Allow the workers, at their discretion, to alternate between sitting and standing. Provide floor mats or padded surfaces for prolonged standing.
7. Support the limbs; provide elbow, wrist, arm, foot, and back rests as needed and feasible.
8. Use gravity to move materials.
9. Design the workstation so that arm movements are continuous and curved. Avoid straight-line, jerking arm motions.

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A. General Workstation Design Principles - continued

10. Design so arm movements pivot about the elbow rather than around the shoulder to avoid stress on shoulder, neck, and upper back.
11. Design the primary work area so that arm movements or extensions of more than 15 inches are minimized.
12. Provide dials and displays that are simple, logical, and easy to read, reach, and operate.
13. Eliminate or minimize the effects of undesirable environmental conditions such as excessive noise, heat, humidity, cold, and poor illumination.

Source: "Elements of Ergonomic Programs", National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, Publication No 97-117.

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B. Design Principles for Repetitive Hand and Wrist Tasks

1. Reduce the number of repetitions per shift. Where possible, substitute full or semi-automated systems.
2. Maintain neutral (handshake) wrist positions:
 - a. Design jobs and select tools to reduce extreme flexion or deviation of the wrist.
 - b. Avoid inward and outward rotation of the forearm when the wrist is bent to minimize elbow disorders (i.e., tennis elbow).
3. Reduce the force or pressure on the wrists and hands:
 - a. Wherever possible, reduce the weight and size of objects that must be handled repeatedly.
 - b. Avoid tools that create pressure on the base of the palm that can obstruct blood flow and nerve function.
 - c. Avoid repeated pounding with the base of the palm.
 - d. Avoid repetitive, forceful pressing with the fingertips.

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B. Design Principles for Repetitive Hand and Wrist Tasks - continued

4. Design tasks so that a power rather than a finger pinch grip can be used to grasp materials. Note that a pinch grip is five times more stressful than a power grip.
5. Avoid reaching more than 15 inches in front of the body for materials.
 - a. Avoid reaching above shoulder height, below waist level, or behind the body to minimize shoulder disorders.
 - b. Avoid repetitive work that requires full arm extension (i.e., the elbow held straight and the arm extended).
6. Provide support devices where awkward body postures (elevated hands or elbows and extended arms) must be maintained. Use fixtures to relieve stressful hand/arm positions.
7. Select power tools and equipment with features designed to control or limit vibration transmissions to the hands, or alternatively design work methods to reduce time or need to hold vibrating tools.
8. Provide for protection of the hands if working in a cold environment. Furnish a selection of glove sizes and sensitize users to problems of forceful over gripping when worn.
9. Select and use properly designed hand tools (e.g., grip size of tool handles should accommodate majority of workers).

Source: "Elements of Ergonomic Programs", National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, Publication No. 97-117.

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C. Hand Tool Use and Selection Principles

1. Maintain straight wrists. Avoid bending or rotating the wrists. Remember, bend the tool, not the wrist. A variety of bent-handle tools are commercially available.
2. Avoid static muscle loading. Reduce both the weight and size of the tool. Do not raise or extend elbows when working with heavy tools. Provide counter-balanced support devices for larger, heavier tools.

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IX. APPENDIX I:

C. Hand Tool Use and Selection Principles - continued

3. Avoid stress on soft tissues. Stress concentrations result from poorly designed tools that exert pressure on the palms or fingers. Examples include short-handled pliers and tools with finger grooves that do not fit the worker's hand.
4. Reduce grip force requirements. The greater the effort to maintain control of a hand tool, the higher the potential for injury. A compressible gripping surface rather than hard plastic may alleviate this problem.
5. Whenever possible, select tools that use a full-hand power grip rather than a precision finger grip.
6. Maintain optimal grip span. Optimum grip spans for pliers, scissors, or tongs, measured from the fingers to the base of the thumb, range from 6 to 9 cm. The recommended handle diameters for circular-handle tools such as screwdrivers are 3 to 5 cm when a power grip is required, and 0.75 to 1.5 cm when a precision finger grip is needed.
7. Avoid sharp edges and pinch points. Select tools that will not cut or pinch the hands even when gloves are not worn.
8. Avoid repetitive trigger-finger actions. Select tools with large switches that can be operated with all four fingers. Proximity switches are the most desirable triggering mechanism.
9. Isolate hands from heat, cold, and vibration. Heat and cold can cause loss of manual dexterity and increased grip strength requirements. Excessive vibration can cause reduced blood circulation in the hands causing a painful condition known as white-finger syndrome.
10. Wear gloves that fit. Gloves reduce both strength and dexterity. Tight-fitting gloves can put pressure on the hands, while loose-fitting gloves reduce grip strength and pose other safety hazards (e.g., snagging).

Source: "Elements of Ergonomic Programs", National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, Publication No. 97-117.

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D. Design Principles for Lifting and Lowering Tasks

1. Optimize material flow through the workplace by:
 - a. Reducing manual lifting of materials to a minimum,
 - b. Establishing adequate receiving, storage, and shipping facilities, and
 - c. Maintaining adequate clearances in aisle and access areas.
2. Eliminate the need to lift or lower manually by:
 - a. Increasing the weight to a point where it must be mechanically handled,
 - b. Palletizing handling of raw materials and products, and
 - c. Using unit load concept (bulk handling in large bins or containers).
3. Reduce the weight of the object by:
 - a. Reducing the weight and capacity of the container,
 - b. Reducing the load in the container, and
 - c. Limiting the quantity per container to suppliers.
4. Reduce the hand distance from the body by:
 - a. Changing the shape of the object or container so that it can be held closer to the body, and
 - b. Providing grips or handles to enable the load to be held closer to the body.
5. Convert load lifting, carrying, and lowering movements to a push or pull by providing:
 - a. Conveyors,
 - b. Ball caster tables,
 - c. Hand trucks, and
 - d. Four-wheel carts.

Source: "Elements of Ergonomic Programs", National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, Publication No. 97-117.

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E. Design Principles for Pushing and Pulling Tasks

1. Eliminate the need to push or pull by using the following mechanical aids, when applicable:
 - a. Conveyors (powered and non-powered)
 - b. Powered trucks
 - c. Lift tables
 - d. Slides or chutes
2. Reduce the force required to push or pull by
 - a. Reducing side and or weight of load;
 - b. Using four-wheel trucks or dollies;
 - c. Using non-powered conveyors;
 - d. Requiring that wheels and casters on hand-trucks or dollies have (1) periodic lubrication of bearings, (2) adequate maintenance, and (3) proper sizing (provide larger diameter wheels and casters);
 - e. Maintaining the floors to eliminate holes and bumps; and
 - f. Requiring surface treatment of floors to reduce friction.
3. Reduce the distance of the push or pull by:
 - a. Moving receiving, storage, production, or shipping areas closer to work areas.
 - b. Improving the workflow or process to eliminate unnecessary material handling steps.
4. Optimize the technique of the push or pull by:
 - a. Providing variable-height handles so that both short and tall employees can maintain an elbow bend of 80 - 100 degrees.
 - b. Replacing a pull with a push whenever possible.
 - c. Using ramps with a slope of less than 10%.

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E. Design Principles for Pushing and Pulling Tasks - continued

Source: "Elements of Ergonomic Programs", National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, Publication No. 97-117.

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F. Design Principles for Carrying Tasks

1. Eliminate the need to carry by rearranging the workplace to eliminate unnecessary materials movement and using the following mechanical handling aids, when applicable:
 - a. Conveyors (all kinds)
 - b. Lift trucks and hand trucks
 - c. Tables or slides between workstations
 - d. Four-wheel carts or dollies
 - e. Air or gravity press ejection systems
2. Reduce the weight that is carried by:
 - a. Reducing the weight of the object,
 - b. Reducing the weight of the container,
 - c. Reducing the load in the container, and
 - d. Reducing the quantity per container to suppliers.
3. Reduce the bulk of the materials that are carried by:
 - a. Reducing the size or shape of the object or container,
 - b. Providing handles or hand-grips that allow materials to be held close to body, and
 - c. Assigning the job to two or more persons.
4. Reduce the carrying distance by:
 - a. Moving receiving, storage, or shipping areas closer to production areas, and
 - b. Using powered and non-powered conveyors.

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IX. APPENDIX I:

F. Design Principles for Carrying Tasks - continued

5. Convert carry to push or pull by:
 - a. Using non-powered conveyors, and
 - b. Using hand trucks and pushcarts.

Source: "Elements of Ergonomic Programs" National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, Publication No. 97-117.

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G. Design Principles for Vibration and Cold Temperature Exposure

Eliminate or reduce vibration exposures by:

Engineering Controls

1. Reduction at the Source
 - a. Operate tools at the lowest speed possible without lengthening the job.
 - b. If several tools are available that serve the same function, use the tool that produces the lowest acceleration.
 - c. Use a rotary gasoline engine or an electric motor as a power source instead of a reciprocating gasoline engine, providing it meets the operational requirements.
 - d. A schedule maintenance program should be implemented to maintain the optimal level of a tool's performance.
2. Reduction of Transmission
 - a. Where possible, use mechanical isolation and dampening in tool handles/grips and vehicle seats.
 - b. Use offset or spring-loaded handles or shock-absorbing exhaust mechanisms.
3. Process Modification
 - a. Use mechanical aids such as chucks and clamps to hold the piece being worked on to reduce the time and intensity of the vibration exposure.

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**G. Design Principles for Vibration and Cold Temperature
Exposure - continued**

Administrative Controls

1. Work Practices
 - a. Alternate work tasks involving a vibrating tool with some other task that does not involve exposure to vibration.
 - b. Schedule longer rest periods each hour to reduce duration of vibration exposure.
 - c. Hold tools as loosely as safe tool control and operating requirements permit. Let the tool do the work. Rest the tool on the support as much as possible. The tighter the tool is held, the greater the vibration transmitted to the employee.
 - d. Use slip-resistant materials on handhold surfaces.
 - e. Substitute a manual tool or other processes where practical.

Personal Protective Equipment

Use vibration-dampening gloves that provide adequate dampening with minimal thickness so that the dexterity required for safe and efficient tool operation will not be reduced.

Cold Temperatures

Symptoms of vibration exposure usually appear suddenly, and are precipitated by exposure to cold temperatures. Eliminate or reduce exposures to cold temperatures by:

- a. Wearing adequate clothing to keep the body temperature stable and normal.
- b. Keeping hands warm and dry while on the job.
- c. Drying hands when they do become wet and chilled and then put on dry, warm gloves before additional exposure to vibration.
 1. Wearing more than one pair of gloves may be required on the job.

IX. APPENDIX I:

H. Guidelines for Video Display Terminal (VDT)
Ergonomics

Ergonomics is the science of arranging and adjusting your work environment to fit you and your body. In a practical sense, ergonomics is the science of human comfort. Ergonomic design in office settings has become increasingly important, particularly because of the increased use of computers or video display terminals (VDT). Your work performance is often related to how you feel while doing your daily tasks. An uncomfortable environment can produce a number of symptoms such as eye strain, fatigue, headaches, back strain and sometimes serious hand and wrist injuries. This can limit your job performance and how much you enjoy your work.

Work related illnesses such as cumulative trauma disorders (CTDs) and repetitive strain illnesses. (RSIs) have increased dramatically and are the result of an increasingly automated workplace. Many of these conditions are caused by repeated overuse or strain of tendons, muscles and nerves instead of one traumatic incident.

Your workspace should be adaptable to your physical needs in order to create a comfortable working environment. There are some easy steps you can take to accomplish good ergonomics:

1. **Adjust Your Chair.** Because you spend most of your day sitting, your chair is the main support for your body.
 - a. **Backrests** should fit snugly against your lower back. If you can't adjust the backrest, use a small thin, firm pillow or rolled-up towel to support your lower back.
 - b. **Chair Heights** that are properly adjusted can help relieve cramping and stiffness in your legs, as well as prevent stress and tension in your neck and shoulders. Adjust your chair height up or down until your forearms are parallel to the floor when sitting. Your feet should rest flat on the floor with approximately one inch of legroom between your lap and keyboard tray. Use a footrest if your feet don't reach the floor.
2. **Adjust the VDT Monitor.** Correctly adjusting the height and viewing distance of your monitor can reduce eyestrain and muscle tension in your neck, shoulders, and upper back.
 - a. **Screen Height** The top of your monitor should be at or slightly below eye level.
 - b. **Screen Distance** The screen should be 18-30 inches from your eyes, or at about arm's length.

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H. Guidelines for Video Display Terminal (VDT)
Ergonomics - continued

3. Adjust the Keyboard. The proper keyboard height can help keep you from bending, flexing or extending your wrists while typing. This improves the comfort of your hands, wrists and forearms, and helps you avoid injury.
 - a. **Forearm, Hand and Wrist Positions** should be in the “neutral” or straight position and parallel with the floor while your fingers are on the keyboard. Avoid resting your wrists and forearms on hard edges. Only use padded wrist rests when **not** keying.
4. Adjust Workstation Props. Arrange your props (i.e., telephone, notepads, rolodex) so items you use the most are within easy reach.
 - a. A **mouse** should be located adjacent to the keyboard where you can access it while maintaining good posture.
 - b. A **copy stand** should be the same height as the screen to keep you from straining your neck or head.
 - c. A **telephone headset** helps to keep your head upright and your body straight while allowing use of both hands for typing or writing.
5. **Adjust Lighting.** Your screen should be free of glare from light coming through outside windows or from inside lighting. Glare makes it hard to see the screen clearly.
 - a. **Closing blinds, shades or curtains can control outside light.** If you are unable to adjust window coverings, move your monitor until it is at a right angle to the window.
 - b. **Tilting or swiveling the position of your VDT monitor can reduce inside light that causes glare.**
 - c. **Task lighting** should be adjusted so that the light is directed toward your document instead of your screen.
 - d. **Light from your computer.** To improve viewing comfort, adjust the contrast and brightness to the maximum possible setting without blurring the text.
 - e. **Clean the screen** as needed to increase clarity.
 - f. **Anti-Glare screens** may be necessary if glare cannot be eliminated.

IX. APPENDIX I:

H. Guidelines for Video Display Terminal (VDT)
Ergonomics - continued

6. **Make Lifestyle Changes.** The way you live has a lot to do with how you feel. Your health and comfort can be improved on and off the job by making lifestyle changes.
 - a. Eat Right and Exercise
 - b. Rest and Reduce Stress
 - c. Use Good Ergonomics at Home

7. **Take micro breaks.** Moving around whenever possible can help ward off tension. Throughout the day, readjust your sitting posture and take sixty-second micro breaks right at your workstation.

Office Ergonomic Assessment Form

(Complete one form for each task.)

Completed by _____
Date _____

Part 1: Description

Department	Job	Worker
Name and describe the task. _____ _____ _____ _____		Does the worker have discretion to reorganize the task? (Circle one.) Yes / No
		Longest uninterrupted time at task during typical day. _____ hours _____ minutes
		Average total time per day at this task. _____ hours _____ minutes
		Frequency of rest breaks. _____ break(s) every _____ hours

Part 2: Risk Factor Identification

Check the risk factors present in the task.

Part of Body	Awkward Positions	Static Positions	Repetition	Excessive Force	Excessive Reaches
Neck					
Back					
Arms					
Shoulders					
Wrists					
Lower Body					

<p><u>Visual Issues</u></p> <p>___ Eye strain</p> <p>___ Soreness</p> <p>___ Dryness</p> <p>___ Blurred vision</p> <p>___ Glare</p> <p>___ Headaches</p>
--

Part 3: Equipment Changes

Check the possible equipment issues associated with the above risk factors.

		<i>Provide</i>	<i>Reposition or Adjust</i>	<i>OK</i>
Work surface	Height?	___	___	___
	Equipment arrangement?	___	___	___
	Leg clearance?	___	___	___
Chair	Seat height?	___	___	___
	Lumbar support?	___	___	___
	Seat tilt?	___	___	___
	Arm rest position?	___	___	___
Foot rest	Feet supported?	___	___	___
Keyboard holder	Shoulders relaxed?	___	___	___
	Forearm & wrists neutral?	___	___	___
	Correct height & angle?	___	___	___
Wrist rest	Forearms & wrists neutral?	___	___	___
Mouse	Placed close to keyboard?	___	___	___
	Arm supported?	___	___	___
	Wrists supported?	___	___	___
	Mouse pad?	___	___	___

		<i>Provide</i>	<i>Reposition or Adjust</i>	<i>OK</i>
Monitor	Viewing distance?	___	___	___
	Height?	___	___	___
	Brightness/contrast control?	___	___	___
	Placement?	___	___	___
	Tilt?	___	___	___
	Glare shield?	___	___	___
Eye exam	Recent?	___	___	___
	Rx correct for monitor use?	___	___	___
	Bifocals?	___	___	___
Lighting	Overhead lighting?	___	___	___
	Task lights?	___	___	___
	Window coverings?	___	___	___
Copy holder	Same level as screen?	___	___	___
	Same distance as screen?	___	___	___
Phone	Placement (right/left)?	___	___	___
	Shoulder rest?	___	___	___
	Headset?	___	___	___

**TITLE 8
GENERAL INDUSTRY SAFETY ORDERS
SECTION 5110
ERGONOMICS**

(Approved by OAL on June 3, 1997. Scheduled
Effective Date: July 3, 1997)

Group 15. Occupational Noise and Ergonomics.

Article 106. Ergonomics.

Section 5110. Repetitive Motion Injuries.

- A. This section shall apply to a job, process, or operation where a repetitive motion injury (RMI) has occurred to more than one employee under the following conditions:
1. The repetitive motion injuries (RMI's) were predominately caused (i.e. 50% or more) by a repetitive job, process, or operation;
 2. The employees incurring the RMI'S were performing a job process, or operation of identical work activity, Identical work activity ,means that the employees were performing the same repetitive motion task, such as but not limited to, word processing, assembly, or loading;
 3. The RMI's were musculoskeletal injuries that a licensed physician objectively identified and diagnosed;
 4. The RMI's were reported by the employees to the employer in the last 12 months but not before (the effective date).

Exemption: Employers with 9 or fewer employees.

- B. Every employer subject to this section shall establish and implement a program designed to minimize RMI's. The program shall include a worksite evaluation, control of exposures that have caused RMI's and training of employees.
1. Worksite evaluation. Each job, process or operation of identical work activity covered by this section or a representative number of such jobs, processes, or operations of identical work activities shall be evaluated for exposures which have cause RMI's.
 2. Control of exposures which have caused RMI's. Any exposures that caused RMI's shall, in a timely manner, be corrected or if not capable of being corrected, have the exposures minimized to the extent feasible. The employer shall consider engineering controls, such as work station redesign, adjustable fixtures or tool redesign, and administrative controls, such as job rotation, work pacing or work breaks.

REPETITIVE MOTION INJURIES
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Section 5110. Repetitive Motion Injuries. - continued

3. Training. Employees shall be provided training that includes an explanation of:
 - a. The employer's program;
 - b. The exposures which have been associated with RMI's;
 - c. The symptoms and consequences of injuries caused by repetitive motion;
 - d. The importance of reporting symptoms and injuries to the employer; and
 - e. Methods used by the employer to minimize RMI's.

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

Note: Authority cited: Sections 142.3 and 6357, Labor Code. Reference: Sections 142.3 and 6357, Labor Code.



X. APPENDIX II:

Work Station Checklist

Using this checklist is one way a supervisor or Employee can identify, analyze and control Musculoskeletal Disorder (MSD) hazards in computer workstation tasks.

	YES	NO
1. Head and neck upright (not bent down/back).	<input type="checkbox"/>	<input type="checkbox"/>
2. Head, neck and trunk face forward (not twisted).	<input type="checkbox"/>	<input type="checkbox"/>
3. Trunk perpendicular to floor (not leaning forward/backward).	<input type="checkbox"/>	<input type="checkbox"/>
4. Shoulders and upper arms perpendicular to floor (not stretched forward) and relaxed (not elevated).	<input type="checkbox"/>	<input type="checkbox"/>
5. Upper arms and elbows close to body (not extended outward).	<input type="checkbox"/>	<input type="checkbox"/>
6. Forearms, wrists, and hands straight and parallel to floor (not pointing up/down).	<input type="checkbox"/>	<input type="checkbox"/>
7. Wrists and hands straight (not bent up/down or sideways toward little finger).	<input type="checkbox"/>	<input type="checkbox"/>
8. Thighs parallel to floor and lower legs perpendicular to floor.	<input type="checkbox"/>	<input type="checkbox"/>
9. Feet rest flat on floor or supported by a stable foot rest.	<input type="checkbox"/>	<input type="checkbox"/>
10. Computer tasks organized in a way that allows the employee to vary them With other work activities, or to take micro-breaks or recovery pauses while at the computer workstation.	<input type="checkbox"/>	<input type="checkbox"/>

SEATING

	YES	NO
1. Backrest provides support for employee's lower back (lumbar area).	<input type="checkbox"/>	<input type="checkbox"/>
2. Seat width and depth accommodate specific employee (seat pan not too big/small).	<input type="checkbox"/>	<input type="checkbox"/>
3. Seat front does not press against the back of employee's knees and lower legs (seat pan not too long).	<input type="checkbox"/>	<input type="checkbox"/>
4. Seat has cushioning and is rounded/has "waterfall" front (no sharp edge).	<input type="checkbox"/>	<input type="checkbox"/>
5. Armrests support both forearms while employee performs computer tasks and do not interfere with movement.	<input type="checkbox"/>	<input type="checkbox"/>

**REPETITIVE MOTION INJURIES
DOCUMENT NUMBER: 2005**

X. APPENDIX II: Work Station Checklist - continued

KEYBOARD/INPUT DEVICE **YES** **NO**

- | | | | |
|----|--|--------------------------|--------------------------|
| 6. | Keyboard/input device platform(s) stable and large enough to hold keyboard and input device. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Input device (mouse or trackball) located right next to keyboard so it can be operated without reaching. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | Input device is easy to activate and shape/size fits hand of specific employee (not too big/small). | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Wrists and hands do not rest on sharp/hard edge. | <input type="checkbox"/> | <input type="checkbox"/> |

MONITOR **YES** **NO**

- | | | | |
|-----|--|--------------------------|--------------------------|
| 10. | Top line of screen is at or below eye level so employee is able to read it without bending head or neck down/back. | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Employee with bifocals/trifocals is able to read screen without bending head or neck backward. | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Monitor distance allows employee to read screen without leaning head, neck, or trunk forward/backward. | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Monitor position is directly in front of employee so employee does not have to twist head or neck. | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | No glare (e.g., from windows, lights) is present on the screen which might cause employee to assume an awkward posture to read screen. | <input type="checkbox"/> | <input type="checkbox"/> |

WORK AREA **YES** **NO**

- | | | | |
|-----|--|--------------------------|--------------------------|
| 15. | Thighs have clearance space between chair and computer table/keyboard platform (thighs not trapped). | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Legs and feet have clearance space under computer table so that employee is able to get close enough to keyboard/input device. | <input type="checkbox"/> | <input type="checkbox"/> |

ACCESSORIES **YES** **NO**

- | | | | |
|-----|---|--------------------------|--------------------------|
| 17. | Document holder, if provided, is stable and large enough to hold documents that are used. | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | Document holder, if provided, is placed at about the same height and distance as monitor screen so there is little head movement when employee looks from document to screen. | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | Palm rest, if provided, is padded and free of sharp and square edges. | <input type="checkbox"/> | <input type="checkbox"/> |

**REPETITIVE MOTION INJURIES
DOCUMENT NUMBER: 2005**

X. APPENDIX II: Work Station Checklist - continued

- | | | YES | NO |
|-----|--|--------------------------|--------------------------|
| 20. | Palm rest, if provided, allows employee to keep forearms, wrists and hands straight and parallel to ground when using keyboard/input device. | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | Telephone can be used with head upright (not bent) and shoulders relaxed (not elevated) and shoulders relaxed (not elevated) if employee does computer tasks at the same time. | <input type="checkbox"/> | <input type="checkbox"/> |

GENERAL

- | | | YES | NO |
|-----|--|--------------------------|--------------------------|
| 22. | Workstation and equipment have sufficient adjustability so that the employee able to be in a safe working posture and to make occasional changes in posture while performing computer tasks. | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | Computer workstation, equipment and accessories are maintained in serviceable condition and function properly. | <input type="checkbox"/> | <input type="checkbox"/> |

Employee Comfort Survey

Do you experience discomfort, numbness, or pain in any part of your body while at work or when you go home? For each body part listed, check the frequency of discomfort.

Department
Job
Date

Shoulders

Never
 Occasionally
 Often
 Always

Neck

Never
 Occasionally
 Often
 Always

Eye Strain

Never
 Occasionally
 Often
 Always

Dry/Sore Eyes

Never
 Occasionally
 Often
 Always

Upper Back

Never
 Occasionally
 Often
 Always

Blurred Vision

Never
 Occasionally
 Often
 Always

Forearm

Never
 Occasionally
 Often
 Always



Wrist/Hand

Never
 Occasionally
 Often
 Always

Elbows

Never
 Occasionally
 Often
 Always

Knees

Never
 Occasionally
 Often
 Always

Hip

Never
 Occasionally
 Often
 Always

Lower Body

Never
 Occasionally
 Often
 Always