20.16.1 Appendix A: Repetitive Motion Injuries (Cal/OSHA Standard)

§5110. Repetitive Motion Injuries.

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

(1) Work related causation. The repetitive motion injuries (RMIs) were predominantly caused (i.e. 50% or more) by a repetitive job, process, or operation;

(2) Relationship between RMIs at the workplace. The employees incurring the RMIs were performing a job process, or operation of identical work activity. Identical work activity means that the employees were performing the same repetitive motion task, such as but not limited to word processing, assembly or, loading;

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

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

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

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

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

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

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

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

Note: Authority cited: Sections 142.3 and 6357. Labor Code. Reference: Sections 142.3 and 6357. Pulaski v.Occupational Safety & Health Stds. Bd. (1999) 75 Cal.App.4th 1315 [90 Cal. Rptr. 2d 54].

20.16.2 Appendix B-1: General Workplace Evaluation Checklist

Use the checklist below to evaluate general ergonomic risks at your work site. Check the box if your answer is "yes" to the question. A "yes" response indicates that an ergonomic risk factor may be present and should be followed up with further evaluation, task modification and workstation adjustment if necessary.

Note that while workplace evaluations are useful tools in identifying possible ergonomic risks, not all individual risk factors need be eliminated in order to reduce the risk of RMIs Often, only slight modifications of work practices or equipment will be sufficient to reduce or eliminate RMIs. Very rarely will all risk factors require modification or elimination to achieve significant reduction in RMIs.

Refer to the indicated Workplace Evaluation Checklists to follow up on any checked items. Use the Workplace Evaluation Coversheet found in Appendix B-2, to document the workplace specifics of this evaluation.

Musculoskeletal Demands

- ❑ Do the tasks require frequent, repetitive or monotonous motions?
- ❑ Do work postures require frequent contortion of the neck, shoulder, elbow, wrist or finger joints?
- ❑ Are workers required to sit continuously for more than 30 minutes, without the opportunity to stand?
- ❑ Are workers required to stand continuously for more than 30 minutes, without the opportunity to sit?
- ❑ For seated work, is reach distance in excess of 15 inches from the worker's position?
- ❑ Is the worker unable to change position often?
- ❑ Does the work involve shock or rapid buildup of forces?
- ❑ Is finger-pinch gripping used?
- ❑ Do job postures involve sustained muscle contraction of any limb?

For further evaluation, refer to Appendix B-4, Computer Workstation Evaluation Checklist; Appendix B-5, Task Evaluation Checklist; and Appendix B-6, Hand Tool Evaluation Checklist.

Computer Workstation

- ❑ Do operators use computer workstations for more than 4 hours a day?
- ❑ Do employees use input devices (i.e. mouse, keyboard) continuously for more than 30 minutes?
- ❑ Are there complaints of discomfort from those working at these stations?
- ❑ Is the chair or desk nonadjustable?
- ❑ Is the display monitor, keyboard or document holder nonadjustable?
- ❑ Does lighting cause glare or make the display monitor hard to read?
- ❑ Is the room too hot or too cold?
- ❑ Is there irritating vibration or noise?

For further evaluation, refer to Appendix B-4, Computer Workstation Evaluation Checklist.

20.16.2 Appendix B-1: General Workplace Evaluation Checklist

Manual Material Handling

- ❑ Is there lifting or lowering of loads, tools or parts that cannot be held close to the body?
- ❑ Is there lifting or lowering of loads, tools or parts in excess of 50 lbs?
- ❑ Is there overhead reaching for loads, tools or parts?
- ❑ Is there bending at the waist to handle loads, tools or parts?
- ❑ Is there twisting to handle loads, tools or parts?

For further evaluation, refer to Appendix B-7, Materials Handling Evaluation Checklist.

Physical Energy Demand

- ❑ Do tools or parts weigh more than 10 lbs. (I gallon of water weighs ~8 lbs.)?
- ❑ Is reach distance greater than 20 inches?
- ❑ Is bending, kneeling, stooping or squatting a primary task activity?
- ❑ Is lifting or lowering loads a primary task activity?
- ❑ Is walking or carrying loads a primary task activity?
- ❑ Is stair or ladder climbing with loads a primary task activity?
- ❑ Is pushing or pulling loads a primary task activity?
- ❑ Is reaching overhead a primary task activity?
- ❑ Do any of the above tasks require five or more complete work cycles to be done within a minute?
- ❑ Do workers complain that rest breaks and fatigue allowances are insufficient?

For further evaluation, refer to Appendix B-7, Materials Handling Evaluation Checklist.

Tools

- ❑ Is the handle too large or too small?
- ❑ Does the handle shape cause the operator to bend the wrist in order to use the tool?
- ❑ Is the tool difficult to access?
- ❑ Does the tool weigh more than 9 lbs. (1 gallon of water weighs -8 lbs.)?
- ❑ Does the tool vibrate excessively?
- ❑ Does the tool cause excessive kickback to the operator?
- ❑ Does the tool become too hot or cold?

For further evaluation, refer to Appendix B-6, Hand Tool Evaluation Checklist.

20.16.2 Appendix B-2: Workplace Evaluation Coversheet

WORK SITE/LOCATION (ATTACH FLOORPLAN OR SCHEMATIC DRAWING):
_____

EVALUATED BY:_____DATE:_____

DEPARTMENT SUPERVISOR:_____TELEPHONE:_____

TOTAL NO. OF WORKSTATIONS/TASKS/TOOLS EVALUATED:_____

TYPES OF EQUIPMENT OR TOOLS USED:_____
_____
_____
_____
_____

TYPES OF TASKS PERFORMED:_____
_____
_____
_____
_____

TYPICAL HOURS AND WORK CONDITIONS:_____
_____
_____
_____
_____
_____
_____

RECOMMENDED MODIFICATIONS OR CORRECTIVE ACTIONS:
_____
_____
_____
_____
_____

20.16.2 Appendix B-3: Workplace Evaluation Checklist

In addition to this Checklist, use the Workplace Evaluation Coversheet found in Appendix B-2, to document the workplace specifics of this evaluation.

WORKSTATION EQUIPMENT SET-UP

No responses indicate potential ergonomic problem areas and should be followed up with engineering or administrative control measures. Indicate if an adjustment is made by the evaluator, and indicate the type of adjustment in the comments section at the bottom of this form. In addition to this Checklist, use the Workplace Evaluation Coversheet found in Appendix B-2, to document the workplace specifics of this evaluation.

	Yes	Adjusted	No	N/A
1. Does the work space allow for full range of motion?	☐	☐	☐	☐
2. Is the height of the work surface adjustable?	☐	☐	☐	☐
3. Can the work surface be tilted or angled?	☐	☐	☐	☐
4. Is the workstation designed to eliminate:				
bending or twisting at the wrist?	☐	☐	☐	☐
reaching above the shoulder?	☐	☐	☐	☐
static muscle exertion?	☐	☐	☐	☐
full extension of the arm?	☐	☐	☐	☐
raised elbows?	☐	☐	☐	☐
5. Is the worker able to vary position and posture?	☐	☐	☐	☐
6. Are there sharp edges where hands or arms are rested on work surfaces?	☐	☐	☐	☐
7. Are armrests provided where needed?	☐	☐	☐	☐
8. Is a footrest provided when needed?	☐	☐	☐	☐
9. Is the floor free of obstacles?	☐	☐	☐	☐
10. Are work surfaces free of clutter?	☐	☐	☐	☐
11. Are cushioned floor mats provided for employees required to stand for long periods of time?	☐	☐	☐	☐
12. Are chairs or stools easily adjustable and suited to the task?	☐	☐	☐	☐
13. Are all task tools and equipment visible and reachable from comfortable positions?	☐	☐	☐	☐
14. Is there a preventive maintenance program for tools and equipment?	☐	☐	☐	☐

20.16.2 Appendix B-4: Computer Workstation Evaluation Checklist

The first step to a successful ergonomics program is supervisors and their employees to evaluate the work and the workstation. What follows is a *"VDT Checklist"* to help you make a quick but thorough appraisal of your VDT workstations. Answer each of the Checklist questions for each VDT operator and their workstations. A "yes" answer means you are in good shape. A "no" answer means that you should take a closer look. In addition to this Checklist, use the Workplace Evaluation Coversheet found in Appendix B-2, to document the workplace specifics of this evaluation.

VDT CHECKLIST

	Yes	Adjusted	No	N/A
VDT OPERATORS				
1. VDT operators have been encouraged to report to management any physical problems that they associate with the use of their VDT workstation.	☐	☐	☐	☐
2. VDT operators do not have physical problems that they associate with the use of their VDT workstation.	☐	☐	☐	☐
LIGHTING AND GLARE				
3. VDT workstation is arranged to minimize glare and visual discomfort.	☐	☐	☐	☐
4. VDT screen is clean and free of perceptible flicker.	☐	☐	☐	☐
WORKSTATION SEATING				
4. The seat and backrest of the chair support comfortable postures permitting occasional variation in the seating.	☐	☐	☐	☐
5. Seat height allows the operator to comfortably place the entire sole of the foot flat on the floor or flat on a footrest.	☐	☐	☐	☐
6. Seat pan does not push against the back of the lower leg behind the knee.	☐	☐	☐	☐
7. The seat pan angle allows the operator to assume a comfortable position with the thighs approximately parallel to the floor and the lower leg approximately perpendicular to the floor.	☐	☐	☐	☐
8. The angle between the seat back and the seat pan allows the operator to assume a comfortable upright position with the torso approximately perpendicular to the floor.	☐	☐	☐	☐
9. The seat back width is at least 12 inches.	☐	☐	☐	☐
10. The seat back allows the operator to assume a comfortable position with ample support for the lower back.	☐	☐	☐	☐

20.16.2 Appendix B-4: Computer Workstation Evaluation Checklist

11. Arm rests, if present, allow the operator to assume a comfortable position and to:
    (a) relax the shoulders and arms in a position close to the body; ☐ ☐ ☐ ☐
    (b) operate the keyboard with the home row at approximately elbow height and the hands, wrists and forearms in a straight line approximately parallel to the floor; ☐ ☐ ☐ ☐
    (c) move as close as desired to the keyboard; ☐ ☐ ☐ ☐
    (d) easily reach primary work materials and accessories ☐ ☐ ☐ ☐

12. Arm rests, if present, have a minimum inside distance between them which is at least equal to the width of the hips of the operator. ☐ ☐ ☐ ☐

13. Adjustable seat pans, seat backs, and arm rests, if present, are readily operable by the operator without the use of tools. ☐ ☐ ☐ ☐

SCREENS, KEYBOARDS, AND WORK SURFACES

14. The topmost line of the VDT screen is slightly below eye level with the operator in an upright position. ☐ ☐ ☐ ☐

15. The operator while sitting in a comfortable position can perform keying with the torso sitting in an upright position. ☐ ☐ ☐ ☐

16. Operators wearing bifocals or trifocals can look at the screen without tilting the head. ☐ ☐ ☐ ☐

17. The keyboard, seating and work surfaces are positioned so that the operator, while seated in the most comfortable upright position, can perform keying with the keyboard approximately at elbow level, and the forearms, wrists and hands in a straight line approximately parallel to the floor. ☐ ☐ ☐ ☐

18. The operator, while seated in the most comfortable position, can perform keying with relaxed shoulders (i.e., not elevated) and arms resting close to the sides of the body (i.e., not extended outward or stretched forward). ☐ ☐ ☐ ☐

19. The keyboard is positioned (i.e., angled) so that keystroking can be performed with the wrist, hands, knuckles and fingers in a relaxed, natural (neutral) position. ☐ ☐ ☐ ☐

20. The work surface is high enough underneath so that it does no contact the top of the operators legs whenever the operator is sitting at the VDT with the feet flat on the floor or flat on a footrest. ☐ ☐ ☐ ☐

21. The work surface is large enough to hold all needed input devices (e.g., keyboards, mouse, trackball), task materials and related accessories. ☐ ☐ ☐ ☐

22. Input devices are positioned on the work surface at approximately the same height and distance from the operator at the keyboard. ☐ ☐ ☐ ☐

20.16.2 Appendix B-4: Computer Workstation Evaluation Checklist

23. Input devices, primary work materials and frequently used accessories are positioned on the work surface in front of the operator. ☐ ☐ ☐ ☐

24. Adjustable screens, keyboards and work surfaces, if present, are readily operable by the user without the use of tools. ☐ ☐ ☐ ☐

WORK PRACTICES

25. VDT operators have frequent short interruptions from keystroking at regular intervals throughout the shift, during which they can perform other duties or otherwise give their hands and wrists a break from keystroking. Even periods as short as 30 seconds are helpful. ☐ ☐ ☐ ☐

26. VDT operators routinely change body positions while working at the VDT. ☐ ☐ ☐ ☐

27. VDT operators routinely perform stretching and movement exercises and provide their eyes with short mini-rest breaks. ☐ ☐ ☐ ☐

28. VDT operators work regular hours without a lot of overtime. ☐ ☐ ☐ ☐

29. VDT operators are normally able to complete daily work and meet deadlines without harmful stress. ☐ ☐ ☐ ☐

VDT ACCESSORIES

30 Document holders are provided upon the operator's request for any employee who types from documents. ☐ ☐ ☐ ☐

31. Document holders are positioned so that reading material is at approximately the same height and at the same distance from the operator as the VDT screen. ☐ ☐ ☐ ☐

32. Wrist rests are provided upon the operator's request. ☐ ☐ ☐ ☐

33. Wrist rests assist the operator in maintaining a straight, neutral position of the wrists and hands while keystroking, and are padded and free of sharp edges. ☐ ☐ ☐ ☐

34. The wrist rest, if present, is
    (a) approximately the same height as the keyboard; ☐ ☐ ☐ ☐
    (b) positioned directly adjacent to the keyboard without gaps; ☐ ☐ ☐ ☐
    (c) allows the operator to avoid resting the arms/wrists or hands on hard, sharp or square edged surfaces. * ☐ ☐ ☐ ☐

35. Footrests are provided as needed to allow the operator to place the entire sole of the foot flat on a stable surface. ☐ ☐ ☐ ☐

36. Telephone headsets are provided up0on request for VDT operators who frequently answer telephones as part of their normal work activities. ☐ ☐ ☐ ☐

20.16.2 Appendix B-4: Computer Workstation Evaluation Checklist

**NOTE: A "no" response to any single item in (a) through (c) should be recorded as a "no" response should be noted.*

20.16.2 Appendix B-5: Task Evaluation Checklist

In addition to this Checklist, use the Workplace Evaluation Coversheet found in Appendix B-2 to document the workplace specifics of this evaluation.

TASK DESIGN

No responses indicate potential ergonomic problem areas and must be followed up with engineering or administrative control measures.

	Yes	No	N/A
1. Does the design of the primary task reduce or eliminate:			
bending or twisting of the back or trunk?	☐	☐	☐
crouching?	☐	☐	☐
bending or twisting the wrist?	☐	☐	☐
extending the arms?	☐	☐	☐
raising elbows?	☐	☐	☐
static muscle exertion?	☐	☐	☐
wringing motions?	☐	☐	☐
finger pinch grip?	☐	☐	☐
2. Are mechanical devices used when necessary?	☐	☐	☐
3. Can the task be done with either hand?	☐	☐	☐
4. Can the task be done with two hands?	☐	☐	☐
5. Are pushing or pulling forces kept minimal?	☐	☐	☐
6. Are required forces judged acceptable by workers?	☐	☐	☐
7. Are the materials			
able to be held without slipping?	☐	☐	☐
easy to grasp?	☐	☐	☐
free from sharp edges and corners?	☐	☐	☐
8. Do containers have good handholds?	☐	☐	☐
9. Are jigs, fixtures, and vises used where needed?	☐	☐	☐
10. As needed, do gloves fit properly and are they made of proper fabric?	☐	☐	☐
11. As needed, do work shoes provide adequate protection and are they designed to accommodate the type of work performed?	☐	☐	☐
12. Does the worker avoid contact with sharp edges when performing the task?	☐	☐	☐
13. When needed, are push buttons designed properly?	☐	☐	☐
14. Do the job tasks allow for ready use of personal protective equipment that may be required?	☐	☐	☐
15 Are ergonomic risk factors reduced or eliminated by:			
job rotation?	☐	☐	☐
self-pacing?	☐	☐	☐

20.16.2 Appendix B-5: Task Evaluation Checklist

sufficient pauses?	☐	☐	☐
adjusting the job skill level of the worker?	☐	☐	☐
16. Is the employee trained in:			
proper work practices?	☐	☐	☐
when and how to make adjustments?	☐	☐	☐
recognizing signs and symptoms of potential problems?	☐	☐	☐

20.16.2 Appendix B-6: Hand Tool Evaluation Checklist

In addition to this Checklist, use the Workplace Evaluation Coversheet found in Appendix B-2 to this document the workplace specifics of this evaluation.

HANDTOOL USE AND DESIGN

No responses indicate potential ergonomic problem areas and must be followed up with engineering or administrative control measures.

	Yes	No	N/A
1. Are tools selected to limit or minimize			
exposure to excessive vibration?	☐	☐	☐
use of excessive force?	☐	☐	☐
bending or twisting the wrist?	☐	☐	☐
finger pinch grip?	☐	☐	☐
problems associated with trigger finger?	☐	☐	☐
2. Are tools powered where necessary or feasible?	☐	☐	☐
3. Are tools evenly weight balanced?	☐	☐	☐
4. Are heavy tools suspended or counterbalanced to facilitate use?	☐	☐	☐
5. Do tools allow adequate visibility of the workplace?	☐	☐	☐
6. Do tool grips or handles prevent slipping?	☐	☐	☐
7. Are tools equipped with handles of textured, non-conductive materials?	☐	☐	☐
8. Are different handle sizes available to fit the range of worker's hand sizes?	☐	☐	☐
9. Are tool handles designed not to dig into the palm of the hand?	☐	☐	☐
10. Can the tool be used safely with gloves?	☐	☐	☐
11. Can the tool be used with either hand?	☐	☐	☐
12. Is there a preventive maintenance program to keep tools operating as designed?	☐	☐	☐
13. Have employees been trained:			
in the proper use of tools?	☐	☐	☐
when and how to report problems with tools?	☐	☐	☐
in proper tool maintenance?	☐	☐	☐

20.16.2 Appendix B-7: Materials Handling Evaluation Checklist

In addition to this Checklist, use the Workplace Evaluation Coversheet found in Appendix B-2 to document the workplace specifics of this evaluation.

MATERIALS HANDLING

No responses indicate potential ergonomic problem areas and must be followed up with engineering or administrative control measures.

	Yes	No	N/A
1. Are the weight of loads lifted judged acceptable by the workforce?	☐	☐	☐
2. Are materials moved over minimum distances?	☐	☐	☐
3. Is the distance between the carried load and the body minimized?	☐	☐	☐
4. Are walking surfaces			
level?	☐	☐	☐
wide enough?	☐	☐	☐
clean, dry and free of obstructions?	☐	☐	☐
slip resistant?	☐	☐	☐
5. Are floor surfaces padded when long-term standing is required?	☐	☐	☐
6. Are objects to be lifted:			
easy to grasp?	☐	☐	☐
stable?	☐	☐	☐
able to be held without slipping?	☐	☐	☐
7. Are there handholds on the objects to be lifted?	☐	☐	☐
8. When required, do gloves fit properly?	☐	☐	☐
9. Is the proper footwear worn?	☐	☐	☐
10. Is there sufficient room to maneuver?	☐	☐	☐
11. Are mechanical aids used whenever possible?	☐	☐	☐
12. Are working surfaces adjustable to optimal material handling heights?	☐	☐	☐
13. Does material handling avoid:			
movements below knee or above shoulder height	☐	☐	☐
static muscle exertion?	☐	☐	☐
sudden movements during handling?	☐	☐	☐
twisting at the waist?	☐	☐	☐
extended reach?	☐	☐	☐
14. Are high rates of repetition avoided by			
job rotation?	☐	☐	☐
self-pacing?	☐	☐	☐
sufficient pauses?	☐	☐	☐
15. Are pushing or pulling forces reduced or eliminated?	☐	☐	☐
16. Does the employee have an obstructed view of handling the task?	☐	☐	☐
17. Is there a preventive maintenance program for equipment?	☐	☐	☐

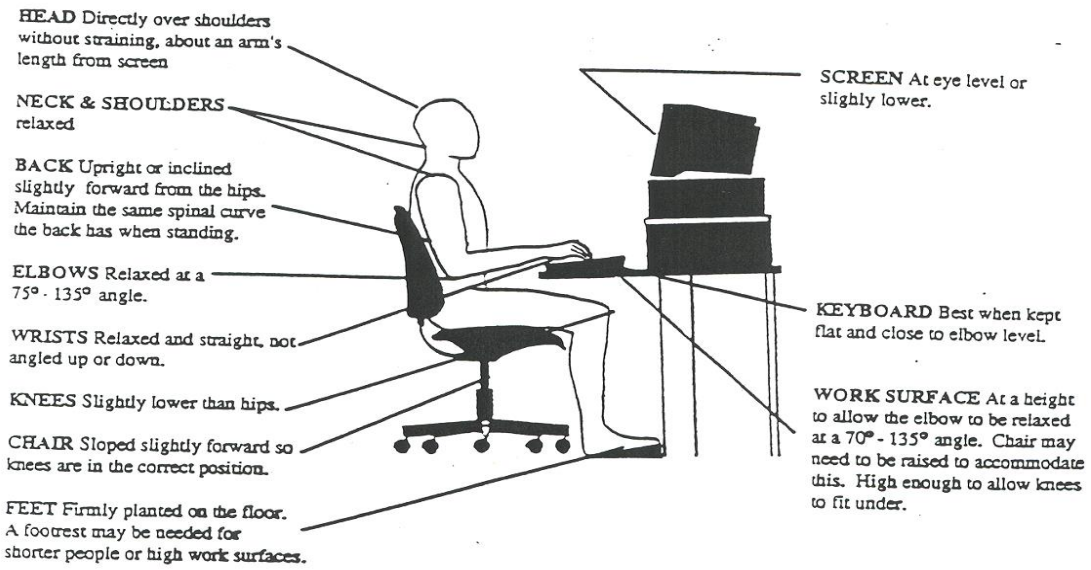
20.16.2 Appendix B-7: Materials Handling Evaluation Checklist

18. Are workers trained in correct handling and lifting procedures?	☐	☐	☐
19. Are workers trained or certified, where necessary, in the proper use of equipment?	☐	☐	☐

20.16.2 Appendix B-7: Materials Handling Evaluation Checklist

20.16.3 Appendix C: Arrange Your Computer Work-Station To Fit You

Arranging Your Computer Work-Station to Fit You



20.16.4 Appendix D: Record of Ergonomic Training

LOCATION OF TRAINING: _____ **DATE:**_____

NAME OF TRAINER: _____ **PHONE#** _____

NAME OF SUPERVISOR: _____ **PHONE#** _____

	NAME OF ATTENDEE:	**SIGNATURE OF ATTENDEE:**
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____
11.	_____	_____
12.	_____	_____
13.	_____	_____
14.	_____	_____
15.	_____	_____

TRAINING TOPICS COVERED

1. An overview of the County's Ergonomics Program
2. Exposures associated with repetitive motion injuries
3. Symptoms and consequences of repetitive motion injuries
4. The importance of reporting symptoms and injuries to the supervisor
5. Job-specific ergonomic hazards, including: _____
   _____
   _____
   _____
6. Methods used to minimize ergonomic hazards and repetitive motion injuries, including:_____
   _____
   _____

LIST OF TRAINING MATERIALS AND HANDOUTS

1. _____
2. _____
3. _____

20.16.5 Appendix E: Ergonomic Resources

County Contacts

Occupational Safety and Environmental Compliance
2310 N First Street, Suite 204
San Jose, CA 95131
(408) 441-4280
fax (408) 432-7555

Employee Wellness Program
2310 N Frrst Street, Suite 103
San Jose, CA 95131
(408) 299-5825

Workers' Compensation
2310 N First Street, Suite 205
San Jose, CA 95131
(408) 441-4300

Purchasing Department
2310 N First Street. Suite 201
San Jose, CA 95131
(408) 491-7400

VIDEOS

Please contact OSEC at 441-4280 for availability of Ergonomic videos.

13.17.6 Appendix F: NIOSH Designations for Filters (42 CFR 84)