

On Guard!

A Closer Look at Safeguarding Your Manufacturing Equipment

An experience with OSHA reminds of the importance of machine guarding.

at a glance

- ❑ OSHA machine guarding standards are meant to prevent the 18,000 injuries U.S. workers suffer while operating machinery.
- ❑ Six machine guarding requirements are defined by OSHA.
- ❑ Scott Arquilla's story demonstrates that OSHA may make an exception if it is determined that a certain guard presents a hazard.

Earlier in the year, Scott Arquilla of Best Homes, Inc. called in for advice/with a question about a recent OSHA citation involving a non-existent machine guard on a "radial arm" saw. You'll see why we've put this term in quotes by reading below.

A Real Life OSHA Experience – By Scott Arquilla

In late March 2007, a federal OSHA Compliance Officer called on Best Homes, Inc. because of the higher than industry average Days Away/Restricted or Transfer (DART) and Days Away from Work Injury and Illness (DAFWII) rates our company had experienced in the 2003 through 2005 calendar years. This inspection was promulgated under (OSHA's) Site Specific Targeting 2006 (SST-06) Plan for worksites with a DART rate at or above 12.0 or a DAFWII rate at or above 9.0.

Because our rates were in excess of rates set by OSHA, the Compliance Officer reviewed a number of our existing policies, training records and our OSHA 300 Log for 2006. While the 2005 and 2006 OSHA 300 logs noted lower and substantially lower, respectively, DART and DAFWII rates than noted above (only one recordable accident with no lost work days in 2006), the Compliance Officer nevertheless proceeded with an inspection of our plant because she could not use the 2006 results and could only average the results for calendar years 2003 through 2005. No trends were considered. Even after hearing how impressed she was with our policies, procedures, training, the opinions of our employees on our the safety environment, and our vastly improved performance in 2006, she was very concerned with the lack of lower blade protection on our two pull saws under OSHA 29 CFR 1910.213 (h)(1) and a formal citation was issued a few weeks after her visit (see language below).

1910.213(h)(1): The upper hood shall completely enclose the upper portion of the blade down to a point that will include the end of the saw arbor. The upper hood shall be constructed in such a manner and of such material that it will protect the operator from flying splinters, broken saw teeth, etc., and will deflect sawdust away from the operator. The sides of the lower exposed portion of the blade shall be guarded to the full diameter of the blade by a device that will automatically adjust itself to the thickness of the stock and remain in contact with stock being cut to give maximum protection possible for the operation being performed.

by SBC Staff



Any component manufacturer who owns what we normally call a "radial arm" saw realizes these are not radial arm saws in the conventional sense. The angles that these saws typically cut are far in excess of the 45 degrees that most commercial and civilian saws are limited to.

While the fine was minimal, the real problem was that payment of the fine would require us to mitigate the hazard, which would be impossible to do. Our safety advisor sprang into action on our behalf. They were instrumental in convincing our saw manufacturer to attend our informal hearing on May 8. At that hearing, it was explained that these saws should be classified as "pull" saws, are typically only used in truss manufacturing operations where extreme angles are required to cut truss parts, that none of the available saws in the market have lower blade guarding as required by the standard, and that adding a lower blade guard would create a "greater hazard" to the operator. The saw rep further reviewed their numerous attempts to design and make available compliant guards, all of which became damaged and created that "greater hazard." He even presented engineering, which noted that the forces involved when a saw operates at an extreme angle would push a blade guard into the moving blade.

Since we purchased the saws in 2004, our saw manufacturer has designed and equipped their saws with a blade guard when the saw is retracted as well as a laser to allow the operator to see where the blade will travel in order to prevent injuries. Incidentally, none of our injuries going back 30 plus years occurred using these saws.

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On Guard!

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In the end, logic prevailed and the local OSHA office agreed to vacate our citation.

In July 1987, another pull saw manufacturer in the industry received an opinion from OSHA stating that their horizontal barrier guard with vertical side shields above the barrier guard met the intent of the regulation and any citation would be a de minimis violation, meaning there would be no fine or need to mitigate. Our saw manufacturer intends to seek a similar interpretation for their saw with help from our safety advisory.

Learn

In this case, Scott was able to argue (and for good reason) against the use of machine guarding for the equipment noted. However, one lesson we can take away from his experience is that something as simple (and necessary) as proper machine guarding of complex component saws and finishing equipment to smaller handheld tools, such as pneumatic nail guns, can help prevent accidents and injuries. This is the reason that OSHA imposes the standards that it does.

OSHA reports that U.S. workers who operate and/or maintain machinery suffer approximately 18,000 amputations, lacerations, crushing injuries, abrasions, and over 800 deaths per year. The good news is that appropriate safeguarding and proper training can reduce or even eliminate the possibility of injuries.

Identify

The OSHA Standard states that the purpose of machine guarding is to "protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying

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chips and sparks." [Source: Occupational Safety and Health Standards, Subpart: O, Machinery and Machine Guarding, Number 1910.212(a)(1).] The standard further defines examples of guarding methods which include barrier-style guards, two-hand operating devices and electronic safety devices such as light curtains and laser eyes. As you consider the language of the OSHA standard think about the three basic kinds of hazards every machine will have:

1. **Point of Operation:** where the "work" happens, such as cutting or pressing.
2. **Power Transmission Device:** the mechanical system that brings power to the machine including, but not limited to, belts, chains and gears.
3. **Operation Controls:** all other parts of the machine that move while the machine is turned on and active.

Protect

OSHA outlines the following six critical requirements machine guarding must meet. One means to accomplish these requirements is by implementing a detailed maintenance program (see preventative maintenance program article on page 28).

- **Must prevent contact:** keep hands, arms, and other body parts from coming in contact with dangerous moving parts.
- **Secure:** Good safeguards should not be easily removed or manipulated. All guards and safety devices should be attached to the machine where possible and made of solid materials. (If a guard can't be attached to the machine, it can be attached elsewhere.)
- **Protect from falling objects:** A helpful guard should ensure that nothing can fall into the active machine.
- **Create no new hazards:** In place, a safeguard should not create additional hazards. In Scott's case, a lower blade

Using a self-inspection checklist is one of the best methods for reviewing your machine guarding status. Since each piece of equipment is unique, completing a walk-through of your facility and inspecting each machine will provide you with a list of safeguarding items for your maintenance department. As you examine each machine, missing guards or guards damaged in a way that compromise their ability to protect must render that piece of equipment temporarily out of service. Download a sample self-inspection checklist from **Support Docs** at www.sbcmag.info.

guard on his pull saws could easily be damaged while cutting at steep angles and jam the saw, cause a severe laceration or amputation.

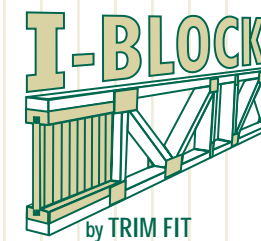
- **Create no interference:** A guard that obstructs the operator from performing quickly or comfortable is likely to be removed. Good safeguarding should improve efficiency.
- **Allow for safe lubrication:** Part of guard maintenance includes lubricating the moving parts. Suitable guards eliminate the need for maintenance workers to put any body parts within the hazardous areas.

Train

Once you have fully understood the OSHA standards that apply and met the requirements imposed by OSHA and the appropriate safeguards are in place, the next step will be to establish an employee training program to ensure a thorough understanding of all of the risks associated with working on or around hazardous equipment. A comprehensive training program will incorporate hands-on, machine specific instruction that includes:

- A detailed description of each hazard the machine presents. (Each hazard should be physically identified.)
- Pointing out each safeguard on the machine, how it works and what hazard(s) it protects the employee from encountering.
- Explaining the importance of using and maintaining machine guards including when and where they are allowed to be removed. (Usually for maintenance purposes only.)

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- Information on who to contact should a guard need to be repaired or replaced.

Also keep in mind that best practices require that training be given any time a new operator or maintenance person is hired, an employee is transferred to a new operator position, when new guarding is added or pre-existing guarding is altered.

As is repeatedly the case with safety issues, the goal of machine guarding is to protect people from getting injured on the job. That can feel like a daunting task in a component manufacturing facility at times where either the equipment is highly specialized for our tasks or we're using common equipment in ways that are very different from other industries, as Scott's story illustrates. However, when in place and properly maintained, these "engineering controls," or machine guards, are effective and reliable ways to ensure worker safety. **SBC**

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