

## MACHINE GUARDING/HAZARD ABATEMENT

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### 1.0 SCOPE

This Performance Assessment Guide for Machine Guarding and Hazard Abatement will be used to carry out the oversight responsibility of the U.S. Department of Energy (DOE) Brookhaven Group. This guide was prepared to assist in conducting performance-based assessments of both DOE prime contractors and subcontractors to ensure that their machine guarding/hazard abatement programs identify, disposition, and take corrective action on issues that affect satisfactory facility performance. The goals are to ensure that laboratory employees and the public do not experience injuries and illness as a result of machine guarding and hazard abatement activities and that there is little or no economic loss to the Government.

Machine guarding and hazard abatement assessments will be directed at all prime contractors and subcontractors working at DOE sites. DOE line management must ensure that these contractors comply with DOE Orders and Federal and State regulations. Information developed from this assessment will determine the degree to which this is being done as well as the effectiveness of the laboratory's program.

### 2.0 ATTRIBUTES AND LINES OF INQUIRY

This section provides lines of inquiry to help assess whether the organization has implemented a program that ensures that machine guarding and hazard abatement requirements are incorporated into line activities. This section will be used to evaluate the laboratory's line organization.

2.1 The laboratory has identified the locations within the site where machine guarding concerns exist.

- Does the laboratory's machine guarding program address the general requirements for machines, including guarding, types of guarding, requirements for machine guards, point-of-operation guarding, exposure of blades, and anchoring fixed machinery?
- Does the scope of the laboratory's guidance include machine guarding for—
  - Woodworking machinery?
  - Mills and calendars?
  - Mechanical power presses?

- Abrasive wheel machinery?
- Forging machines?
- Mechanical power-transmission apparatus?
- How are these hazards identified in the field? special warning signs? procedure cautions or warnings? color coding?
- Are markings/labeling based on applicable standards/specifications (i.e., ANSI)?
- Does the laboratory's hazard abatement program address guarding for walking and working surfaces, including—
  - Covers, guardrails, floor loading protection, guarding and protection of floor and wall openings and holes, protection of open-sided floors, platforms and runways, stairways, railings, toeboards, and cover specifications?
- Does the laboratory's machine guarding program address guarding for powered platforms, manlifts, and vehicle-mounted platforms, including—
  - Powered platform installations and affected parts of buildings, powered platform equipment installations, and manlifts?
- Does the laboratory's hazard abatement machine guarding program address guarding for hazardous materials equipment, including—
  - Spray finishing using flammable and combustible materials, and fixed electrostatic apparatus guarding?
- Does the laboratory's machine guarding program address guarding for hand-held equipment, including—
  - Guarding of portable power tools, pneumatic powered tools and hose, portable abrasive wheels, explosive actuated fastening tools, and power lawn mowers?
- Does the organization's machine guarding program address guarding for materials handling and storage, including—
  - Powered industrial trucks, overhead and gantry cranes, stops, bumpers, rail sweeps, guards for hoisting ropes, and guards for moving parts?

**2.2** The laboratory's training programs ensure that individuals working around machines, equipment, and systems know where potential guarding hazards exist and how to work safely around these systems.

- Are the applicable governing regulations and standards addressed or described in the training programs?
- Does the training include the purpose for and intent of machine guarding?
- Does the training program address machine guarding concerns, requirements, and practices to be followed at the site?
- Does the training clearly identify who has responsibility for implementing the machine guarding program?
- Are personnel who are in a position to detect and control performance of work on or around energized or moving parts of machines appropriately trained and instructed so that the required level of performance is maintained?
- Is the training on machine guarding provided on a periodic basis?
- Does a review of the training documentation show that the course content is comprehensive?
- When training has not yet been received, how is certainty provided that the correct and necessary actions will be carried out by the assigned individual?
- Has training been provided to all who are required to work on, with, or around equipment with energized or moving parts?
- When the level of responsibility changes, is additional training required and provided?
- Do interviews with workers show that they understand the importance and application of machine guarding at the site?
- Are there special training or certification requirements for individuals who work on or around equipment with energized or moving parts?

**2.3** The laboratory's program ensures that modifications incorporate the required safety design criteria for guarding equipment and systems with energized or moving parts.

- Are there design processes to ensure that new systems are designed to meet safety criteria with respect to machine guarding?
- Are applicable design codes and standards referenced in the modification program for the facilities and are these documents readily accessible?
- Does the design of the system allow workers to safely operate and maintain the equipment?
- Does the organization have a process for documenting the current system design information and is this information accessible?
- Are existing installations reviewed against the machine guarding design criteria?

**2.4** Machine guards and the associated equipment are inspected and tested to ensure worker safety.

- Is there a periodic inspection program to ensure that Machine Guards maintain their integrity?
- Are machine guards periodically inspected to ensure they are intact and do not obstruct the associated machine's moving parts?
- Is postmaintenance testing performed on machines with guards to verify proper performance prior to returning the item to service?
- Do maintenance procedures and records indicate that the applicable codes, standards, specifications, and requirements are described and satisfied?
- Is there a program for reporting deficiencies or abnormalities with machine guards that contains root cause investigation and corrective actions?

**2.5** During maintenance on equipment and systems with machine guards, adequate controls are in place to protect the workers.

- What procedural documents provide the guidance that is used to implement the process?
- Do the laboratory's procedures ensure that contractors are aware of their responsibilities with respect to the machine guarding program?

- Are there special procedure requirements (i.e., two-man rule, additional reviews or approvals) when working on equipment with machine guards?
- Do procedures (lockout/tagout) specifically require workers to isolate, deenergize, and block or lock the moving and energized parts prior to working on the equipment?
  - Are the procedures in writing and are they specific to the machine or equipment being serviced?
- Are there restrictions on who is allowed to work on equipment or systems with machine guards?
- Do maintenance workers have special equipment or tools needed to safely work on equipment or systems with machine guards?
- Are the maintenance procedures based on manufacturer's recommendations, engineering reviews, industry experience, and/or reliability-centered maintenance programs?

**2.6** The laboratory has a comprehensive and effective program for the use of machine guards to ensure worker safety.

- What procedural documents provide the guidance that is used to implement the process?
- Do the laboratory's procedures ensure that contractors are aware of their responsibilities with respect to the machine guarding program?
- Are there operational controls for maintaining machine guards?
- Are there operational controls over the use of temporary rigs, devices, or set-ups that could potentially be used and present a machine guarding concern?
- Are there procedures for response to a hazard or emergency that involves machine guards?

**2.7** The laboratory periodically reviews the implementation of the machine guarding aspects of the safety program to ensure that the program is comprehensive and effective.

- Is the safety program current with respect to machine guarding requirements?
- Have the program reviews been timely and thorough?

- What types of changes have been made to the program? Why were they made? Have they been effective?
- What is the laboratory's current assessment of the status of their performance in implementing the machine guarding program?

**2.8** The laboratory's program has been effective at preventing accidents from occurring while working on, or with, equipment and systems with energized or moving parts.

- Does a review of the accidents over the past year indicate any trends related to machine guarding concerns?

**2.9** A walkthrough of the facility indicates that the laboratory's program is effective in ensuring that equipment and systems with energized or moving parts are safe to operate.

- Does the walkthrough of the site indicate that the maintenance criteria are being met?
- Do site walkthroughs indicate that good practices are being followed by laboratory employees while working on equipment and systems with energized or moving parts?
- Does a walkthrough of the site indicate that machine guarding hazards have been identified?
- Do the findings of the walkthrough confirm the effectiveness of the self-assessment organization?

### **3.0 STANDARDS AND REQUIREMENTS**

**3.1** Specific DOE Orders and Standards.

- DOE 5480.4, "Environmental Protection, Safety, and Health Protection Standards."
- DOE 5480.19, "Conduct of Operations Requirements for the Conduct of Operations at DOE Facilities."

**3.2** OSHA Title 29 CFR Requirements.

- 29 CFR 1910-Subpart N, "Walking-Working Surfaces."
- 29 CFR 1910-Subpart F, "Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms."

- 29 CFR 1910.107, "Spray Finishing Using Flammable and Combustible Materials."
- 29 CFR 1910.178, "Powered Industrial Trucks."
- 29 CFR 1910-Subpart N, "Materials Handling and Storage."
- 29 CFR 1910-Subpart O, "Machinery and Machine Guarding."
- 29 CFR 1910-Subpart P, "Hand and Portable Powered Tools and Other Hand-Held Equipment."
- 29 CFR 1926.300, "Tools - Hand and Power."
- 29 CFR 1926.303, "Abrasive Wheels and Tools."
- 29 CFR 1926.304, "Woodworking Tools."
- 41 CFR 50.204.5, "Machine Guarding."

#### **4.0 GUIDANCE TO ASSESSOR**

This assessment guide is intended to assist in conducting a performance assessment of machine guarding. It is not to be considered as all-inclusive, inflexible, or limiting reasonable assessment concentration when lines of inquiry responses dictate that an area must be more thoroughly probed.