

2.6 General University Machine Guarding Requirements

Machine guarding is the process of identifying hazards and applying risk reduction methodology to mitigate those hazards. All machines are comprised of 3 basic functional areas. These functional areas include the Point of Operation, the Mechanical Power Transmission system, and the Operating Controls. Guards installed on machinery must never be bypassed, disabled, or removed during operation. All guarding devices must remain in place unless a machine is fully locked out/tagged out for service or repair. Bypassing of guarding devices is only permitted under very specific limited circumstances, and only after a very thoroughly documented review process has occurred.

In New Jersey, workplace safety is overseen and enforced by Public Employees Occupational Safety and Health (PEOSH). All Federal [OSHA Machinery and Machine Guarding](#) regulations are applicable under PEOSH. Under the Public Employees Occupational Safety and Health Act, employers shall:

- a. Provide each of his employees with employment and a place of employment which are free from recognized hazards which may cause serious injury, physical harm, or death to his employees; and
- b. Comply with occupational safety and health standards promulgated under this act.

Per N.J.S.A. 34:6A-30 Adoption of Standards, all applicable occupational health and safety standards, amendments, or changes under the authority of the Occupational Safety and Health Act of 1970 shall be adopted. Per New Jersey Administrative Code N.J.A.C 12:100-4.2, the standards contained in 29 CFR Part 1910, OSHA's General Industry Standards are incorporated by reference. OSHA mandates in [Title 29 CFR 1910.212](#) that one or more methods of machine guarding be implemented in order to protect a machine operator and other workers in the general area from hazards associated with the point of operation, ingoing nip points, rotating parts, flying chips, and sparks. Any element of machine operation that has the potential to cause injury must be guarded. The following requirements apply to all machines:

1. Guards shall be affixed to the machine wherever possible or secured elsewhere if attachment to the machine is not possible. The guard shall not create an accident hazard in itself.
2. Point of operation guarding: The point of operation is the area of the machine where work is being performed. A point of operation on a machine which exposes personnel to a risk for injury shall be guarded.
3. Barrels, containers, and drums: Revolving barrels, containers, and/or drums shall be guarded by an interlocked enclosure which prevents machine operation if the enclosure is not in place.

4. Exposure of blades: When the periphery of fan blades is less than 7 feet above the floor or working level, the blades shall be guarded with openings not larger than ½ inch.
5. Anchoring fixed machinery: Machines designed for a fixed location shall be securely anchored in place to prevent walking or moving.

There are no existing regulatory requirements stating that machines are to be supplied from the manufacturer in full compliance with all applicable regulations and standards. It is common to think that only older machinery is afflicted by a lack of proper guarding, and that newly purchased machines are in full compliance. While some manufacturers do provide some degree of guarding, it is the full responsibility of the purchaser/operator to supply all necessary guards, safeguarding devices, and/or awareness devices. One of the main reasons for variations in manufacturer supplied guarding is because there are often multiple operational uses for a given piece of machinery. One type of guarding may work well for one type of process, but not as well in another. Therefore, the purchaser/operator of the machine is left with the responsibility of determining what type of guard will work best for the work being performed.

New machinery must be evaluated for compliance with safeguarding regulations prior to initial operation. Laboratory Safety should be consulted prior to the purchase of new machinery whenever feasible to assess potential guarding needs ahead of delivery. Early Laboratory Safety involvement in the machine purchasing process will help to ensure that proper safety considerations are made in advance, and that potential operational delays are avoided. The machine's manufacturer should be consulted to see whether they offer or recommend a guarding solution for a particular piece of machinery. Machine manufacturer designed guards often provide effective protection while retaining machine functionality more so than would be possible with generic machine guards. Machine guards may also be purchased through industrial supply companies or fabricated by safeguarding design firms. If determined necessary, Laboratory Safety will assist the machine owner in identifying a machine guarding firm they can hire to create the necessary guarding for the application. Machine owners are strongly encouraged to contact Laboratory Safety for assistance prior to purchasing or installing any guarding devices.

OSHA machine guarding regulations are published in [Title 29 CFR Part 1910 Occupational Safety and Health Standards](#). Subpart A provides basic information on Part 1910 as well as the incorporation of Consensus Standards and Best Practices into the Federal Regulations. Subpart O contains specific regulatory information pertaining to machine guarding. The machine guarding regulations established by OSHA are the bare minimum requirements for compliance. OSHA incorporates by reference or through the ["General Duty Clause"](#) many industry Consensus Standards. Consensus Standards frequently cited by OSHA include those created by ANSI, NFPA, and ISO. Consensus Standards go beyond the requirements set forth by OSHA and include many machine specific safety requirements that have been adopted by industry. Because they are often more stringent and provide more protection for machine operators, OSHA will frequently utilize Consensus Standards in writing citations during facility inspections and incident investigations.