

Administrative Procedures

HMIS-PRO-SP-62772

Ergonomics

Revision 0, Change 0

Published: 07/11/2024
Effective: 02/12/2024

Program: Safety Programs
Topic: Safety Programs

Subject Matter Expert: Hall, William L
Functional Manager: Nielsen, Christopher E

Use Type: Administrative



- No USQ Required

JHA: Administrative

Periodic Review Due Date:02/12/2029

Publication Correction:07/11/2024

Rev. 0, Chg. 0

Change Summary

Description of Change

Establishes requirements to ensure that conditions presenting potential ergonomic-related hazards to employees are identified and controlled.

Publication Correction 40861: added ASME

Table of Contents

1.0 PURPOSE2

2.0 SCOPE2

3.0 RESPONSIBILITIES2

 3.1 Ergonomic SME.....2

 3.2 Facility, Line, and Project Management3

 3.3 Qualified Person.....3

 3.4 Employee3

 3.5 Site Occupational Medical Contractor (SOMC) Personnel4

4.0 INSTRUCTIONS.....5

 4.1 Providing Ergonomic Evaluations5

5.0 RECORD IDENTIFICATION7

6.0 SOURCES8

 6.1 Source Requirements8

 6.2 References.....8

 6.3 Forms8

Appendix A. Requirements Matrix.....9

Appendix B. Definitions13

Appendix C. Material Handling Controls.....15

1.0 PURPOSE

This procedure is applicable to Hanford Mission Essential Services Contract (HMESC) employees and establishes requirements to ensure that conditions presenting potential ergonomic-related hazards to employees are identified and controlled. The general requirements approach used in this document recognizes the varied work activities associated with each of the HMESC Projects/Functions. This variety necessitates flexibility in addressing ergonomic-related conditions when job location/tasks change and/or during the job planning process.

This procedure provides direction for the implementation and management of the ergonomics program. The objective of the ergonomics program is to reduce the number and severity of musculoskeletal disorders caused by exposure to ergonomic risk factors in the workplace. For the purpose of this procedure risk factors include excessive force, awkward posture, static posture, repetition, vibration, and contact stress.

2.0 SCOPE

HMESC Projects/Functions performing HMESC work scope shall make ergonomics a consideration in their overall safety program. In line with Voluntary Protection Program (VPP) and Integrated Safety Management Systems (ISMS) principles, this Level 1 Administrative procedure describes efforts that will focus on: Management Commitment and Leadership, Employee Involvement, Hazard Identification and Analysis, Hazard Elimination, Reduction or Control, Training, and Continuous Improvement achieved by sharing of Lessons Learned.

3.0 RESPONSIBILITIES

3.1 Ergonomic SME

- Provide technical oversight and review of program requirements.
- Support Qualified personnel in the performance of ergonomic evaluations as needed. Such support could include, but is not limited to walking-down or reviewing ergonomic hazards/exposure, reviewing and recommending the most appropriate analytical tool(s), reviewing and providing feedback on analysis, recommending possible solutions, etc.
- Manage and coordinate implementation of the Ergonomics Program.
- Establish and maintain pick lists of approved ergonomic equipment (i.e. chairs, desks, keyboards, tool handles, anti-fatigue mats, anti-vibration gloves, etc.).
- Participate in Management/Self Assessments to determine effectiveness of the program and to identify areas for improvement.
- Establish and maintain an Ergonomics homepage to communicate information such as:

- Ergonomic Evaluation Analytical Tools
- Training materials and/or links
- List of Qualified Persons (QP) for performing ergonomic evaluations

3.2 **Facility / Line Management**

- Work with Qualified Person to obtain recommended Ergonomic Controls.
- Implement the established ergonomics program for applicable workplace activities.
- Facilitate implementation of recommended controls to reduce workplace risk factors.
- Promote and encourage ergonomic computer-based training (#052010) and the performance of work in accordance with recommended engineering, administrative and PPE controls.
- Report to management any workplace conditions or work practices that pose potential ergonomics risk factors.
- Evaluate assigned lifting activities (size, manageability, weight, etc.) to ensure that proper precautions are taken.
- Request that a Qualified Person perform a hazard analysis prior to lifting objects that weigh more than 55 pounds.
- Consider stretching exercises prior to performing activities with exposure to risk hazards.
- Report to management if experiencing early signs (decreased range of motion, decreased grip strength, loss of muscle function) or symptoms (pain, numbness, tingling, burning, cramping, stiffness) of an MSD.

3.3 **Qualified Person**

- Conduct ergonomic workstation/activity reviews.
- Identify ergonomic hazards and recommend engineering, administrative and PPE controls.
- Promote exercise/stretching programs and the use of other site resources.

3.4 **Employee**

- Perform work activities in accordance with recommendations from Qualified Persons, ergonomic principles identified within this procedure or applicable training.
- The load to be moved is in appropriate condition and has the integrity to be moved.

Ergonomics

Published Date: 02/12/2024

Effective Date: 02/12/2024

- The load is controlled through all phases of the movement.
- The load is controlled, unloaded and stored in a safe manner.
- If an ergonomic work restriction is prescribed by an outside physician, then report this information to immediate supervision and Site Occupational Medical Contractor (SOMC) personnel prior to performing work activities. Comply with all work restrictions or recommended time off as determined necessary by the SOMC.
- Provide input to Qualified Person(s) performing ergonomic workplace evaluations.
- Comply with engineering, administrative and/or PPE controls recommended by Qualified Persons to minimize risk factors.
- Use mechanical handling equipment whenever feasible.
- Consider stretching exercises prior to performing activities with exposure to risk hazards.
- Report to management if experiencing early signs (decreased range of motion, decreased grip strength, loss of muscle function) or symptoms (pain, numbness, tingling, burning, cramping, stiffness) of an MSD.

3.5 Site Occupational Medical Contractor (SOMC) Personnel

- Provide health care management of employees reporting MSDs, or MSD signs and symptoms.
- Provide ergonomic web-based resources and educational programs such as Ergonomic Training and assist in the development of supplemental ergonomic information and/or training when unique tasks or ergonomic hazards are found in the workplace.
- Provide injury prevention and work conditioning programs designed to restore physical capacity, reduce pain or other symptoms, and educate workers about re-injury prevention.
- Upon request, provide field and/or office ergonomic consultation to assist in evaluating biomechanics, musculoskeletal strain, and accommodation questions.

4.0 INSTRUCTIONS**4.1 Providing Ergonomic Evaluations**

Actionee	Step #	Action
IH/QP	1.	<u>IF</u> employee is experiencing discomfort or symptoms of soft tissue injury in the workplace or requests an ergonomic evaluation, <u>THEN REQUEST</u> employee complete Office Ergonomic Questionnaire (Form A-6005-896), as applicable.
	2.	<u>IF</u> determined that an evaluation is needed based on the hazards/risk factors, <u>THEN USE</u> Office Ergonomic Assessment Report (Form A-6006-324) or the WISHA Screening Tool (Modified) (Form A-6006-299) can be used.
	3.	RECOMMEND equipment and accessories identified during the assessment, if needed.
	4.	GENERATE new Site Wide Industrial Hygiene Database (SWIHD) survey for each assessment and communicate with worker as needed.
	5.	<u>IF</u> evaluation is not recommended, <u>THEN ATTACH</u> self-assessment (Office Ergonomic Questionnaire) to SWIHD survey and DOCUMENT actions taken or recommended, as applicable.
	6.	RECOMMEND preferred method of engineering control if evaluation determines the need. Some examples include, but are not limited to the following: <ol style="list-style-type: none"> a. ELIMINATE the use of poorly designed equipment and replace it with ergonomically designed equipment. b. DESIGN and ARRANGE computer workstations according to recommended ergonomic guidelines. c. DESIGN work processes and workstations to reduce static, extreme and/or awkward postures, repetitive motions, and excessive forces.

Actionee	Step #	Action
		<ul style="list-style-type: none"> d. SELECT hand and power tools that are designed to achieve proper fit, minimizing, and reducing workplace risk factors. e. USE appropriate mechanical handling equipment to reduce the potential exposures to risk factors.
	7.	<p>RECOMMEND administrative controls when engineering controls are not feasible. Some examples of administrative controls include, but are not limited the following:</p> <ul style="list-style-type: none"> a. USE rest breaks to relieve fatigued muscle/tendon groups. b. INCREASE number of employees assigned to a task to alleviate severe conditions, especially when lifting heavy objects. c. MAKE work schedule adjustments, such as job rotation, to alleviate physical fatigue and stress. d. PROVIDE an opportunity for stretching exercises. e. IMPOSE restrictions on lifting activities. f. USE teams lift for loads on excess of 55 pounds.
	8.	<p>REVIEW ergonomic furniture, tools, and other equipment to help ensure proper items will be obtained prior to purchasing.</p> <p><i>NOTE: It is recommended that a Qualified Person be contacted to perform a follow up assessment within 90 days of implementing controls to determine effectiveness and to evaluate whether design of new or modified work process or eliminate static, extreme and/or awkward postures, repetitive motions, and excessive forces.</i></p>
	9.	<p>EVALUATE the need for additional resources prior to assigning work involving material movement (i.e. second person or material handling devices) and use the following:</p> <ul style="list-style-type: none"> a. IMPOSE restrictions on lifting activities. b. USE team lift for loads in excess of 55 pounds.

Published Date: 02/12/2024

Effective Date: 02/12/2024

Actionee	Step #	Action
		<ul style="list-style-type: none"> c. EVALUATE the condition of the material/load to be moved and whether integrity of the packaging is appropriate for the move. d. EVALUATE the stability of the surrounding objects (i.e., rolling stock is chocked, gas cylinders are chained, stacked boxes are not leaning) before removing the material. e. ENSURE the material/load is controlled (i.e., stable and secured) during all phases of the movement. f. ENSURE the travel path is free of obstructions and hazards that would jeopardize the safe movement of the material/load. g. ENSURE the material is unladed and placed in a location that does not create new workplace hazards.
	10.	ENSURE the Employee Job Task Analysis accurately reflects the weights and actions necessary to perform the assigned to material movement task.

5.0 RECORD IDENTIFICATION

All records are generated, processed, and maintained in accordance with HMIS-PRO-RM-10588, *Records Management Processes*, or HMIS-PRO-RM-32281, *Electronic Records Management*, as applicable.

Table 1. Records Capture Table

Name of Record	Submittal Responsibility	Retention Responsibility
WISHA Screening Tool (Modified)	Qualified Person(s)	IDMS
Office Ergonomic Questionnaire	Qualified Person(s)	IDMS
Ergonomic Analytical Reports	Qualified Person(s)	IDMS

6.0 SOURCES

6.1 Source Requirements

Title 29, Code of Federal Regulations, Part 1910, Subpart N, *Materials and Storage*

Title 29, Code of Federal Regulations, Part 1926, Section 250, *Materials Handling, Storage, Use, and Disposal*

Title 10, Code of Federal Regulations, Part 851, *Worker Safety & Health Program*, Appendix A, Item 2 Fire Protection.

NFPA 30, *Flammable and Combustible Liquids Code*, 2008

6.2 References

HMIS-PRO-RM-10588, *Records Management Processes*

HMIS-PRO-RM-32281, *Electronic Records Management*

HMIS-PRO-SP-079, *Job Hazard Analysis*

6.3 Forms

Form A-6006-299, *WISHA Screening Tool*

Form A-6005-896, *HMIS Office Ergonomic Questionnaire*

Form A-6006-324, *HMIS Office Ergonomic Assessment Report*

Appendix A. Requirements Matrix

Under the requirement “type” column, “V” means verbatim, and “I” means interpreted.

#	Requirement	Type V or I	Source
1.	Work areas and tasks shall be evaluated to identify those with potential ergonomic-related hazards including repetition, awkward posture, force, vibration, and contact stress. Physical strength and conditioning of the involved personnel will also be considered.	I	10CFR851.21(a) (1)-(8)
2.	The Job Hazard Analysis (JHA) process (HMIS-PRO-SP-079) shall be used to identify, evaluate, control, and communicate potential hazards relative to discrete work activities/tasks to be performed, and establish an appropriate level of controls.	I	10CFR851.21(a) (1)-(8)
3.	Measures shall be implemented that prevent or control to the extent possible ergonomic-related hazards specific to the involved work area and activities. Hazard controls must be selected based on the following hierarchy: <ul style="list-style-type: none"> a. Elimination or substitution of the hazards where feasible and appropriate; b. Engineering controls where feasible and appropriate; c. Work practices and administrative controls that limit worker exposures; and d. Personal Protective Equipment. 	I	10CFR851.22(a)
4.	Mechanical lifting devices shall be used for lifting or moving heavy objects when possible. <i>NOTE: When engaged in mandatory training, qualification testing or responses to emergency events, Requirement 4 will not apply to Hanford Patrol or Hanford Fire personnel. Job Hazard Analyses shall be performed for training and qualification activities as well as anticipated emergency response activities. Controls shall be implemented to eliminate or minimize to the extent possible hazards associated with these activities.</i>	I	10CFR851.22(a) (2) (i)

Ergonomics

Published Date: 02/12/2024

Effective Date: 02/12/2024

#	Requirement	Type V or I	Source
5.	<p>Employees shall not attempt to singularly lift objects that exceed physical capabilities or are greater than 55 pounds (24.95 kgs) without a hazards analysis.</p> <p><i>NOTE: When engaged in mandatory training, qualification testing or responses to emergency events, Requirement 5 will not apply to Hanford Patrol or Hanford Fire personnel. Job Hazard Analyses shall be performed for training and qualification activities as well as anticipated emergency response activities. Controls shall be implemented to eliminate or minimize to the extent possible hazards associated with these activities.</i></p>	I	10CFR851.22(b) (3)
6.	<p>The handling of material-containing drums shall be conducted as follows:</p> <ul style="list-style-type: none"> a. Mechanical and/or powered assist devices will be used when possible. b. Single person unassisted manual lift(s) of a drum are limited to 55 pounds (24.95 kgs) or less. c. Two-person manual lifts of a drum are limited to 55 pounds (24.95 kgs) or less per person. d. Single person unassisted manual push (tipping) of a drum in an upright position is limited to 240 pounds (108.86 kgs) or less. e. Two-person manual push (tipping) of a drum in an upright position is limited to 240 pounds (108.86 kgs) per person. f. Single person unassisted manual pull (tipping) of a drum in an upright position is limited to 220 pounds (99.79 kgs) or less. g. Two-person manual pull (tipping) of a drum in an upright position is limited to 220 pounds (99.79 kgs) per person. h. Single person manual raising from a horizontal position to a vertical position or lowering from an upright to horizontal position of a drum is not permitted due to the awkward body positioning needed to complete the task. 	I	10CFR851.22(b)

Ergonomics

Published Date: 02/12/2024

Effective Date: 02/12/2024

#	Requirement	Type V or I	Source
	<p>i. Two-Person manual raising from a horizontal position to a vertical position or lowering from an upright to horizontal position of a drum is limited to 220 pounds (99.79 kgs).</p> <p>NOTE: <i>The above practices assume a good coefficient of friction between the employee's footwear and the walking surface, average male weight and strength, one push, pull lift every 30 minutes. Drum handling activities outside these assumptions require further evaluation with support from Qualified Person, as needed.</i></p>		
7.	Employees experiencing discomfort resulting from ergonomic-related sources such as computer workstation use, material handling, or other equipment use, will report the discomfort to line management. Line management will notify a Qualified Person to perform an evaluation of the workstation/activity.	I	10CFR851.20(a) (6)
8.	The overall effectiveness of controls implemented for ergonomic-related hazards must be periodically assessed using Project/Function developed measures and modified as necessary for continuous improvement.	I	10CFR851.21(a) (7)
9.	Project/Function Safety managers will provide the S&H Leadership team feedback on Lessons Learned, Ergonomic-related assessment summaries, results of ergonomic-related injury/illness investigations, etc. to facilitate continuous improvement.	I	10CFR851.26(b) (1) (2)
10.	Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways and wherever turns or passage must be made.	V	29CFR1910.176(a))
11.	Aisles and passageways shall be kept clear and in good repair, with no obstructions across or in aisles that could create a hazard.	I	29CFR1910.176(a)) 29CFR1926.250(a)) (3)
12.	Storage of material shall not create a hazard. All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling or collapse.	I	29CFR1910.176(b))

NOTE: Employees may print off this document for reference purposes but are responsible to check HMIS Procedure System to ensure the most current version is used to prevent unintended use of obsolete versions.

Administrative

Published Date: 02/12/2024

Effective Date: 02/12/2024

#	Requirement	Type V or I	Source
			29CFR1926.250(a) (1)
13.	When a difference in road or working levels exist, means such as ramps, blocking, or grading shall be used to ensure the safe movement of vehicles between the two levels.	V	29CFR1926.250(a) (4)
14.	Structural steel, poles, pipe, bar stock, and other cylindrical materials, unless racked, shall be stacked and blocked so as to prevent spreading or tilting.	V	29CFR1926.250(b) (9)

Appendix B. Definitions

Administrative controls. Methodologies in the way that work is assigned or scheduled that reduce the magnitude, frequency or duration of exposure to ergonomic risk factors.

Some examples of administrative controls for MSD hazards include:

- a. Employee rotation
- b. Job task enlargement
- c. Alternative tasks
- d. Employer-authorized changes in work pace.

Assigned computer workstations. Computer workstations specifically assigned to an individual to perform work. These would not include computer stations for multi-users, such as for timecard entry or turn-around offices or telecommuting workstations.

Engineering controls. Physical designs of the job or work environment that are put in place to reduce MSD hazards. Some examples of engineering controls include changing or redesigning workstations, tools, facilities, equipment, materials, or processes.

Job. Means the physical work activities or tasks that an employee performs. This program considers jobs to be the same if they involve the same physical work activities or tasks, even if the jobs have different titles or classifications.

Musculoskeletal disorder (MSD). A disorder of the muscles, nerves, tendons, ligaments, joints, cartilage, blood vessels, or spinal discs. For purposes of this guidance document, this definition only includes MSDs in the following areas of the body that have been associated with exposure to risk factors: neck, shoulder, elbow, forearm, wrist, hand, abdomen (hernia only), back, knee, ankle, and foot.

MSDs may include muscle strains and tears, ligament sprains, joint and tendon inflammation, pinched nerves, and spinal disc degeneration.

MSDs include such medical conditions as: low back pain, tension neck syndrome, carpal tunnel syndrome, rotator cuff syndrome, DeGuerin's syndrome, trigger finger, tarsal tunnel syndrome, sciatica, epicondylitis, tendinitis, Raynaud's phenomenon, hand-arm vibration syndrome (HAVS), carpet layer's knee, and herniated spinal disc.

Injuries arising from slips, trips, falls, motor vehicle accidents, or similar accidents resulting in acute injuries are not considered MSDs for the purposes of this guidance document.

MSD hazard. The presence of risk factors in the job that occur at a magnitude, duration, or frequency that is likely to cause MSDs that result in work restrictions or medical treatment beyond first aid.

Published Date: 02/12/2024

Effective Date: 02/12/2024

MSD signs. Objective physical findings that an employee may be developing an MSD. Some examples of MSD signs are:

- a. Decreased range of motion
- b. Deformity
- c. Decreased grip strength
- d. Loss of muscle function.

MSD symptoms. Physical indications that an employee may be developing an MSD. Some examples of MSD symptoms are:

- a. Pain
- b. Numbness
- c. Tingling
- d. Burning
- e. Cramping
- f. Stiffness.

Personal Protective Equipment (PPE). Equipment employees wear that provides a protective barrier between the employee and an MSD hazard. Some examples of PPE are vibration-reduction gloves and carpet layer's kneepads.

Qualified Person. Industrial Hygiene, Safety, or OMSP professionals, currently practicing in the field, who have sufficient knowledge, training and experience to assess and recommend solutions for ergonomic problems of worksites and work operations.

Risk factor. For the purpose of this guidance document: excessive force, awkward posture, static posture, repetition, vibration, and contact stress, such as at levels identified within the WISHA Screening Tool (Modified) (Form A-6006-299).

Work-related. An exposure in the workplace which caused or contributed to an MSD or significantly aggravated a pre-existing MSD. The employee's job activities, causing the exposure, must be related to the MSD incident and typically involve (on one or more days a week) exposure to risk factors at levels described in the Basic Screening Tool.

Work restrictions. Limitations, during the recovery period, on an employee's exposure to MSD hazards. Work restrictions may involve limitations on the work activities of the employee's current job (light duty), transfer to temporary alternative duty jobs, or temporary removal from the workplace to recover.

Ergonomics

Published Date: 02/12/2024

Effective Date: 02/12/2024

Appendix C. Material Handling Controls

Control Type	Examples
Engineering	Changing the shape of item(s) or handles to allow easier grasp; using counterbalances to stabilize loads; decreasing the distance, height, or weight of objects; providing mechanical devices such as handcarts, hand trucks, fork trucks, cranes, or hoists; reducing the weight manually handled.
Work Practices	Optimizing the load location between knee and shoulder level whenever possible; distributing a load evenly while keeping it close to the body; staying focused on the task; providing assistance/help; maintaining good physical condition; not exceeding physical abilities; avoiding twisting, pushing, pulling or sliding objects instead of lifting; avoid fatigue from repeated forceful activities.
Administrative	Establishing limits for handling heavy, bulky, or awkward-shaped objects; providing adequate recovery time.
Personal Protective Equipment	Use personal protective equipment to reduce or eliminate ergonomic hazards such as gloves to enhance grip stability on slippery surfaces, hearing protection in high noise areas and clothing appropriate for the prevailing environmental conditions.