

# 851>Cal/OSHA Implementation Plan: Ergonomics

This form is for documenting changes to a program and the program's supporting resources (ESH Manual chapter or similar program description, training courses, databases, and so on) resulting from the adoption of the model Revolutionary Working Group (RWG) contract (see below) and the associated DOE variance from 10 CFR 851, "Worker Safety and Health Program". The purpose is to ensure consistent, concise descriptions of the resulting changes. The form is to be completed by the program manager and sent to the DOE as a cover sheet with the revised documents. The general process is as follows:

1. Program manager completes form
2. Changes to program resources made and reviewed following normal revision processes
3. DOE sent draft form and revisions
4. Changes to program resources published
5. DOE sent final form and revisions

## 1 Introduction

The RWG model contract and 10 CFR 851 variance are intended to simplify and improve the implementation of worker safety and health requirements by tailoring the laws, regulations, and standards that apply while achieving an equivalent level of protection to the requirements of 10 CFR 851. This mostly entails replacing federal Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1910 and 1926) with Cal/OSHA regulations (8 CCR) as external requirements to be complied with, but may involve other laws and regulations and either different versions of industry standards than those cited in 10 CFR 851 or entirely different standards. (One purpose of this form is to capture the specific changes in external requirements for each program.) (For more information on this effort, see the variance application in [851>Cal/OSHA](#) resources.)

## 2 Required Elements

Element Number	Element Name	Element Type and Description
1.	Program name	Ergonomics
2.	Program manager	McMahon, Terrence Thomas
3.	Program resources	<p><i>The following is a list of existing program resources, to be reviewed by the program manager to determine which will need to be revised to reflect RWG changes.</i></p> <ul style="list-style-type: none"><li>▪ <a href="#">ESH Manual Chapter 54: Ergonomics</a></li><li>▪ <a href="#">Ergonomics: Quick Start Summary</a></li><li>▪ <a href="#">Ergonomics: Ergonomic Evaluation Procedures</a></li><li>▪ <a href="#">Ergonomics: Industrial Ergonomics Screening Checklist</a></li><li>▪ ESH Course 291, Ergonomics Training - Office Worker (<a href="#">ESH Course 291</a>)</li><li>▪ ESH Course 291EV, Ergonomic Evaluation - Office Worker (<a href="#">ESH Course 291EV</a>)</li><li>▪ ESH Course 323, Industrial Ergonomic Awareness (<a href="#">ESH Course 323</a>)</li><li>▪ ESH Course 410, Back Safety Training (<a href="#">ESH Course 410</a>)</li></ul>

Element Number	Element Name	Element Type and Description		
		<ul style="list-style-type: none"> <li>▪ <a href="#">Ergonomics</a></li> <li>▪ <a href="#">Safe Office Moves</a></li> </ul>		
4.	Current external requirements	<p><i>The following is a list of current external requirements for this program, as identified in the program resources above.</i></p> <ul style="list-style-type: none"> <li>▪ <a href="#">10 CFR 851</a></li> </ul> <p><i>The following is a list of current reference/guidance documents.</i></p> <ul style="list-style-type: none"> <li>▪ <a href="#">8 CCR 5110</a></li> <li>▪ <a href="#">ACGIH TLVs and BEIs-2016</a></li> <li>▪ California Department of Industrial Relations and the National Institute for Occupational Safety and Health (NIOSH). Ergonomic Guidelines for Manual Material Handling (<a href="#">DHHS (NIOSH) Publication No. 2007-131</a>)</li> </ul>		
5.	Proposed external requirements	<p><i>List the external requirements that will apply to this program. To determine, start by looking up existing external requirements in RWG resources (variance, gap analysis, and contract) and finding replacements (for example a specific section in 29 CFR 1910 to a specific section in 8 CCR or a current version of an industry standard).</i></p> <ul style="list-style-type: none"> <li>▪ <a href="#">8 CCR 5110</a></li> <li>▪ Applicable <a href="#">ACGIH TLVs and BEIs-2016</a></li> </ul>		
6.	Proposed substantive changes	<ul style="list-style-type: none"> <li>▪ No substantive changes due to regulatory changes</li> </ul>		
7.	Additional proposed substantive changes	<ul style="list-style-type: none"> <li>▪ Delete requirement to enter ergonomic evaluations, when warranted, into the Action Tracking System</li> <li>▪ Add a recommendation for workers who use hoisting and rigging equipment regularly or perform lifting/manual handling tasks and their supervisors to take ESH Course 127, Safe Use of Mobile Mechanical Lifting Devices</li> <li>▪ Delete references to retired stretching training (ESH courses 320 and 321)</li> <li>▪ In addition to these changes, in response to comments received during the review period, changes were made to clarify that threshold limit values (TLVs) were only guidance and other sources may be used to assess risk and that ergonomics program manager has oversight responsibilities to review injuries annually and evaluate field work in order to identify issues and opportunities for improvement.</li> </ul>		
8.	Affected program resources	<ul style="list-style-type: none"> <li>▪ None</li> </ul>		
9.	Status	<input checked="" type="checkbox"/> Initial draft (proposed changes)	<input checked="" type="checkbox"/> Draft (for DOE review)	<input checked="" type="checkbox"/> Final (published changes)
10.	Date completed	10/9/2019 (revised 6/2/2020)	6/17/2020	7/20/2020

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Chapter 54: [Ergonomics](#)

## Quick Start Summary

Product ID: [656](#) | Revision ID: 2193 | Date published: 20 July 2020 | Date effective: 20 July 2020

URL: <https://www-group.slac.stanford.edu/esh/eshmanual/references/ergonomicsQuickstart.pdf>

### 1 Who needs to know about these requirements

The requirements of Ergonomics apply to workers, supervisors, ergonomic specialists, ESH coordinators, and the ergonomics program manager; and the Occupational Health Center (OHC) and Building and Space Management.

### 2 Why

Activities that require work in a restricted space or with awkward or static postures, repetitive motions, pressure points, vibrating tools, or forceful exertions can lead to injuries and reduced worker effectiveness.

### 3 What do I need to know

Workers and supervisors should be actively screening activities and workplace conditions with potential ergonomic risks and are strongly encouraged to engage their ESH coordinator or contact the program manager and/or OHC for assistance, ranging from informal consultations to formal evaluations.

Workers who use computers for more than two hours a day must complete ESH Course 291, Ergonomics Training - Office Worker ([ESH Course 291](#)), either when they arrive at SLAC or when moving to a different office. Formal office ergonomic evaluations ([ESH Course 291EV](#)), performed by an ergonomic specialist provided by OHC, are available and are particularly recommended for computer users. Formal evaluations and informal consultations are also performed at non-office locations, such as machine shops and laboratories, and a voluntary industrial ergonomic awareness course ([ESH Course 323](#)) is available. Supervisors and workers are expected to implement the recommendations resulting from formal evaluations. Stretching and back safety courses are available to increase awareness and support this program.

### 4 When

These requirements take effect 20 July 2020.

### 5 Where do I find more information

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 54, "Ergonomics"](#)

Or contact the [program manager](#).



## Chapter 54

# Ergonomics

Product ID: [645](#) | Revision ID: [2192](#) | Date published: 20 July 2020 | Date effective: 20 July 2020

URL: <https://www-group.slac.stanford.edu/esh/eshmanual/pdfs/ESHch54.pdf>

## 1 Purpose

The purpose of this program is to prevent ergonomic injuries. It covers identifying, evaluating, and mitigating ergonomic risks. These risks stem from activities that require work in a restricted space or with awkward or static postures, repetitive motions, pressure points, vibrating tools, or forceful exertions, all of which can lead to injuries and reduced worker effectiveness. It applies to workers who engage in these activities, their supervisors, ergonomic specialists, ESH coordinators, and the ergonomics program manager; and the Occupational Health Center (OHC) and Building and Space Management.

## 2 Roles and Responsibilities

Functional roles and general responsibilities for each are listed below. More detailed responsibilities and when they apply are provided in the procedures and requirements.

The roles may be performed by one or more individuals and one individual may play more than one role, depending on the structure of the organizations involved. Responsibilities may be delegated.

### 2.1 Worker

- Works with supervisor to plan work properly to identify risk of ergonomic injury, for example by evaluating activities using the [Ergonomics: Industrial Ergonomics Screening Checklist](#) and by comparing lifting activities to established thresholds (see [Ergonomics: Ergonomic Evaluation Procedures](#))
- Takes precautions to prevent injury, including following guidance to reduce ergonomic risks in job safety analyses (JSAs), activity training and authorizations (ATAs), and work procedures
- Promptly reports conditions that may result in ergonomic injuries and any discomfort, pain, or ergonomic concern associated with a particular task to supervisor
- Visits the OHC with any work-related medical concerns
- Contacts the OHC ergonomic specialist directly for guidance or to schedule an office evaluation
- Completes any required training and ergonomic evaluation (see Section 4, “Training”)
- Uses equipment and follows work practices described in training and ergonomic evaluation reports
- Follows any work restrictions established by OHC
- Follows [Safe Office Moves](#) guidance and uses tools, if involved in an office move

## 2.2 Supervisor

- Ensures that work is planned and evaluated to reduce ergonomic risks. Coordination with the ESH coordinator and use of the [Ergonomics: Industrial Ergonomics Screening Checklist](#) will facilitate this.
- Assigns ergonomic training as appropriate (see Section 4, “Training”)
- For workers performing routine lifting, must evaluate associated risks, using such guidance as the *threshold limit values (TLVs)* (see [Ergonomics: Ergonomic Evaluation Procedures](#), Table 1) or similar

*Note*      *Although use of the TLVs for lifting is recommended, use of other tools such as the [NIOSH lifting equation](#) is acceptable. If additional guidance is needed, contact [ergonomics-slac@slac.stanford.edu](mailto:ergonomics-slac@slac.stanford.edu).*

- Ensures workers observe the TLVs
- If activities are determined to be near a threshold in the TLVs for lifting, documents mitigations in a JSA, ATA, and/or work procedure
- If activities are determined to exceed the thresholds in the TLVs for lifting, and cannot be mitigated, engages the ESH coordinator, who will determine the need for a formal evaluation by an ergonomic specialist. Mitigations must be documented in a JSA, ATA, and/or work procedure
- Reviews ergonomic evaluation reports and ensures prompt implementation of needed worksite corrections/improvements
- Supports needed behavioral or work practice changes of affected workers
- For workers who are injured or experiencing reoccurring discomfort
  - Reports all injuries promptly to OHC
  - Contacts OHC to request an ergonomic evaluation and adds [ESH Course 291EV](#) to the worker’s training assessment ([STA](#))
- Assists workers in following work restrictions established by the OHC as a result of any ergonomic injury
- Reviews [Safe Office Moves](#) information with workers who will be involved in an office move

## 2.3 Occupational Health Center

- Provides resources, including ergonomic specialists, and assists with program implementation and assessment
- Assists line management with identifying activities/tasks with ergonomic risks
- Provides ergonomic evaluations/consultations (for both office and non-office tasks) as requested or needed
- Recommends work environment or work practice changes to decrease the risk of injury
- Evaluates and assigns/documents work restrictions related to any ergonomic injury/illness
- Follows up after the initial evaluation to determine if recommendations are being implemented and are effective
- Maintains records of ergonomic evaluations and support activities

- Assists with development of and provides ergonomics training
- Provides feedback for updates to the SLAC Furniture Guidelines and SLAC Ergonomics Products List Catalog
- Supports injury and illness data analysis and reports trends in ergonomic injury and/or incidence rates

## 2.4 ESH Coordinator

- Assists in identifying and evaluating activities with ergonomic risk and assists in implementing controls to mitigate those risks. Use of the [Ergonomics: Industrial Ergonomics Screening Checklist](#) will help facilitate this.
- Performs and/or assists with non-office ergonomic evaluations and helps determine when support from ergonomic specialists and/or formal evaluations are warranted
- Assists with the investigation of ergonomic and materials handling injuries/illnesses, helps identify and implement corrective actions, and follows up to ensure they are implemented and effective
- Supports the analysis of ergonomic injury and related first aid data and lessons learned

## 2.5 Ergonomics Program Manager

- Develops, implements, and assesses program
- Maintains this chapter and associated documents
- Identifies, develops, and maintains training and assists with the qualification and authorization of trainers
- Develops and maintains resources and tools related to safe office moves
- Assists in identifying and evaluating activities with ergonomic risks and implementing controls to mitigate those risks
- In an oversight capacity, evaluates field work to help identify potential issues and opportunities for improvement
- Assists in investigating ergonomic injuries/illnesses, provides feedback on corrective actions, and follows up to ensure corrective actions are implemented and effective
- Reviews ergonomic injuries annually to look for trends and possible program enhancements
- Provides feedback for updates to the SLAC Furniture Guidelines

## 2.6 Building and Space Management

- Engages the ergonomic specialist as needed
- Maintains the SLAC Furniture Guidelines and seeks input from the ergonomics program manager and specialist on content.
- Submits new office and control room furniture plans to the Building Inspection Office for review
- Assists with communication of the [Safe Office Moves](#) resources to all involved in moves
- Recommends to worker to schedule ergonomic workstation evaluations, as needed

- When height-adjustable workstations are recommended, assists with selection and coordinates removal and installation

## 3 Procedures, Processes, and Requirements

These documents list the core requirements for this program and describe how to implement them:

- [Ergonomics: Ergonomic Evaluation Procedures](#) (SLAC-I-730-0A21S-059). Describes process for requesting, performing, and following up on ergonomic evaluations

These documents provide useful guidance; their use is not mandatory:

- [Ergonomics: Industrial Ergonomics Screening Checklist](#) (SLAC-I-730-0A21J-052). Checklist for identifying and minimizing industrial (non-office) ergonomic hazards
- [Ergonomics](#) (including checklists for identifying risks and guides to using computers and furniture safety)
- SLAC Furniture Guidelines
- SLAC Ergonomics Products List Catalog
- [Safe Office Moves](#)

## 4 Training

Workers who use computers for more than two hours a day must complete the following course (either upon arrival at SLAC or when moving to a different office):

- ESH Course 291, Ergonomics Training - Office Worker ([ESH Course 291](#))

Workers who are experiencing pain or discomfort from their work at a computer workstation should complete the following course:

- ESH Course 291EV, Ergonomic Evaluation - Office Worker ([ESH Course 291EV](#))

Workers who perform industrial or laboratory tasks with known or potential ergonomic risk factors and/or work in non-office locations with ergonomic risk factors and their supervisors should complete the following course:

- ESH Course 323, Industrial Ergonomic Awareness ([ESH Course 323](#))

Workers who use mobile mechanical lifting devices and their supervisors should complete the following course:

- ESH Course 127, Safe Use of Mobile Mechanical Lifting Devices ([ESH Course 127](#))

Workers who use hoisting and rigging equipment regularly or perform lifting/manual handling tasks (see [Ergonomics: Ergonomic Evaluation Procedures](#)) and their supervisors should complete the following course:

- ESH Course 410, Back Safety Training ([ESH Course 410](#))



## 5 Definitions

*activity with ergonomic risks.* A work activity that possesses identified risk factors for workers to develop an RMI or MSD

*ergonomics.* The multidisciplinary science that applies design principles based on the physical and psychological capabilities of people to the design of jobs, equipment, products, and workplaces

*musculoskeletal disorder (MSD).* An injury or disorder of the muscles, nerves, tendons, joints, cartilage, and supporting structures of the upper and lower limbs, neck, and lower back that are caused, precipitated, or exacerbated by sudden exertion or prolonged exposure to physical factors such as repetition, force, vibration, or awkward posture. Also called *work-related musculoskeletal disorder (WMSD)*.

*repetitive motion injury (RMI).* An MSD resulting from a repetitive job, process, operation, or similar work activity. Injuries include carpal tunnel syndrome, tendinitis, tenosynovitis, and muscle strain. Also called cumulative trauma disorder (CTD) and repetitive strain injury (RSI).

*threshold limit value (TLV).* Recommended guidelines for occupational exposure published by the American Conference of Governmental Industrial Hygienists (ACGIH). TLVs represent the average concentration for an eight-hour workday and a 40-hour workweek to which nearly all workers may be repeatedly exposed without adverse effect.

## 6 References

### 6.1 External Requirements

The following are the external requirements that apply to this program:

- Title 8, *California Code of Regulations*, “Industrial Relations”, Division 1, “Department of Industrial Relations”, Chapter 4, “Division of Industrial Safety”, Subchapter 7, “General Industry Safety Orders”, Group 15, “Occupational Noise”, Article 106, “Ergonomics”, Section 5110, “Repetitive Motion Injuries” ([8 CCR 5110](#))

### 6.2 Related Documents

SLAC Environment, Safety, and Health Manual (SLAC-I-720-0A29Z-001)

- [Chapter 2, “Work Planning and Control”](#)

Other SLAC Documents

- SLAC Training Assessment ([STA](#))

Other Documents

- American Conference of Governmental Industrial Hygienists (ACGIH). Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) ([ACGIH TLVs and BEIs](#))

- California Department of Industrial Relations and the National Institute for Occupational Safety and Health (NIOSH). Ergonomic Guidelines for Manual Material Handling ([DHHS \(NIOSH\) Publication No. 2007-131](#))
- Stanford University, Office of Environmental Health and Safety. [Ergonomics](#)

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Chapter 54: [Ergonomics](#)

# Ergonomic Evaluation Procedures

Product ID: [657](#) | Revision ID: 2194 | Date published: 20 July 2020 | Date effective: 20 July 2020

URL: <https://www-group.slac.stanford.edu/esh/eshmanual/references/ergonomicsProcedEval.pdf>

## 1 Purpose

The purpose of these procedures is to prevent ergonomic injuries. They cover identifying, evaluating, and mitigating ergonomic risks. They apply to workers, supervisors, ergonomic specialists, ESH coordinators, and the ergonomics program manager; and the Occupational Health Center (OHC) and Building and Space Management.

## 2 Procedures

The following procedures cover conducting office and non-office ergonomic evaluations. But workers and supervisors should be actively screening activities and workplace conditions with potential ergonomic risks and are strongly encouraged to engage their ESH coordinator or contact the program manager and/or OHC for assistance, ranging from informal consultations to formal evaluations.

### 2.1 Ergonomic Evaluation

#### 2.1.1 Office

Office ergonomic evaluations are formal, conducted by an OHC ergonomic specialist, and documented in an evaluation report.

Step	Person	Action
1.	Supervisor and worker	If not previously completed within 2 years, worker is to complete ESH Course 291, Ergonomics Training - Office Worker ( <a href="#">ESH Course 291</a> ) Worker and supervisor discuss results of ESH Course 291 workstation self-assessment and implement identified workstation corrective actions When warranted or desired, requests ergonomic evaluation by contacting OHC at <a href="mailto:ergonomics-slac@slac.stanford.edu">ergonomics-slac@slac.stanford.edu</a> or ext. 2281
2.	Supervisor	Adds ESH Course 291EV, Ergonomic Evaluation - Office Worker ( <a href="#">ESH Course 291EV</a> ), to worker's SLAC Training Assessment ( <a href="#">STA</a> ) for an office evaluation
3.	Ergonomic specialist and worker	Performs evaluation at worker's computer workstation
4.	Ergonomic specialist	Documents evaluation and recommendations in evaluation report Sends evaluation report to supervisor and worker

Step	Person	Action
5.	Supervisor	Implements recommendations noted in the evaluation report, including, for example, procuring equipment and arranging for installation Reviews work practice recommendations with worker
6.	Space Planning and Management	When height-adjustable workstations are recommended, assists with selection and coordinates removal and installation
7.	Worker	Makes work practice modifications recommended in the evaluation report Informs supervisor if ergonomic concerns arise
8.	Supervisor	Monitors and supports recommended work practice modifications
9.	Supervisor/worker	Requests additional support/follow up from OHC if desired
10.	OHC and/or ESH coordinator	Provides follow-up support as necessary or as requested Tracks implementation of report recommendations
11.	OHC	Maintains evaluation reports and records

### 2.1.2 Non-office

For non-office evaluations, the emphasis is on workers and supervisors working together to identify and minimize hazards (for guidance see the [Ergonomics: Industrial Ergonomics Screening Checklist](#)) and contacting their ESH coordinator for assistance.

When appropriate, a formal evaluation by an ergonomics specialist may be performed, following this procedure.

Step	Person	Action
1.	Supervisor/ESH coordinator	Assesses activities (using the <a href="#">Ergonomics: Industrial Ergonomics Screening Checklist</a> ) and determines if an ergonomic specialist is needed Requests an ergonomic evaluation Contacts OHC at <a href="mailto:ergonomics-slac@slac.stanford.edu">ergonomics-slac@slac.stanford.edu</a> or ext. 2281 to schedule
2.	Ergonomic specialist	Coordinates with the ESH coordinator to perform the evaluation
3.	ESH coordinator	Coordinates the evaluation with the supervisor and affected staff
4.	Ergonomic specialist and worker	Performs evaluation at worker's location
5.	Ergonomic specialist	Documents evaluation and recommendations in evaluation report Sends evaluation report to supervisor and worker
6.	Supervisor	Implements recommendations noted in the evaluation report, including, for example, procuring equipment and arranging for installation Reviews work practice recommendations with worker
7.	Worker	Makes work practice modifications recommended in the evaluation report Informs supervisor if ergonomic concerns arise
8.	Supervisor	Monitors and supports recommended work practice modifications

Step	Person	Action
9.	Supervisor/worker	Requests additional support/follow up from OHC if desired
10.	OHC and/or ESH coordinator	Provides follow-up support as necessary or as requested Tracks implementation of report recommendations
11.	OHC	Maintains evaluation reports and records

## 2.2 Office Moves

In addition to minimizing ergonomic risks in their workspaces, office workers must take care to avoid injury when moving their offices, which tends to involve activities and efforts with which they are unaccustomed and unfamiliar.

Step	Person	Action
1.	Space Planning and Management	Assists with communication of ergonomics and safe office move resources (provided by ESH) to workers who are moving and their supervisors
2.	Supervisor and worker	Reviews tools and guidance on the <a href="#">Ergonomics</a> and <a href="#">Safe Office Moves</a> web sites
3.	OHC	Reviews Safe Office Moves guidelines with work groups upon request before move
4.	Supervisor and worker	Conducts moves following Safe Office Moves guidelines
5.	OHC	Provides office ergonomic tutorials and informal evaluations after the move upon request

## 2.3 Lifting Activities

For workers who perform routine lifting, supervisors must evaluate associated risks, using such guidance as the *threshold limit values (TLVs)* in Table 1 below or similar. (See Figure 1 for a simplified version.)

*Note* Although use of the TLVs for lifting is recommended, use of other tools such as the [NIOSH lifting equation](#) is acceptable. If additional guidance is needed, contact [ergonomics-slac@slac.stanford.edu](mailto:ergonomics-slac@slac.stanford.edu).

If activities are determined to be near a threshold in the TLVs for lifting, the supervisor must document mitigations in a job safety analysis (JSA), activity and training authorization (ATA), and/or work procedure. If activities are determined to exceed the thresholds in the TLVs for lifting, and cannot be mitigated, the supervisor must engage the ESH coordinator, who will determine the need for a formal evaluation by an ergonomic specialist.

Workers performing such lifts are to observe these thresholds. Workers routinely performing lifting/manual handling tasks, and their supervisors, should complete ESH Course 410, Back Safety Training ([ESH Course 410](#)).

**Table 1** Maximum Weights (in pounds) and Frequencies for Lifting

Horizontal/vertical Location	Close 0 to 12"	Intermediate 12 to 24"	Far 24 to 31"
<b>Low-frequency lifting: less than 2 hours/day or more than 2 hours/day with less than 12 lifts/hour</b>			
Shoulder to 12" above the shoulder	35	15	No known safe limit
Knuckle to chest	70	35	20
Shin to knuckle	40	30	15
Floor to shin	30	No known safe limit	No known safe limit
<b>Moderate-frequency lifting: more than 2 hours/day and less than 30 lifts/hour</b>			
Shoulder to 12" above the shoulder	30	10	No known safe limit
Knuckle to chest	60	30	15
Shin to knuckle	35	25	10
Floor to shin	20	No known safe limit	No known safe limit
<b>High-frequency lifting: more than 2 hours/day and less than 360 lifts/hour</b>			
Shoulder to 12" above the shoulder	24	No known safe limit	No known safe limit
Knuckle to chest	30	20	10
Shin to knuckle	20	15	5
Floor to shin	No known safe limit	No known safe limit	No known safe limit

*Adapted from American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values for Lifting, in Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) ([ACGIH TLVs and BEIs](#))*

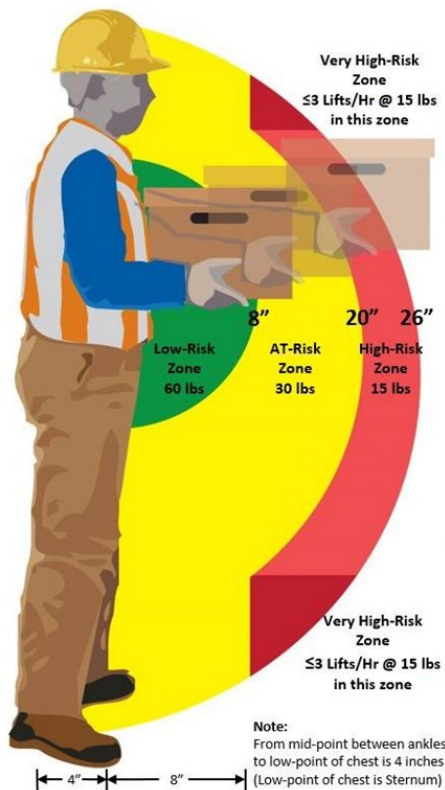


Figure 1 Maximum Weights (in pounds) and Frequencies for Lifting

### 3 Forms

The following forms are required by this procedure:

- None

The following checklist is provided as guidance:

- [Ergonomics: Industrial Ergonomics Screening Checklist](#) (SLAC-I-730-0A21J-052). Checklist for identifying and minimizing industrial (non-office) ergonomic hazards

### 4 Recordkeeping

The following recordkeeping requirements apply for this procedure:

- OHC maintains evaluation reports and records

## 5 References

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 54, “Ergonomics”](#)

### Other SLAC Documents

- SLAC Training Assessment ([STA](#))
- ESH Course 291, Ergonomics Training - Office Worker ([ESH Course 291](#))
- ESH Course 291EV, Ergonomic Evaluation - Office Worker ([ESH Course 291EV](#))
- ESH Course 410, Back Safety Training ([ESH Course 410](#))
- [Ergonomics](#) (including checklists for identifying risks and guides to using computers and furniture safely)
- [Safe Office Moves](#)

### Other Documents

- California Department of Industrial Relations and the National Institute for Occupational Safety and Health (NIOSH). Ergonomic Guidelines for Manual Material Handling ([DHHS \(NIOSH\) Publication No. 2007-131](#))
- American Conference of Governmental Industrial Hygienists (ACGIH). Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) ([ACGIH TLVs and BEIs](#))
- Stanford University, Office of Environmental Health and Safety. [Ergonomics](#)











# Industrial Ergonomics Screening Checklist

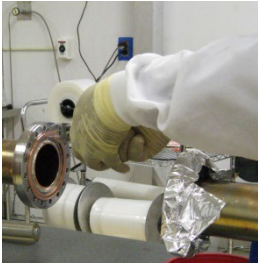

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Supervisors and workers are to use this checklist to identify risk factors for work activities with ergonomic concerns and risk-reduction solutions (see [Ergonomics: Ergonomic Evaluation Procedures](#) [SLAC-I-730-0A21S-059]). Analyze the task and mark the check boxes for any risk factors. List the ergonomic control measures that mitigate the identified risk factors. Contact the ergonomics specialist at [ergonomics-slac@slac.stanford.edu](mailto:ergonomics-slac@slac.stanford.edu) for additional assistance. There are no recordkeeping requirements for this checklist.

Task			
Location		Department	
Evaluated by		Date	

1. Lifting			
Risk Factor		Risk Factor Observed	Risk Control Measures (e.g., mechanical assists, making load smaller, additional help, lifting technique, postural awareness, microbreaks, work rotation)
	Lifting between 50 and 70 lbs.	<input type="checkbox"/>	
	Lifting objects above shoulder level or below the knees	<input type="checkbox"/>	
	Lifting objects with the hands > 12 inches horizontally from the body	<input type="checkbox"/>	
	Frequent lifts Low-frequency: < 2 hours/day or > 2 hours/day with < 12 lifts/hour Moderate-frequency: > 2 hours/day and < 30 lifts/hour High-frequency: > 2 hours/day and < 360 lifts/hour	<input type="checkbox"/>	
<p><i>Note: if one or more items are checked, efforts should be made to minimize one or more of the following: load weight, load distance, and lifting frequency. For recommended weight limits, refer to the <a href="#">Oregon Safe Lifting Calculator</a>.</i></p>			

2. Awkward Postures			
Risk Factor		Check If Observed	Risk Control Measures (e.g., mechanical assists, adjustable workstations, tools with alternate handles, stands, larger grips, postural awareness, microbreaks)
	Overhead work - hands above the head, elbows above the shoulders. Cumulative duration > 2 hours/day.	<input type="checkbox"/>	
	Neck or back is bent > 30°, little ability to vary posture. Cumulative duration > 2 hours/day.	<input type="checkbox"/>	
	Squatting or kneeling. Cumulative duration > 2 hours/day.	<input type="checkbox"/>	
	Bent wrists. Cumulative duration > 2 hours/day.	<input type="checkbox"/>	

3. Forceful Hand Movements			
Risk Factor		Check If Observed	Risk Control Measures (e.g., mechanical assists, tools with alternate handles, stands, larger grips, clamps, making load smaller)
	Pinching to hold unsupported objects $\geq$ 2 lbs/hand (using pinch force equivalent to holding half a ream of paper). Cumulative duration > 2 hours/day.	<input type="checkbox"/>	
	Gripping $\geq$ 10 lbs/hand to hold unsupported objects (using gripping force equivalent to squeezing car jumper cables). Cumulative duration > 2 hours/day.	<input type="checkbox"/>	

4. Other (Body Movements, Vibration, Slip/Trip/Fall)			
Risk Factor		Check If Observed	Risk Control Measures (e.g., automated processes, gloves/grip handles, barriers, proper tool maintenance, microbreaks, work rotation, proper housekeeping)
Repeating the same movement with little or no variation ( $\geq$ 5 times/min). Cumulative duration > 2 hours/day.		<input type="checkbox"/>	
Work involving sudden movements (e.g., starting a chainsaw)		<input type="checkbox"/>	
Vibration from high-vibration tools (e.g., chain saws, jackhammers, impact wrenches) > 30 minutes/day OR from moderate-vibration tools (e.g., saws, sanders) > 2 hours/day.		<input type="checkbox"/>	
Work around potential slip/trip/fall hazards (e.g., loading docks, stairs, wet/greasy surfaces)		<input type="checkbox"/>	

References

- Based on Stanford University, Office of Environmental Health and Safety. [Ergonomics Screening Tool](#) (OHS 14-026)
- American Conference of Governmental Industrial Hygienists. Threshold Limit Values for Lifting, in Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) ([ACGIH TLVs and BEIs](#))
- Washington State Department of Labor and Industries. Caution Zone Checklist and Hazard Zone Checklist (available from [Evaluation Tools](#))
- Oregon Occupational Safety and Health Division. [Safe Lifting Calculator](#)