

PROCEDURE 20 - Machine Guarding

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Synopsis

The purpose of this procedure is to provide the requirements and guidelines relative to hazards associated with improper or insufficient machine guarding. The procedure applies to all NWS facilities and work locations where machine guarding is required, and to the employees using the machines.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
 - Inspect machine guards. (20.3.1)
- **Develop/Obtain Documentation/Information required for Site**
 - Develop Machine Guard List. (20.5.3b)
- **Designate Person to Administer Machine Guarding Procedure Requirements**
- **Provide Local Training of Site Personnel**
- **Inventory Material/Equipment (Procure as required)**
 - Guards. (20.5.2b, 20.3.1)
 - Special Tools (e.g., push sticks, blocks, hand-feeding tools). (20.5.2b, 20.3.2)

Annual Review and Recurring Task Requirements:

- **Perform Inspection/Assessments/Testing**
 - Inspect Guards prior to each equipment use and periodically. (20.3.1, 20.5.3b)
- **Review/Update Documentation/Information required for Site**
 - Update Equipment Guard List. (20.5.3b)
- **Provide Refresher Training of Site Personnel (if Applicable)**
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment**
 - Guards. (20.5.2b, 20.3.1)
 - Special Tools (e.g., push sticks, blocks, hand-feeding tools). (20.5.2b, 20.3.2)

Machine Guarding Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	20.4.2				
Are power saws and similar equipment provided with safety guards?	20.3.1				
Are all machines or operations that expose operators or other personnel to rotating parts, pinch points, flying chips, particulates, or sparks adequately guarded?	20.3.1				
Do drill presses and lathes have guards?	20.3.1				
Are fan blades, pulleys, belts protected with a guard when operating within 7' of the floor or working level?	20.3.1				
Are special tools being used for placing and removing materials from points of operation?	20.3.2				
Are equipment and machinery securely placed and anchored to prevent tipping and other movement?	20.3.3				
Is sufficient clearance provided around and between machine to allow safe operations, set up, servicing, material handling, and waste removal?	20.3.5				
Are abrasive grinding wheel tool rests adjusted to within 1/8" of the periphery of the wheel and tongue guards adjusted to 1/4" of the periphery of the wheel?	20.3.5				
Are machines equipped with anti starting devices?	20.3.8				

Requirements	Reference	YES	NO	N/A	Comments
Is the power shut off switch within reach of the operator?	20.3.9				
Is wood working machinery kept clean and properly maintained?	20.3.10				
Has an equipment guard listing been developed for use to perform periodic inspections of guarding?	20.5.3				

20 MACHINE GUARDING

20.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with improper or insufficient machine guarding. This procedure applies to all NWS facilities, work locations and employees where machine guarding is required.

20.2 Definitions

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Guard. A barrier that prevents entry of the operator's hand, fingers or other body parts into the point of operation.

Nip Point. A point between two inrunning rolls where it is possible for a part of the body to be pinched and/or injured.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Pinch Point. Any point other than the point of operation at which it is possible for a part of the body to be caught between moving or stationary parts of a press or auxiliary equipment.

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

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

20.3 Procedure

20.3.1 The employer shall follow the guidelines listed below to protect the operator and other employees in the machine area from hazards that could cause injury or damage:

- a. Points of operation, pinch points, nip points, rotating shafts, couplers, etc., shall have appropriate guarding. The following are some of the machines that usually require point of operation guarding: paper cutters, guillotine cutters, woodworking machinery, grinders, shears, alligator shears, power presses, milling machines, power saws, joiners, portable power tools, forming roller and calenders.

- b. The guard shall be such that it does not facilitate or cause an accident in itself.
 - c. Guards shall be inspected prior to each use.
 - d. Openings between the guard and machine surface shall not be greater than ½ inch.
 - e. Mechanical power-transmission apparatus shall be guarded when parts are located within seven (7) feet of floor or working platform.
 - f. Blades shall be guarded when the periphery of the blades is less than seven (7) feet above the floor or working level.
- 20.3.2 Special tools shall be available for placing and removing material from the point of operation. These tools shall permit easy handling of material without requiring the operator to place a hand in the danger zone. Examples of these tools include push sticks, blocks, hand-feeding tools, etc. Such tools shall not be used in lieu of other guarding required by regulations and/or procedures.
- 20.3.3 All machines designed for a fixed post shall be securely anchored to prevent walking or moving.
- 20.3.4 Cage-type guarding shall not have any opening larger than ½ inch.
- 20.3.5 Abrasive wheel guarding shall cover the spindle end, nut and flange projections.
- a. The safety guard shall be mounted so as to maintain proper alignment with the wheel.
 - b. The strength of the fasteners shall exceed the strength of the guard.
 - c. Work rests shall be adjusted with the gap, between the rest and the wheel, not to exceed **C** inch in order to help prevent the work from jamming.
 - d. The exposure adjustment at the top guard shall not exceed ¼-inch distance from the wheel.
- 20.3.6 All hand and power tools and similar equipment shall be maintained in a safe condition.

<p>NOTE: Employees shall not bring their own tools to government facilities.</p>

- 20.3.7 All safety attachments and guards furnished by the manufacturer shall be used and maintained at all times.
- 20.3.8 Anti-starting devices shall be installed where injury to the operator might result if motors were to restart after power failures.
- 20.3.9 Power controls and operating controls shall be located within easy reach of the operator when in a regular work position.

- 20.3.10 Cleanliness shall be maintained around woodworking machinery, particularly in regard to the effective functioning of guards.
- 20.3.11 Dull, badly set, improperly filed, or improperly tensioned saws shall be immediately removed from service, as they may interfere with the proper functioning of the guard.
- 20.3.12 HVAC Equipment Guards shall be maintained and kept in place according to the manufacturer's specifications.

20.4 Quality Control

20.4.1 Regional or Operating Unit Environmental/Safety Coordinators

- a. Shall perform an assessment of the regional headquarter facilities or operating unit every two years to monitor and promote compliance with the requirements of this procedure.
- b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

20.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

20.4.3 NWS Headquarters (NWSH)

- a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.
- b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.
- c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

20.5 Responsibilities

20.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

20.5.2 Station Manager*

- a. Shall have oversight over the implementation of this procedure and ensure that the requirements of this procedure are followed by individuals at the NWS facility.
- b. Shall ensure that initial and periodic inventory of guards and special tools is accomplished and adequate stock is maintained.

20.5.3 Safety or Environmental/Safety Focal Point*

- a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.
- b. Shall develop and maintain an equipment guard listing for use to perform periodic inspections of guarding and report or remove from service any equipment that is deficient or poses a danger with use.

20.5.4 Employees

- a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.
- b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
<http://www.nws.noaa.gov/directives/050/pd05011a.pdf>

20.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

- 20.6.1 National Electric Code, Latest Edition. (As applicable)
- 20.6.2 U.S. Department of Commerce, Department Administrative Order 209-4, Occupational Safety and Health Order.
- 20.6.3 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.212, General Requirements for all Machines.
- 20.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.213, Woodworking Machinery Requirements.
- 20.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910. 215, Abrasive Wheel Machinery.

20.6.6 U.S. Department of Labor, Occupational Safety and Health Administration,
29 CFR 1926.300, Tools - Hand and Power.

20.7 Attachments

None