

**University of Delaware**  
**Environmental Health and Safety Protocol**

**Section:** Construction/Facilities Safety

**Protocol Name:** Machine Guarding and Machine Shop Safety

**Origination Date:** August 2004

**Revisions:** February 2019

**Protocol Number:** C-06

**I. SCOPE OF PROTOCOL**

This protocol addresses general machine guarding and machine shop safety policies and applies to all university departments, faculty, staff and students.

**II. PROTOCOL STATEMENT**

A. Shop use

1. Undergraduate students

a. No undergraduate students shall be permitted to use any shop equipment or tools without documented training.

b. No undergraduate student shall be permitted to work alone in any machine shop.

2. Graduate students, faculty and staff

a. If a person other than an undergraduate student works in a machine shop after normal business hours, a second person must be informed of the intended work and must be within 100 feet of the shop during the work.

B. Tools, Training, and Personal Protective Equipment

1. Hand tools, power tools, and machine shop equipment are to only be used by properly trained and authorized personnel. It is the responsibility of the shop supervisor to ensure all users are trained by a competent person in the safe use of these tools.

2. All power tools and shop equipment must be internally grounded and GFCI protected.

3. The appropriate personnel protective equipment must be worn when using hand and power tools and machine shop equipment. This may include eye protection (side-shield safety glasses, goggles, or full-face shield), gloves, apron, and closed-toed shoes.

4. When using machine shop equipment (e.g. drill press, lathe, band saws, etc.) loose long hair must be secured behind the head. Loose head scarves/head coverings must be removed or secured behind the head. Loose clothing /gowns /robes/blouses must not be worn or else must be confined with a tight-fitting outer garment such as overalls or a lab coat. Long sleeves should be rolled up to the elbow. Dangling accessories, such as neck ties, necklaces, bracelets, etc., must be removed.

5. Procedures and standards for specific tools and guards are detailed in shop procedure manuals and/or online training.

C. Guards

1. One or more methods of machine guarding shall be provided to protect the operator and other people from hazards such as nip rotating parts, chips, crushing, and sparks.
2. Guards must be inspected prior to machine use. Inspection shall note any missing, broken, or worn guard components. Any guarding deficiencies shall be reported immediately to the shop supervisor and the machine shall be locked out of service until the guarding issue has been corrected.
3. Guards shall be affixed to the machine where possible or secured elsewhere if attachment to the machine is not possible. The guard shall be such that it does not introduce a hazard itself.
4. Guards shall not be removed except as noted below:
  - a. If a guard prevents proper and safe operation of a device, it may be removed provided the operator receives prior approval from the shop supervisor, uses personal protective equipment, and reinstalls guarding immediately after machine use.
  - b. If the guard must be removed to clean, adjust, or repair the device or the guard, the device must be locked out of service prior to removing the guard. Precautions must be taken to protect the operator from sharp edges and other hazards while the guard is removed.

#### D. Incident Reporting

1. All incidents and near misses must be reported promptly to the shop supervisor and to the Department of Environmental Health & Safety.
2. Contractors must report all incidents and near misses to the supervising University project manager who shall in turn inform the Department of Environmental Health & Safety of the incident or near miss.

#### E. Inspections & Recordkeeping

1. Each shop must perform regular inspections of all hand and power tools and maintain these records in accordance with record retention policies.
2. Each shop shall maintain records of employee training on each tool in accordance with record retention policies.
3. Copies of training documentation of "Competent Persons" shall be maintained at the Department level and a copy sent to the Department of Environmental Health & Safety.

### III. PROTOCOL STANDARDS AND PROCEDURES

#### A. OSHA

1. OSHA Standard 1910.212 "Machine and Machine Guarding – general requirements"
2. OSHA Standard 1910.213 "Woodworking machinery requirements"
3. OSHA Standard 1910.215 "Abrasive wheel machinery"

#### B. ANSI

1. ANSI B11.0 - 2015 "Safety of Machines; General Requirements and Risk Assessment"
2. ANSI B11.8 - 2012 "Safety Requirements for Manual Milling, Drilling, & Boring Machines with or without Automatic Control"
3. ANSI B11.8 - 2015 "Safety Requirements for Grinding Machines"
4. ANSI B11.10 – 2015 "Safety Requirements for Metal Sawing Machines"

For more information regarding this policy, contact the Department of Environmental Health and Safety 302-831-8475.