



SANFORD UNDERGROUND RESEARCH FACILITY

SOUTH DAKOTA SCIENCE AND TECHNOLOGY AUTHORITY

Machine Safeguarding Standard

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Revision History

Rev	Date	Section	Paragraph	Summary of Change	Authorized by
01	12/20/2022	NA	NA	Initial Release	CCR 651
02	5/29/2024	NA	NA	Update Logo	CCR 946

1.0 Purpose

Machine safeguarding procedures are to ensure that equipment or machines are operated safely and to protect all employees in the work area from associated hazards.

South Dakota Science and Technology Authority (SDSTA) references the following to fulfill this standard:

- OSHA 1910.212, 1910.215, Subpart O, Machine Guarding
- OSHA 1926.404(b)(1)(i)

2.0 Scope

This standard applies to all SDSTA personnel, users and contractors/subcontractors.

3.0 Definitions

Machinery – Includes building system equipment, such as HVAC systems, pumps, mechanical systems, science equipment, etc.

Machine Tools – Are non-portable machines used to cut, shape, or otherwise alter materials. Machine tools are not limited to shops and may be found in other areas, such as laboratory and construction spaces.

Pre-Use Inspection – An inspection required before the use of any equipment to ensure it is safe to operate.

Point of Operation – The area on a machine where work is actually performed upon the material being processed.

Qualified Person – A person who, by possession of a recognized degree, certificate or professional standing, or who by extensive knowledge, training and experience has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work or the project.

4.0 Responsibilities

4.1. SDSTA Department Directors

- 4.1.1. Ensures that direct reports are trained to perform the assigned work.
- 4.1.2. Ensures accountability of the requirements of this document with direct reports.

4.2. Environmental, Safety and Health Department

- 4.2.1. Provides technical support and assist departments in implementing an effective machine safeguarding program.
- 4.2.2. Provides training for proper guarding requirements and selection.
- 4.2.3. Reviews and revise the Machine Safeguarding Standard for compliance with applicable regulations.

4.3. Supervisors

- 4.3.1.** Implement the Machine Safeguarding Standard for worksite.
- 4.3.2.** Ensure that machine operators follow all policies and procedures related to the safe operation of all shop machines and take corrective action(s) in the event that the operator violates the established safe operating procedures.
- 4.3.3.** Ensure that only those workers who have been trained to operate the machine tools will be allowed to do so.
- 4.3.4.** Verify Worker/User has appropriate Personal Protective Equipment (PPE) for task.

4.4. Workers/Users

- 4.4.1.** During a pre-use inspection, ensure that all machine safety guards are in place prior to machine operation.
- 4.4.2.** Report any missing or damaged guards to your supervisor immediately and replace before the machine is operated.
- 4.4.3.** Shall wear appropriate PPE while operating or being in close proximity to mechanical equipment with moving parts.
- 4.4.4.** Stops work immediately if machinery becomes damaged.
- 4.4.5.** Practice good housekeeping of work area.

5.0 Instructions

5.1. Machinery with Moving Parts

- 5.1.1.** Whenever there is a possibility that operators may come in contact with moving mechanical parts, the parts shall be safely enclosed in affixed machine guards or placed behind barricades as to prevent operators from gaining access to the area of moving parts, in accordance with all applicable regulations.
- 5.1.2.** The point of operation of machines whose operation exposes an employee to injury, shall be guarded. The guarding device shall be in conformity with any appropriate standards therefore, or, in the absence of applicable specific standards, shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle.
- 5.1.3.** Guards shall be affixed to the machine where possible and secured elsewhere if for any reason attachment to the machine is not possible. The guard shall be such that it does not offer an accident hazard in itself.
- 5.1.4.** Special hand tools for placing and removing material shall be such as to permit easy handling of material without the operator placing a hand in the danger zone. Such tools shall not be in lieu of other guarding required by this section but can only be used to supplement protection provided.
- 5.1.5.** Machines requiring a guard shall not be operated if the guard is missing or defective. The missing or defective guard shall be reported to the supervisor immediately and be replaced before the machine is operated. Only guards specified by the machine's manufacturer shall be used.
- 5.1.6.** Machine guards should only be removed for the purposes of servicing the machine. SDSTA's Lockout-Tagout Standard shall be adhered to during this process. Only qualified person shall maintain or repair machinery and equipment.
- 5.1.7.** Workers should not wear loose clothing, watches, rings, or other jewelry while operating or being in close proximity to mechanical equipment with moving parts. For persons with long hair, it should be bound and kept so as to eliminate the potential of getting it caught in moving parts.

- 5.1.8.** Revolving drums, barrels, and containers shall be guarded by an enclosure which is interlocked with the drive mechanism, so that the barrel, drum, or container cannot revolve unless the guard enclosure is in place.
- 5.1.9.** When the periphery of the blades of a fan is less than seven (7) feet above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than one-half (1/2) inch.
- 5.1.10.** Machines designed for a fixed location shall be securely anchored to prevent walking or moving.
- 5.1.11.** Abrasive wheels shall be used only on machines provided with a safety guard.
- 5.1.12.** Work rests on stationary grinding machines shall be used. Work rests shall be adjusted closely to the wheel with a maximum opening of one-eighth inch. The adjustment shall not be made with the wheel in motion.
- 5.1.13.** Only qualified and authorized personnel or vendors may repair or otherwise service machine tools or equipment.
- 5.1.14.** To keep hands and fingers away from moving or rotating cutters, blades, and other points of operation, workers should use push sticks or other approved methods. The machine must be turned off before using a brush or wooden dowel, not hands, to remove chips from the machining area.
- 5.1.15.** Specialized machines, e.g. science or research, controls shall be addressed during the work planning control process.

5.2. Training

- 5.2.1.** Training is required per the training matrix for affected personnel.

6.0 Documented Information/Related Document

- 6.1.** OSHA 1910.212, 1910.215, Subpart O, Machine Guarding
- 6.2.** OSHA 1926.404(b)(1)(i)