

Human Factors and Ergonomics

Short description

This section of the HSEQ Manual provides awareness and guidance for Centennial employees and subcontractors in avoiding awkward work postures, excessive effort or other environmental factors which may lead to fatigue, discomfort and the development of musculoskeletal disorders.

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Content

1	Objective and area of application.....	3
2	Superior and additional applicable documents.....	4
3	Definitions.....	4
4	Ergonomic hazard assessment.....	4
	4.1 Workplace conditions and behaviors.....	5
5	Contributing factors to MSDs.....	6
	5.1 Environmental factors.....	6
	5.2 Time and fatigue.....	6
	5.3 Awkward postures.....	6
	5.3.1 Ground level work positions.....	6
	5.4 Visual effort.....	7
	5.5 Repetitive motions.....	7
	5.6 Forceful exertions.....	7
	5.7 Pressure points (local contact stress).....	8
	5.8 Vibration.....	8
	5.9 Personal factors.....	8
6	Workstation design.....	9
	6.1 Work positioning.....	9
	6.2 Work station components.....	9
	6.2.1 Monitor.....	9
	6.2.2 Keyboard.....	10
	6.2.3 Pointing devices.....	11
	6.2.4 Desk.....	11
	6.2.5 Chair.....	12
	6.3 Workstation environment.....	13
	6.3.1 Lighting.....	13
	6.3.2 Glare.....	14
	6.3.3 Ventilation.....	14
7	Ergonomic hazard controls.....	15
8	Training.....	15
9	Amendment history.....	16
10	Appendix.....	16

1 Objective and area of application

Ergonomics is the scientific study of people at work. Construction tasks can place the body in numerous risky positions. Cramped working areas, working overhead and at floor level, heavy material handling and repetitive tasks are just some of the ergonomic risk factors construction workers face. Ergonomic hazards may also be experienced during office work or non-construction related activities at computer workstations. Ergonomics, fitting a job to a person, helps lessen muscle fatigue, increases productivity and reduces the number and severity of work-related musculoskeletal disorders (MSD). The goal of ergonomics is to reduce stress and eliminate injuries and disorders associated with the overuse of muscles, poor posture, and repetitive tasks. This is accomplished by designing tasks, work spaces, controls, displays, tools, lighting and equipment to fit the employee's physical capabilities and limitations.

MSDs affect the muscles, nerves and tendons. Work related MSDs (including those of the neck, upper extremities and low back) are one of the leading causes of lost workday injuries and illness. Workers in many different industries and occupations can be exposed to ergonomic risk factors such as lifting heavy items, bending, reaching overhead, pushing and pulling heavy loads, working in awkward body postures and performing the same or similar tasks repetitively. Exposure to these known risk factors for MSDs increases a worker's risk of injury. Early action is particularly important when addressing MSDs because they tend to be treatable in the early stages but irreversible and costly if untreated after if initial warning signs are ignored.

Ergonomics principles for Centennial facilities and project sites apply to:

- Hand tool use and selection
- Materials handling
- Work area and workstation design
- Placement of controls, handles and knobs
- Shift work

Ergonomics have not been widely practiced within the construction industry due to the following reasons:

- Changing workforce
- Changing environment
- Changing locations
- Changing workstations

Centennial expects subcontractors to have an equivalent dedication to HSEQ as outlined in this section. Centennial requires subcontractors to adopt, implement and enforce rules and practices necessary for the health and safety of personnel, environmentally responsible performance and the contract according to the contract scope of work and specifications.

2 Superior and additional applicable documents

1000_GP_11_01_en_5.0 Global Policy on Health, Safety, Environment/Sustainability and Quality (HSEQ)

This section of the HSEQ Manual applies to all Centennial employees and subcontractors who are performing work in Centennial facilities and project sites. There may be more stringent requirements than this section as defined by specific State, local or contract specific human factor or ergonomic requirements. If there is a conflict between this section and other applicable regulations, the more stringent will apply.

3 Definitions

The following definitions of terms are important for an understanding of this section.

Term	Definition
Centennial	All Centennial employees, joint venture employees, subcontractors and business partners
Competent person	Person who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous or dangerous to employees and has authority to issue stop work directive and/or take prompt corrective measures to eliminate or protect against those hazards
Equipment criteria	Manufacturer supplied instructions, recommendations, limitations and specifications
HSEQ	Health, Safety, Environment and Quality
HSEQ Director	Leads the HSEQ Team
MSD	Musculoskeletal disorder
OSHA	Occupational Health and Safety Administration
NIOSH	National Institute of Occupational Safety and Health
PSM	Project Safety Manager
PSO	Project Safety Officer
SSR	Senior Site Representative
VOC	Volatile organic compounds

4 Ergonomic hazard assessment

An ergonomic hazard assessment should be performed by the PSM or PSO any time a Centennial employee is hired or assigned or re-assigned to a new work station or a workstation is changed or modified significantly within a Centennial facility.

Ergonomic hazard assessments should be performed by the Centennial superintendent, PSM or PSO and subcontractor competent person prior to the start of construction and throughout the construction process on Centennial project sites. These ergonomic hazard assessments shall be documented on an AHA in accordance with Section 6 (Risk Assessment and Operations) of the HSEQ Manual.

The ergonomic risk assessment shall consist of:

- Periodic review of the facility and/or project site
- Facility and/or project sites work conditions
 - Environmental factors
 - Heat/cold stresses
- Specific workstation design
- Work practices
- Tools and materials used

4.1 Workplace conditions and behaviors

Workplace operations shall be examined critically to identify potential ergonomic risk factors with the intent on eliminating or controlling hazards.

The risk of MSD injury depends on:

- Work positions and postures
- How often the task is repeated
- Level of required effort
- Duration of the task

Risk factors that may lead to the development of MSDs include:

- Exerting excessive force including:
 - Lifting heavy objects
 - Pushing or pulling heavy loads
 - Manually pouring materials
 - Maintaining control of equipment or tools
- Performing the same or similar tasks repetitively- performing the same motion or series of motions continually or frequently for an extended period of time
- Working in awkward postures or being in the same posture for long periods of time- using positions that place stress on the body, such as prolonged or repetitive reaching above shoulder height, kneeling, squatting, leaning over a counter, using a knife with wrists bent, or twisting the torso while lifting
- Localized pressure into the body part- pressing the body or part of the body (such as the hand) against hard or sharp edges, or using excess forces
- Cold temperatures in combination with any one of the above risk factors

Note: Combined exposure to several risk factors may place workers at a higher risk for the development of an MSD.

5 Contributing factors to the development of MSDs

5.1 Environmental factors

There are environmental factors associated with the workplace which create additional risk for MSDs. Extreme high temperatures can increase the rate at which the body will fatigue. Alternatively, exposure of the hands and feet to cold temperatures can decrease blood flow, muscle strength, and manual dexterity. These conditions can also cause excessive grip force to be applied to tool handles or objects. Another problem may be caused by tools or equipment that forces cold or hot air directly onto the operator. In addition, the lighting in a workplace may be too dark or too bright for the work task. This may result in employees assuming awkward postures to accomplish work tasks and a loss of product quality.

5.2 Time and fatigue

The amount of time in a workday that employees or workers spend performing physically demanding or repetitive tasks may increase the risk of developing MSDs. Both the total time per work shift and the length of uninterrupted periods of work can be significant in contributing to problems. As repetitive motions, forceful exertions, and other contributing factors increase in work task, so does the recovery time needed to help reduce fatigue and prevent injury or the development of MSDs.

5.3 Awkward postures

Awkward postures or positioning can make work tasks more physically demanding, by increasing the exertion required from smaller muscle groups, and preventing the stronger, larger muscle groups from working at maximum efficiencies. The increased exertion from the weaker, smaller muscle groups impairs blood flow and increases the rate of fatigue.

Awkward postures include, but are not limited to:

- Repeated or prolonged reaching
- Twisting
- Bending
- Working overhead
- Kneeling, squatting
- Holding prolonged fixed positions
- Pinch grips

Awkward positioning can affect various areas of the body such as the hands, wrists, arms, shoulders, neck, back, and knees. The effects of awkward postures are increased if work tasks also involve repetitive motions or forceful exertions. The Centennial PSM / PSO and/or project superintendent shall evaluate the work area for awkward positioning and eliminate or minimize these positions where possible by using job-rotation among crew members.

5.3.1 Ground level work positions

Work that consistently requires bending, stooping, kneeling or squatting can cause pain in the lower back or knees and eventually lead to an MSD. The risk of MSD is higher if the task

requires repetitive stooping or kneeling often or for long periods of time. The risk is also increased if the work requires twisting the body while working in these positions.

These positions can also make it harder to do the job. When stooping or kneeling, the worker cannot lift, push, or pull as much weight without putting stress on the body.

Ground level work cannot be fully eliminated from construction but it is possible to change how the task is performed to minimize the exposure to hazardous positions.

- Change materials or work processes. One of the most effective solutions may be to use materials, building components, or work methods that are less labor-intensive, so the task takes less time and the worker kneels and/or stoops for a shorter period
- Change tools and/or equipment. For example, use tools with extension handles that let the user stand up while doing ground level tasks

5.4 Visual effort

There may be times when employees or workers assume awkward postures or experience eye strain and fatigue because it is difficult to see his or her work due to workstation design. For example, when the lighting is not adequate, the work is too far away, or materials are blocking the field of vision, employees may have to bend, reach, twist, or hold fixed positions. Similarly, performing extremely precise tasks may contribute to eye strain and awkward postures.

5.5 Repetitive motions

In repetitive work the same types of motions are performed over and over again using the same muscles, tendons, or joints. The amount of repetition may be affected by the pace of work, the recovery time provided and the amount of variety in work tasks. The pace of work may be controlled by the individual performing the task, shift duration, other employees, or administrative procedures.

The risk of MSD injury is greater when repetitious jobs involve awkward posture or forceful exertions (see section 5.6). MSD injuries may also develop when highly repetitive jobs are combined with low-force exertions that involve the hands, wrists, elbows, and shoulders.

5.6 Forceful exertions

Force is the amount of muscular effort expended to perform work. Exerting large amounts of force can result in fatigue and physical damage to the body. The amount of force exerted when moving or handling materials, tools, or objects depends on a combination of factors, including the:

- Load shape, weight and dimensions
- Grip type, position, and friction characteristics
- Amount of effort required to start and stop the load when moving it (i.e., how physically demanding it is to accelerate or decelerate the load)
- Length of time continuous force is applied by the muscles
- Number of times the load is handled per hour or work shift
- Amount and frequency of associated vibration
- Body posture and mechanics used
- Resistance associated with moving the load
- Duration of the task over the work shift

- Environmental conditions
- Amount of rotational force

5.7 Pressure points (local contact stress)

Pressure points result from the body pressing against hard or sharp surfaces. Certain areas of the body are more susceptible because nerves, tendons, and blood vessels are close to the skin and underlying bones. These areas include the sides of the fingers, palms, wrists and forearms, elbows, and the knees.

Pressure points include:

- Sides of the fingers
- Palms
- Wrists
- Forearms
- Elbows
- Knees

5.8 Vibration

Vibration exposure is of concern when it is continuous, long in duration, frequent or of very high intensity. Using vibrating tools can cause exposure to hand-arm vibration. Tools that are not properly maintained or are inappropriate for the task may increase the amount of hand-arm vibration. These exposures may result in fatigue, pain, numbness, tingling, increased sensitivity to cold, and decreased sensitivity to touch in the fingers, hands, and arms.

Whole-body vibration commonly results from sitting or standing on work surfaces that vibrate. Examples of such surfaces include vibrating vehicles, equipment, and platforms. Whole-body vibration may be associated with general discomfort and lower back pain.

5.9 Personal factors

Personal factors, such as level of physical fitness, weight, diet, habits, and lifestyle, may also affect the development of MSDs. Also, various medical conditions may predispose individuals to MSDs or may hasten the onset and/or progression of MSDs.

Examples include:

- Arthritis
- Pregnancy
- Bone and muscle conditions
- Previous trauma
- Thyroid disorders
- Diabetes

6 Workstation design

6.1 Work positioning

Many Centennial employees spend much of their day or significant time at a computer workstation. In design of computer workstation, it is helpful to understand the concept of neutral body positioning. Neutral body positioning is a comfortable working posture in which the joints are naturally aligned. Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system and reduces the risk of developing MSDs.

The following shall be considered when attempting to maintain neutral body postures while working at a computer workstation:

- Hands, wrists and forearms shall be straight, in-line and roughly parallel to the floor
- Head shall be aligned level or bent slightly forward, forward facing and balanced
- Shoulders shall be relaxed and upper arms hang normally at the side of the body
- Elbows shall stay in close to the body and are bent between 90 and 120 degrees
- Feet shall be fully supported by the floor or a footrest may be used if the desk height is not adjustable
- Back shall be fully supported with appropriate lumbar support when sitting vertical or leaning back slightly
- Thighs and hips shall be supported by a well-padded seat and generally parallel to the floor
- Knees should be about the same height as the hips with the feet slightly forward

Regardless of the quality of the work position, working in the same posture or sitting still for prolonged periods is not healthy. Work positioning shall be changed as needed frequently throughout the day in the following ways:

- Small adjustments shall be made to the chair and/or backrest
- Stretch fingers, hands, arms and torso periodically
- Stand up and walk around for a few minutes periodically

6.2 Work station components

6.2.1 Monitor

Choosing a suitable monitor and placing it in an appropriate position helps reduce exposure to forceful exertions, awkward postures, and overhead glare. This helps prevent possible health effects such as excessive fatigue, eye strain, and neck and back pain.

The following shall be considered for computer workstation set up:

- Viewing distance
 - Viewing distances that are too long can cause the user to lean forward and strain to see small text. This can fatigue the eyes and place stress on the torso because the backrest is no longer providing adequate support

- Viewing distances that are too short may cause the users eyes to work harder to focus (convergence problems) potentially causing eye strain and may require the user to sit in awkward postures
- Viewing angle
 - A display screen that is too high or low may cause the user to work with the head, neck, shoulders and/or back in awkward postures. When the monitor is too high, for example, the user may have to work with the head and neck tilted back. Working in these awkward postures for a prolonged period fatigues the muscles that support the head.
 - The top of the monitor should be at or slightly below eye level. The center of the computer monitor should normally be located 15 to 20 degrees below horizontal eye level
 - Elevate user line of sight by adjusting (raising or lowering) the chair
- Viewing time- Viewing the monitor for long periods of time may cause eye fatigue and dryness. Users often blink less while viewing the monitor
 - Users should rest their eyes periodically by focusing on objects that are farther away
 - Users shall stop work, look away and blink at regular intervals to moisten the eyes
 - Alternate duties (as possible) with other non-computer tasks to provide periods of rest for the eyes
- Viewing clarity- Monitors that are tilted significantly either toward or away from the operator may distort objects on the screen, making them difficult to read. Also, when the monitor is tilted back, overhead lights may create glare on the screen. This can result in eyestrain and sitting in awkward postures to avoid eye glare
 - The user shall tilt the monitor so it is perpendicular to his or her line of sight, usually by tilting the screen no more than 10 to 20 degrees
 - Monitor support surfaces shall allow the user to modify viewing distances and tilt and rotation angles

6.2.2 Keyboard

Proper selection and arrangement of the computer keyboard helps reduce exposure to awkward postures, repetition, and contact stress. Keyboards or working surfaces that are too high or too low can lead to awkward wrist, arm, and shoulder postures.

Consider the following factors when evaluating a computer workstation keyboard:

- The keyboard shall be placed directly in front of the user
- The user's shoulders shall be relaxed with the elbows close to the body
- The user's wrists shall be straight and in line with the forearms

A keyboard tray may be needed if the work surface or chair cannot be properly adjusted. The keyboard tray shall:

- Be adjustable in height and tilt
- Provide adequate leg and foot clearance
- Have adequate space for multiple input devices (for example, a keyboard and mouse)

The keyboard's vertical position shall be maintained within the recommended range (+20 degrees to -45 degrees). The tilt of the keyboard may need to be raised or lowered using the keyboard feet to maintain straight, neutral wrist postures while accommodating changes in arm angles.

A keyboard or mouse that is not at a proper distance (too close or too far away) may cause the user to assume awkward postures such as reaching with the arms, leaning forward with the torso and extreme or hazardous elbow angles. These awkward postures may lead to musculoskeletal disorders of the elbows, shoulders, hands and wrists.

The following solutions shall be considered when evaluating excessive distance of a keyboard or pointer/mouse:

- Place the keyboard directly in front of the user at a distance that allows the elbows to stay close to the body with forearms approximately parallel with the floor
- A keyboard tray may be useful if the user has limited desk space or if the user's chair has armrests that interfere with adequate positioning

6.2.3 Pointing devices (collectively "mouse")

If the mouse is not near the keyboard the user may be exposed to awkward postures, contact stress, or forceful hand exertions while using the device. Working in this position for prolonged periods places stress on the shoulder and arm and increases the likelihood that the user will assume awkward wrist and shoulder postures which may lead to MSDs.

Pointing devices such as a mouse now come in many sizes, shapes and configurations such as:

- Mouse
- Trackballs
- Touch pads
- Joystick

Selection and placement of a mouse is an important factor in creating a safe computer workstation.

Consider the following factors when evaluating a computer workstation:

- Keep the pointer/mouse close to the keyboard
- Alternate hands with which the user operates the mouse
- Use keyboard short cuts to reduce extended use
- Position the mouse to allow the user to maintain a straight, neutral wrist posture. This may involve adjustments to the chair, desk, keyboard tray, etc.

6.2.4 Desk

Limited space on the work surface may cause users to place components and devices in undesirable positions. This placement may lead to awkward postures as the user reaches for a mouse or looks at a monitor that is placed to the side.

A well-designed and appropriately-adjusted desk shall provide:

- Adequate clearance the user's legs
- Proper placement of computer components and accessories
- Minimal awkward postures and exertions.

The installation, setup, and configuration of comfortable and productive workstations involve the following considerations:

- Using a corner rather than a straight run of desk may provide additional space and depth to accommodate large monitors or multiple items.
- The location of frequently-used devices (keyboard, phone and mouse) shall remain within the repetitive access/primary work zone

Work surface depth shall allow the user to:

- View the monitor at a distance of **at least** 20 inches, and
- Position the monitor to achieve the appropriate viewing angle (directly in front of the user)

6.2.5 Chair

A chair that is well-designed and appropriately adjusted is an essential element of an ergonomically sound and productive computer workstation. A good chair provides necessary support to the back, legs, buttocks, and arms, while reducing exposures to awkward postures, contact stress and forceful exertions.

Increased adjustability ensures a better fit for the user, provides adequate support in a variety of sitting postures, and allows variability of sitting positions throughout the workday. This is particularly important if the chair has multiple users. To ensure that the chair will provide adequate support, it is important that the user try out different chairs before purchasing one.

The following parts of the chair are important elements to consider in creating a safe and productive workstation:

- **Backrest-** Poor back support and inappropriate postures may result from inadequate backrest size, material, positioning, or use. Working in these postures may lead to back pain and fatigue. For example, a chair without a suitable or adjustable backrest will not provide adequate lumbar support or help maintain the natural S-shape curvature of the spine. A backrest shall have the following:
 - A lumbar support that is height adjustable so it can be appropriately placed to fit the lower back
 - An adjustment that allows the user to recline at least 15 degrees from the vertical. The backrest shall lock in place or be tension adjustable to provide adequate resistance to lower back movement
 - A device enabling it to move forward and backward to accommodate users of varying heights
- **Seat-** Using a chair with a seat that is too high may force the user to work with his or her feet unsupported or encourage the user to move forward in the chair to a point where the back is unsupported making it more difficult to maintain the S-shape of the spine. These awkward postures can lead to fatigue, restricted circulation, swelling, numbness and pain. It is recommended that the seat shall be:

- Height adjustable, especially when shared by more than one user. The chair height is appropriate when the entire sole of the foot can rest on the floor with the back of the knee slightly higher than the seat of the chair
- Padded and have a rounded edge
- Wide enough to accommodate the majority of users
- Armrest- Armrests that are not adjustable, or those that have not been properly adjusted, may expose the user to awkward postures or fail to provide adequate support. For example armrests that are:
 - Too low may cause the user to lean over to the side to rest one forearm. This can result in uneven and awkward postures, fatiguing the neck, shoulders, and back
 - Too high may cause the user to maintain raised shoulders which can result in muscle tension and fatigue in the neck and shoulders
 - Too wide may cause the user to reach with the elbow and bend forward for support. Reaching pulls the arm from the body and can result in muscle fatigue in the shoulders and neck
 - Too close can restrict movement in and out of the chair
 - Too large or inappropriately placed may interfere with the positioning of the chair. If the chair cannot be placed close enough to the keyboard, the user may need to reach and lean forward in his or her chair. This can fatigue and strain the lower back, arm, and shoulder
- Chair base
 - Chairs with four or fewer legs may provide inadequate support and are prone to tipping. Chairs shall have a strong, five-legged base
 - Inappropriate choice of casters, or a chair without casters, can make positioning the chair in relation to the desk difficult. This increases reaching and bending to access computer components, which can lead to muscle strain and fatigue

6.3 Workstation environment

Appropriately placing lighting and selecting the right level of illumination can enhance the workstation and the user's ability to see monitor images. For example, if lighting is excessive or causes glare on the monitor screen, the user may develop eyestrain or headaches, and may have to work in awkward postures to view the screen. Ventilation and humidity levels in office work environments may affect user comfort and productivity.

6.3.1 Lighting

Bright light sources behind the display screen can create contrast problems, making it difficult to clearly see work. High contrast between light and dark areas of the computer screen, horizontal work surface and surrounding areas can cause eye fatigue and headaches.

The following solutions shall be utilized to control workstation lighting:

- Use blinds or drapes on windows to eliminate bright light. Blinds and furniture placement shall be adjusted to allow light into the room, but not directly into the worker's field of vision
- Use indirect or shielded lighting where possible and avoid intense or uneven lighting in the user's field of vision. Ensure that lamps have glare shields or shades to direct light away from the user's line of sight

- Reorient the workstation so bright lights from open windows are at right angles with the computer screen

6.3.2 Glare

Reflected light from polished surfaces, such as keyboards, may cause annoyance, discomfort or loss in visual performance and visibility.

The following solutions to glare shall be considered by the user in the design of the workstation:

- Place the face of the display screen at right angles to windows and light sources.
- Position task lighting (for example, a desk lamp) so the light does not reflect on the screen
- Frequently clean the monitor and other surfaces that create glare. A layer of dust can contribute to glare
- Blinds or drapes may be installed on windows to help reduce glare
- Glare filters that attach directly to the surface of the monitor may be used to reduce glare
- Barriers or light diffusers on fixtures may be used to reduce glare from overhead lighting

6.3.3 Ventilation

Users may experience discomfort from poorly designed or malfunctioning ventilation systems such as air conditioners or heaters that directly or indirectly force air on workstation users.

The following are potential hazards that may be caused by poor ventilation:

- Moving air can dry the eyes (especially if the user wears contact lenses)
- Poor air circulation can result in stuffy or stagnant conditions
- Temperatures above or below standard comfort levels can affect comfort and productivity

The following solutions shall be considered to control workstation ventilation:

- Desks, chairs and other office furniture should not be placed directly under air conditioning vents unless the vents are designed to redirect the air flow away from these areas
- Use diffusers or blocks to redirect and mix air flows from ventilation systems
- Keep relative humidity of the air between 30% and 60%
- The recommended ambient indoor temperatures range between 68° and 78° F

Additionally, exposure to chemicals, VOCs, ozone and particles from computers and their peripherals may cause discomfort or health problems. An adequate supply of fresh air shall be supplied in the work area.

The Ergonomic Workstation Evaluation Checklist (Appendix 1) will aid in the review of any existing or new workstations.

7 Ergonomic hazard controls

Type of Control	Workplace Examples
<p>Engineering Controls (implement physical change to the workplace, which eliminates/reduces the hazard on the job/task)</p>	<ul style="list-style-type: none"> ▪ Use a device to lift and reposition heavy objects to limit force exertion ▪ Reduce the weight of a load to limit force exertion ▪ Reposition a work table to eliminate a long/excessive reach and enable working in neutral postures ▪ Use diverging conveyors off a main line so that tasks are less repetitive ▪ Install diverters on conveyors to direct materials toward the worker to eliminate excessive leaning or reaching ▪ Redesign tools to enable neutral postures
<p>Administrative and Work Practice Controls (establish efficient processes or procedures to limit exposure to ergonomic risk factors)</p>	<ul style="list-style-type: none"> ▪ Require that heavy loads are only lifted by two or more people to limit force exertion ▪ Establish systems so workers are rotated away from tasks to minimize the duration of continual exertion, repetitive motions, and awkward postures. Design a job rotation system in which employees rotate between jobs that use different muscle groups ▪ Properly use and maintain equipment and tools
<p>Personal Protective Equipment (use personal protection to reduce exposure to ergonomic risk factors)</p>	<ul style="list-style-type: none"> ▪ Use padding or other barriers to reduce direct contact with hard, sharp, or vibrating surfaces ▪ Wear environmentally rated protective clothing for hot/cold conditions such as thermal gloves to help with cold conditions while maintaining the ability to grasp

8 Training

Employees and subcontractors shall be trained in the specific hazards associated with human factors or ergonomic hazards.

Training shall be provided to all affected personnel and, at a minimum, include:

- The principles of ergonomics and their applications
- The proper use of equipment, tools, and machine controls

- Use good work practices, including proper lifting techniques
- Awareness of work tasks that may lead to pain or injury
- Recognition of the early symptoms of MSDs
- Understand the importance of reporting and addressing early indications of MSDs before serious injury develops

Retraining is required when:

- Changes in the workplace render previous training incomplete or obsolete
- Changes in the types of equipment or work environment render previous training incomplete or obsolete

9 Amendment history

Date	Version	Revised content
03.06.2014	1.0	Initial Preparation
01.01.2018	2.0	Updates to Paragraph 2 Superior Documents to add the Group Policy and Global Standards, Paragraph 3 Definitions (Centennial and HSEQ Director) and Appendix 1 (logo)

10 Appendix

Appendix 1: Ergonomic Workstation Evaluation Checklist (0206500_CP_11_26_en_A1.1)

Workstation Ergonomic Evaluation Checklist

0206500_CP_11_26_en_A1.1



Instructions: Complete the workstation ergonomic evaluation checklist below. Indicate your response by placing a check mark or circling the Yes or No option. If more explanation is required use the spaces provided.

Inspector (print name):

Date:

Office / workstation location or number:

Condition (body parts)

- Head and neck to be upright, or in-line with the torso (not bent down/back). Yes No
- Head, neck and trunk to face forward (not twisted). Yes No
- Trunk to be perpendicular to floor (may lean back into backrest but not forward). Yes No
- Upper arms and elbows to be close to the body (not extended outward). Yes No
- Forearms, wrists and hands to be straight and in-line (forearm, 90 degrees to upper arm). Yes No
- Wrists and hands to be straight (not bent up/down or sideways toward the little finger). Yes No
- Thighs to be parallel to the floor and the lower legs to be perpendicular to the floor. Yes No
- Feet rest flat on the floor or are supported by a stable footrest. Yes No
- Thighs have clearance space from table/desk/keyboard platform. Yes No
- Legs and feet have clearance space under the workstation (chair can be scooted in). Yes No

Notes / Explanation:

Chairs / Posture

- Backrest provides support for lower back (lumbar area). Yes No
- Seat width and depth accommodate the specific user (seat pan not too big/small). Yes No
- Seat front does not press against the back of knees and lower legs (seat pan too long). Yes No
- Seat has cushioning and is rounded with a "waterfall" front (no sharp edge). Yes No
- Armrests, if used, support both forearms during computer tasks (no interference). Yes No

Note: Any "no" answers in this section should prompt a review of workstation chairs/seating.

Keyboards / Pointers (mouse)

- Keyboard platform is stable and large enough to hold a keyboard and a mouse. Yes No
- Mouse is located right next to keyboard so it can be operated without reaching. Yes No
- Mouse is easy to activate and the shape/size fits hand (not too big/small) Yes No
- Wrists/hands do not rest on sharp or hard edges. Yes No

Screen / Monitor

Monitor distance allows you to read the screen without leaning head, neck or trunk forward. Yes No

Monitor position is directly in front of you to prevent twisting of head or neck Yes No

Glare is not reflected on your screen which causes an awkward position to clearly see screen. Yes No

Note: Any "no" answers in this section should prompt a review of monitors or lighting/glare.

Accessories / Work Surfaces

Document holder, if provided, is stable and large enough to hold documents Yes No

Document holder, if provided, is placed at approximately the same height and distance as the monitor/screen so there is little head movement or need to re-focus when you look from the document to the screen. Yes No

Wrist/palm rest, if provided, is padded and free of sharp or square edges. Yes No

Wrist/palm rest, if provided, allows forearms, wrists and hands to be in a straight line. Yes No

Telephone can be used with your head upright and shoulders relaxed. Yes No

Note: Any "no" answers in this section should prompt a review of work surfaces and accessories.

Workstation

Workstation and equipment have sufficient adjust-ability so you are in a safe working posture and can make occasional changes in posture while performing computer tasks. Yes No

Computer workstation, components and accessories are maintained in serviceable condition and function properly. Yes No

Computer tasks are organized in a way that allows you to vary tasks with other work activities or to take micro-breaks or recovery pauses while at the computer workstation. Yes No

Notes / Explanation

Checklist Completed by (print name):

Position / Title:

Completed ergonomic workstation inspection checklists shall be forward to your direct supervisor