



SANFORD UNDERGROUND RESEARCH FACILITY

SOUTH DAKOTA SCIENCE AND TECHNOLOGY AUTHORITY

ERGONOMICS STANDARD

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Revision History

Rev	Date	Section	Paragraph	Summary of Change	Authorized by
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1.0 Purpose

This Ergonomics Standard is established for the Sanford Underground Research Facility to minimize worker exposure to risk factors for work-related musculoskeletal disorders, and to improve the general work environment of employees.

2.0 Scope

This program applies to all South Dakota Science and Technology Authority (SDSTA) employees who may be exposed to ergonomic hazards in the workplace.

3.0 Definitions

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

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

Musculoskeletal Discomfort - anything that causes abnormal sensation for more than two minutes.

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.

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).

Work-related Musculoskeletal Disorders (WMSDs) - MSDs that can be attributed to the work environment and the performance of work.

4.0 Responsibilities

4.1. Environment, Safety & Health (ESH) Department

- 4.1.1. Performs ergonomic consultations as requested in accordance with recognized industry standards.
- 4.1.2. Recommends ergonomic improvements using the traditional hierarchy of safety controls specified in Section 5.2.
- 4.1.3. Documents ergonomics consultation findings per department procedures.
- 4.1.4. Provides a copy of consultation findings to the person who requested the consultation and to other appropriate parties.
- 4.1.5. Provides routine training for full-time permanent personnel.
- 4.1.6. Conducts safety walk-throughs and assessments that include observation of ergonomics practices and conditions upon request.

4.2. Department Directors/ Supervisors

- 4.2.1.** Ensure that workers are aware of ergonomic hazards, such as tasks that require exertion of high force, assumption of awkward posture or extreme joint angle, high repetition, or prolonged static posture.
- 4.2.2.** , ensure supervisors of appropriate groups are notified of the physical requirements of the job task when planning work that includes shared employees.
- 4.2.3.** Notify supervisors of shared groups of any known existing work restrictions and/or limits of physical abilities for employees under your direction.
- 4.2.4.** Ensure that training, equipment, and PPE are made available to workers in accordance with the requirements of applicable policies, standard operating process (SOPs), and/or job hazard analysis (JHA).
- 4.2.5.** Provide for reasonable accommodations as recommended by the ESH Department.
- 4.2.6.** Consider ergonomic hazards of the job task(s) when planning work.

4.3. SDSTA Personnel

- 4.3.1.** Understands ergonomic hazards associated with work area and job tasks.
- 4.3.2.** Practices and enforces good housekeeping techniques.
- 4.3.3.** Requests ergonomic training and/or ergonomic consultation, if desired, from the ESH Department.
- 4.3.4.** Notifies supervisor of existing work restrictions(s).
- 4.3.5.** Notifies supervisor of signs and symptoms of musculoskeletal discomfort.
- 4.3.6.** Utilizes tools, equipment, and accessories as instructed by manufacturers and product label recommendations and training.

4.4. Project Managers

- 4.4.1.** Ensure that contractors are aware of ergonomic hazards, such as tasks that require exertion of high force, assumption of awkward posture or extreme joint angle, high repetition, or prolonged static posture.
- 4.4.2.** Ensure supervisors of appropriate groups are notified of the physical requirements of the job task when planning work that includes shared employees
- 4.4.3.** Notify supervisors of shared groups of any known existing work restrictions and/or limits of physical abilities for contractor employees under your direction.
- 4.4.4.** Consider ergonomic hazards of the job task(s) when planning work.

5.0 Instructions

5.1. HAZARD IDENTIFICATION

Hazard identification is accomplished by:

- (1) Reports (written or verbal) of signs or symptoms of a possible MSD. Any known or suspected WMSD should be reported according to the ESH-3000-S-001 Incident Management Standard, and a medical evaluation is required prior to resuming work.
- (2) Worker requests, which can be communicated to direct supervision, management, the ESH department, or through feedback requests such as surveys.
- (3) New hire workspace assessments. These assessments use the (ESH-4000-F-002 Office Ergonomic Spot Check Form) provide a basic workstation assessment for full-time, permanent new hires who are assigned an individual workspace. Scheduling is to be performed between the new hire supervisor and ESH once the need for an assessment is provided by the Human Resources department.

(4) Hazards discovered during assessments. Examples of these assessments include:

- Facility safety & health inspections
- Formal office ergonomic evaluations (see ESH-4000-F-010 Office Worker-Ergonomic Evaluation)
- Baseline exposure assessments (see ESH-4000-S-004 Industrial Hygiene Standard)
- Work planning documentation (see ESH-2000-S-001 Work Planning and Controls Standard)
- Review of safety lagging indicators.

Common risk factors for an MSD include:

- The method used or required to do the task
- The effort or strength required to do the task
- The location of the parts, equipment or tools
- The position of parts, equipment or tools
- The speed or frequency of the work
- The duration or repetition of the tasks
- The design of the parts, equipment or tools
- Environmental factors, such as light, noise, temperature and air quality
- The habits of the individual
- The physical condition of the individual

Office ergonomic assessments are performed on a quarterly basis in the form of office ergonomic spot checks (ESH-4000-F-002 Office Ergonomic Spot Check Form) as well as upon request. In addition, SDSTA performs specific formal assessments both upon request and as a response to WMSD incidents on a case-by-case basis. Field ergonomic assessments are performed either by SDSTA or a third party expert, with a formal report provided for each assessment.

Employee Information

For those current and new employees in construction, maintenance, manual handling operations, and other jobs with WMSDs, the following information will be provided:

- (1) How to recognize the signs and symptoms of WMSDs, and the importance of early reporting of signs and symptoms
- (2) Hazards that are reasonably likely to be causing or contributing to WMSDs
- (3) How to report signs and symptoms of WMSDs and WMSD hazards, and make recommendations

Information Methods include, but are not limited to, information sheets, videotapes, or classes. Information will be provided in a way that employees are able to understand. Employees will be given an opportunity to ask questions, receive answers, and be provided with information in the languages employees use and at levels they comprehend. For newly hired employees that are assigned an individual workspace, an initial office evaluation will be offered to assess ergonomic hazards and correct any deficiencies.

5.2. CONTROL MEASURES

Successful control measures include the following either separately or in combination. **NOTE:** Where solutions are obvious and the hazards may be eliminated quickly, implementation of controls is permitted without following all the steps of the control process. Interim control measures may be implemented, if practical, until permanent control measures are in place.

The Control Measures involve the use of:

- **Engineering Controls** – Physical changes to the work environment by modifying the workstation, work methods, machines, tools, or equipment.
- **Work Practice Controls** – Focusing on the way work is performed by modifying work procedures and practices.
- **Administrative Controls** – Changes in the way work is assigned or scheduled.

Control Methods

(1) Engineering Controls, where feasible, are the preferred method for controlling WMSD hazards. Engineering controls are the physical changes to jobs that control exposure to WMSD hazards. Engineering controls act on the source of the hazard and control employee exposure to the hazard without relying on the employee to take self-protective action or intervention. Examples of engineering controls for WMSD hazards include changing, modifying or redesigning the following:

- Workstations
- Tools
- Facilities
- Equipment
- Materials
- Processes

(2) Work Practice Controls are controls that reduce the likelihood of exposure to WMSD hazards through alteration of the manner in which a job or physical work activities are performed. Work practice controls also act on the source of the hazard. However, instead of physical changes to the workstation or equipment, the protection work practice controls provided are based upon the behavior of managers, supervisors and employees to follow proper work methods. Work practice controls include procedures for safe and proper work that are understood and followed by managers, supervisors and employees. Examples of work practice controls for WMSD hazards include:

- Safe and proper work techniques and procedures that are understood and followed by managers, supervisors and employees.
- Conditioning period for new or reassigned employees.
- Training in the recognition of ergonomic hazards and work techniques that can reduce exposure or ease task demands and burdens.

(3) Administrative Controls are procedures and methods, typically instituted by the employer, that significantly reduce daily exposure to WMSD hazards by altering the way in which work is performed. Examples of administrative controls for WMSD hazards include:

- Employee rotation
- Job task rotation
- Adjustment of work pace (e.g., slower pace)
- Redesign of work methods
- Alternative tasks
- Rest breaks or microbreaks

(4) Personal Protective Equipment (PPE) may be used as an interim control but will not be used as permanent control where other controls are feasible. PPE used for this purpose will be provided at no cost to employees.

Continuing Control Process

After implementation of feasible permanent controls, the possibility exists that WMSD may continue or re-occur. In these cases, the following steps will be taken:

- (1) Promptly follow-up on employee reports of signs and symptoms of WMSDs to determine whether medical management is needed.
- (2) Track progress and measure success in eliminating or reducing WMSDs further; and
- (3) Continue to look for solutions for the identified hazard(s) and implement further feasible controls when needed.

5.3. TRAINING

Annual training programs covering the topics specified in this standard will be required upon hire and will remain part of the annual refresher training.

5.4. RECORDKEEPING & REPORTING

- Assessment records will be maintained by the ESH department for a minimum of 2 years.
- Training records will be maintained by the ESH training staff.

6.0 Documented Information/Related Documents

- 6.1.** ESH-2000-S-001 Work Planning and Controls Standard
- 6.2.** ESH-3000-S-001 Incident Management Standard
- 6.3.** ESH-4000-S-004 Industrial Hygiene Standard
- 6.4.** ESH-4000-F-002 Office Ergonomic Spot Check Form
- 6.5.** ESH-4000-F-010 Office Worker-Ergonomic Evaluation
- 6.6.** OSHA Ergonomics Overview: <https://www.osha.gov/ergonomics>
- 6.7.** MSHA Mining Topic - Ergonomics and MSD Prevention:
https://archive.cdc.gov/www_cdc_gov/niosh/mining/topics/ErgonomicsandMSDPrevention.html
- 6.8.** NIOSH Ergonomics and Musculoskeletal Disorders:
<https://www.cdc.gov/niosh/ergonomics/index.html>