

Appendix G – Machine Guarding Product & Service Resources

All machinery in Rowan University academic and research laboratories must be equipped with proper guarding and other safety features as required by OSHA and applicable industry consensus standards. For complete machine safeguarding information, please read and understand the Rowan University Machine Guarding Policy for Research & Academic Operations. Machine safeguarding requirements apply to all machinery regardless of age. Contact Laboratory Safety for machine safeguarding assistance at LabSafety@Rowan.edu or 856-256-5105.

The following subjects are fundamental machine safety requirements, and all machinery in operation in Rowan academic and research operations are required to be in full compliance:

Point of Operation Guarding

The point of operation is the area or areas of a machine where work is performed on a material, such as drilling, cutting, shaping, or forming of stock. All machines that expose Students, Faculty, or Staff to injury must be guarded. One of the most common types of point of operation guards is a transparent chip shield.

Mechanical Power Transmission System Guarding

The mechanical power transmission system includes all components of the machine system which transmit energy to the part of the machine performing the work. These components include, but are not limited to: flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears. Components must be properly guarded to prevent accidental contact. Guarding of these hazards is normally in the form of fixed metal guards that are bolted in place.

Machine Anchoring

Machines intended by the equipment manufacturer to be used in a fixed location must be anchored in place. This applies to **both** benchtop and floor mounted machinery. Information on proper anchoring methods is often found in the owner's manual for a machine. Machinery are generally anchored in place with bolts driven into a secure surface.

Machine Operating Controls

A mechanical or electrical power control shall be provided on each machine to make it possible for the operator to cut off the power from each machine without leaving his/her position at the point of operation.

Lockout/Tagout (LOTO)

Individual machine owners must establish machine specific LOTO programs consisting of energy control procedures, operator training, and periodic inspections to ensure that before any individual performs any servicing or maintenance on a machine or equipment, the machine or equipment is isolated from the energy source and rendered inoperative.

Anti-Restart Controls

On machinery where injury to the operator might result if motors were to restart after a power failure, provisions shall be made to prevent machines from automatically restarting upon restoration of power. Anti-restart protection can be added to many machines through a simple device that plugs into the existing power cord.

Resources for Obtaining Guards and Safety Systems

Table 1 of this guide contains several companies and websites where machine guards, safety devices, and services can be purchased. All machine guards and safety systems must be installed and maintained by a competent person. Students are not permitted to install guards or safety systems on machinery. In certain cases, it will be necessary for machine owners to obtain services through a professional machine safeguarding company. Supplemental resources to learn more about machine safeguarding are listed in **Table 2** of this guide. Always consult with Laboratory Safety before purchasing or installing any guards or safety devices to ensure that they will provide proper protection and can be installed correctly.

Table 1: Machine Safeguarding Supply and Service Companies	
Company Name:	Description:
<u>Advent Design Corporation</u>	Specialty machine safeguarding company capable of designing, fabricating, and installation of custom guarding solutions
<u>ATS Machine Safety Solutions</u>	Machine safety company offering various safeguarding products and custom fabrication.
<u>Ferndale Safety</u>	Offers a wide variety of safeguarding products, safeguarding assessments, and installation services.
<u>Flexbar</u>	Machine equipment supplier offering a wide variety of guarding and machine safety products.
<u>Grainger</u>	Industrial supply company offering select guarding products.
<u>JDS Products Inc.</u>	Manufacturer of machine anti-restart modules.
<u>Machine Guard & Cover Co.</u>	Offers a wide variety of fixed guards for mechanical power transmission systems.
<u>Machine & Process Safety Assessment Group</u>	Specialty machine safeguarding company capable of designing, fabricating, and installation of custom guarding solutions
<u>MSC</u>	Industrial supply company offering select guarding products.
<u>Protech Systems</u>	Machine equipment supplier offering a wide variety of guarding and machine safety products.
<u>Rockford Systems, LLC</u>	Offers turnkey machine safeguarding services, resources, and guarding supplies.
NOTE: The companies and websites in this table are provided as a courtesy. Guarding and services may be obtained from companies not listed in this table.	

Table 2: Machine Guarding Information and Resources

Resource:	Description:
<u>29 CFR 1910.147 The control of hazardous energy (lockout/tagout)</u>	Direct link to the Federal Regulations pertaining to lockout/tagout.
<u>** 29 CFR Part 1910 Subpart O Machinery and Machine Guarding</u>	Direct link to the Federal Regulations pertaining to machine guarding.
<u>ANSI B11 Machine Safety Standards</u>	Website providing an overview of the applicable ANSI industry standards for machine safety.
<u>Machine Safeguarding at the Point of Operation</u>	Produced by Oregon OSHA, this guide provides machine guarding information for a wide variety of equipment. The information provided reflects how OSHA incorporates ANSI and NFPA Standards in machine safety enforcement.
<u>**OSHA Machine Guarding eTool</u>	Basic introductory machine safety information provided by OSHA.
<u>**OSHA Machine Guarding Website</u>	OSHA's main website for machine safety information. This page contains links to the Federal Regulations, as well as to a variety of tools and resources on machine safety.
<u>NIOSH Machine Safety Website</u>	NIOSH's website for machine safety information. Contains a variety of information, publications, and links to resources.
<p>** The information provided by Federal OSHA does not represent all requirements for proper machine safeguarding. Through what is known as the <u>General Duty Clause</u>, OSHA requires that a workplace be “<i>free from recognized hazards that are causing or are likely to cause death or serious physical harm</i>”. As a result, OSHA will cite industry safety standards established by organizations such as ANSI and NFPA. At the very minimum, all machinery/equipment must comply with OSHA regulations. To ensure full regulatory compliance and operator safety, any applicable industry standards must also be utilized.</p>	

Contact Laboratory Safety for machine safeguarding questions or assistance at:

LabSafety@Rowan.edu or 856-256-5105