

UMS Safety Support Updates, News and Other Topics of Interest

April 2017

Topics in this newsletter

- This Month's Safety Reminder – Machine Shop Audits
- Is it Spring Yet?
- Spot the Safety Violation

This Month's Safety Reminder – Machine Shop Audits

Every year, about this time, we remind you to conduct your machine shop audits using either your campus program checklist, or one developed by SEM. But this month, we'd also like to specifically discuss the replacement of machine guards.

Did you know that when replacing machine guarding observation windows, they must be replaced with either the original manufacturer's part or a material having at least the same impact-resistance characteristics as the original part? Also various materials having the same generic/ chemical name (e.g., members of the polycarbonate family) may possess different and less effective impact-resistance characteristics than the original materials used by the manufacturer.

The OSHA Hazard Information Bulletin *Potential Hazards Associated with the Use of Replacement Materials for Machine Guarding* and the *Machine Shop Checklist* developed by SEM are attached to this newsletter.

As always, if you have any questions regarding your campus safety programs, or if we can assist you, please don't hesitate to contact the UMaine Safety and Environmental Management at 581-4055 or email us at sem@maine.edu

Is it Spring Yet?



Well, according to the calendar, yes it is. The astronomical spring began on 20 March 2017. But, depending on where in Maine you hang your hat, the snow still hangs around, and the temperatures are still cool. And snowstorms in April? Well, it happens.

Springtime in Maine brings a few challenges with the unpredictable weather. Days begin to warm up, while the nights remain cooler. Rainy weather and thawing of snow not only can cause flooding, but also as the nighttime temperatures drop – can cause freezing on the roads. Listed below are some springtime driving tips:

- ❖ As the warmer weather appears, watch out for people out walking on the side of the road, or bicyclists taking advantage of the good weather.
- ❖ Always assume that there will be black ice (clear ice, ice glazing) on the road surface, especially as the temperature is near freezing. Black ice can form especially after a drizzle or refreezing of the melted snow and although it can be on the road any time during the day, the time when it's usually present is when it's the coldest – later at night and first thing in the morning.
- ❖ Even if the roads are not icy, they might have pooling water which can cause you to lose traction and hydroplane.
- ❖ Watch for an increase in construction on the roads which you might find an unexpected road construction crew doing some much needed maintenance and pot-hole repairs.
- ❖ And speaking of potholes... Leave extra room between you and the driver in front so that you can see potholes up ahead. Try to avoid them, but if you can't, slow down, hold the steering wheel securely and release the break while traveling through them to lessen the impact on your tires and suspension.



Spot the Safety Violation



Hazard Information Bulletin



U.S. Department of Labor
Occupational Safety and Health Administration

HIB 00-06-23

Potential Hazards Associated with the Use of Replacement Materials for Machine Guarding

Purpose

The purpose of this Hazard Information Bulletin is:

1. To inform employers/employees that when replacing machine guarding observation windows, they must be replaced with either the original manufacturer's part or a material having at least the same impact-resistance characteristics as the original part; and
2. To advise that various materials having the same generic/chemical name (e.g., members of the polycarbonate family) may possess different and less effective impact-resistance characteristics than the original materials used by the manufacturer.

Background

The Denver Regional Office brought to the attention of the Directorate of Technical Support a fatality caused by the installation of transparent replacement guarding material having a lower impact resistance than the manufacturer's original guard for the machine.

Description of Hazard

The fatality involved the use of the thermoplastic polymer methyl acrylate, generically known as "plexiglass," as the machine guarding window for a lathe. The fatality occurred when the bell casting on a lathe became loose while the lathe was turning and subsequently struck an employee in the head and neck as he was looking through the window. The bell casting was propelled through two, 1/2 -inch-thick plexiglass material windows. The plexiglass material windows were installed as a replacement for the manufacturer's original composite window on the

This HIB is not a new standard or regulation and it creates no new legal obligations. It is advisory in nature, informational in content, and is intended to assist employers in providing a safe and healthful workplace.

For a fuller description of the nature and effect of Hazard Information Bulletins, see the Important Information box at the end of this bulletin.

machine's door frame.

The manufacturer's original observation window was made of a 1/4-inch-thick laminated glass plate with a 1/2-inch-thick polycarbonate window, separated by an approximately 1/4-inch air space. The original window was replaced with plexiglass material that had a lower impact resistance than the polycarbonate shield originally supplied by the machine manufacturer.

Technical Information

Polycarbonates represent a family of various polymers, each of which possess different impact resistance characteristics at the same thickness and surface area. Various polycarbonates include Macrolux, Lexan, Relex, Replex, Dynaglass, Exolite, Verolite, Cyrolon, and Makrolon.¹ These materials have different impact-resistance characteristics for different thicknesses and /or surface areas. It is important to note that increasing the thickness beyond a certain level does not always improve or increase the

¹ Note: The mention of trademark and/or brand names does not constitute a product endorsement by OSHA.

impact resistance characteristics.

Conclusions

Replacement machine guard windows must meet or exceed the manufacturer's original design specifications.

Recommendations

When replacing original equipment parts, it is recommended that employers review the specifications and ensure that the specifications of replacement materials meet or exceed the original design specifications.

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Important Information on the Nature and Effect of Hazard Information Bulletins

The Directorate of Technical Support issues Hazard Information Bulletins (HIBs) in accordance with OSHA Instruction CPL 2.65 to provide relevant information regarding unrecognized or misunderstood health and safety hazards, as well as potential hazards associated with particular materials, devices, techniques, and engineering controls. HIBs are initiated based on information provided by the field staff, studies, reports, and concerns expressed by safety and health professionals, employers, employees and their representatives, and the public. HIBs are developed based on a thorough evaluation of available facts and in coordination with appropriate parties.

The *Occupational Safety and Health Act* requires employers to comply with hazard-specific safety and health standards. In addition, employers must provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm under Section 5(a)(1), the General Duty Clause of the Act. Employers can be cited for violating the General Duty Clause if there is a recognized hazard and they do not take steps to prevent or abate the hazard. However, failure to implement HIB recommendations is not, in itself, a violation of the General Duty Clause. Citations can only be based on standards, regulations, and the General Duty Clause.

Further information about this Bulletin may be obtained by contacting OSHA's Directorate of Technical Support at 202-693-2300.

Machine Shop Safety Checklist

Area Checked by:	Date:
Department:	Building/Room:

SEM has developed this checklist to assist UMaine employees with conducting safety self-audits.

Yes	No	NA	
			Training and Documentation
<input type="checkbox"/>	<input type="checkbox"/>		Is the Responsibility Sign posted at the entrance to the area?
<input type="checkbox"/>	<input type="checkbox"/>		Is the Emergency Action Plan (EAP) current and available?
<input type="checkbox"/>	<input type="checkbox"/>		Have employees completed basic safety training (www2.umaine.edu/SEM)?
<input type="checkbox"/>	<input type="checkbox"/>		Has the supervisor (or designee) conducted Department Annual Safety Training?
<input type="checkbox"/>	<input type="checkbox"/>		Are training requirements documented with records maintained within the work area?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are written standard operating procedures current and available for any equipment or operation that include associated hazards & required protective measures?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If fire extinguisher use is authorized, has training been completed within last three years?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are Satellite Accumulation Area inspection records available for the previous year?
Yes	No	NA	Housekeeping and Egress
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the area free from accumulation of rubbish or trash?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has an area been provided & designated for eating or drinking, away from hazardous materials?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are shelves and overhead storage areas loaded safely, within their load capacity?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have all lofts or mezzanines been load rated and labeled by a structural engineer?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are aisles, pathways, and secondary corridors at least 28 inches wide?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all exits clearly labeled as exits? (Contact Facilities Management if signage is needed).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are eyewashes, emergency showers, fire extinguishers, & electrical panels accessible?
Yes	No	NA	Hazardous Materials
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is eating/drinking prohibited in areas where hazardous chemicals are used or stored?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is there a current inventory of hazardous chemicals accessible within the work area?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are current MSDS's available to all workers in the shop?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all containers labeled to identify their contents and any applicable hazard warnings?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are chemicals stored according to compatibility of materials?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are flammable liquids stored in flammable storage cabinets?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are oil/solvent-contaminated rags stored in fire resistant receptacles?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are hazardous wastes stored in SAA's away from drains or in secondary containment?
Yes	No	NA	Personal Protective Equipment (PPE)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have PPE hazard assessments been conducted for job tasks that require PPE?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is PPE available for all employees that work in the shop?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is reusable PPE maintained and stored in clean and serviceable condition?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is Steel-toed foot wear required while working in the shop?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do workers use all necessary personal protective equipment, while performing tasks?
Yes	No	NA	Respiratory Protection
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are respirator users up-to-date with required fit testing, training, & medical approvals?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a cartridge change-out schedule been developed for the employees using respirators?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all respirators properly stored (away from sunlight, moisture, dust, & contaminants)?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have the respirable contaminant(s) been identified and exposure monitoring been conducted?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you attempted to control the respirable contaminants through engineering controls?
Yes	No	NA	Hearing Conservation
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have noise evaluations been performed for all loud tasks and/or equipment?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do employees exposed to loud noises receive annual audiograms?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have employees exposed to loud noises received annual hearing conservation training?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have the names of all employees exposed to loud noises been submitted to SEM?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are hearing protection devices properly rated for the current noise levels and are they available?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you attempted to control all loud noises through engineering controls?

Yes	No	NA	
			Welding Equipment
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is welding equipment used in accordance with manufacturer recommendations?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are welding screens used to protect by-standers from flying sparks & UV radiation?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are combustibles stored at least 35 feet from welding, cutting, and brazing activities?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a "Fire Watch" utilized when combustibles cannot be protected from heat/sparks?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are "Hot-work Permits" developed & maintained during specific welding operations?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the proper welding shield available for the type of welding you are performing?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are compressed gas lines and fittings inspected for damage or defect on a regular basis?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all compressed gas cylinders properly labeled, secured, and stored?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	When not in use, are oxygen and acetylene cylinders stored at least 20 feet apart?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is local ventilation provided when welding indoors?
			Electrical
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do electrical boxes (breakers boxes) have at least 3' of clearance?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all flexible cords protected from damage (severe bends, pinching, & intact prongs)?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are extension cords only used temporarily, and not in place of permanent wiring?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the ground plug still attached to the three-prong electrical cord?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all electrical outlets near a water source GFCI protected?
			Shop Equipment and Machinery
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all machine guards intact and in place?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all open belts, gears, chains, rotating shafts, and pulleys adequately guarded?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is machinery properly guarded (e.g., in-going nip points, rotating parts, flying particles, sparks)?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is all machinery designed for a fixed location properly secured to prevent "walking"?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do table saws have hoods, a spreaders, and non-kickback fingers or "dogs"?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does the drill press have a chip guard?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a ring test performed on the abrasive wheel prior to mounting it to the bench grinder?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the bench grinder's spindle speed \geq the maximum operating speed for the abrasive wheel?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the work rest adjusted to no greater than 1/8" & the adjustable tongue is adjusted to no greater than 1/4" from the abrasive wheel on the bench grinder?
			Cranes and Hoists
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has the crane system & support structure been rated & labeled by a structural engineer?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are frequent and periodic inspections of overhead cranes performed and documented?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are crane slings inspected, and are the findings of such inspections recorded?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all crane or hoist operators properly trained?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have overhead cranes been placed in a preventative maintenance programs?
			Lockout Tagout (LOTO)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is equipment/machinery maintenance in compliance with the UMaine LOTO program?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do employees utilize written LOTO procedures for pieces of equipment or machinery?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have all employees who perform LOTO been trained?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do employees utilize LOTO devices that meet all LOTO program requirements?
			Powered Industrial Trucks (Forklifts)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are all industrial truck operators trained with training certifications on file?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have industrial trucks been placed in a preventative maintenance program?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do you conduct a daily pre-use inspection of the industrial truck prior to use?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does your industrial truck have a data plate that is legible?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do you provide an appropriate location for changing and charging batteries, including fire protection, ventilation, neutralizing electrolyte, and emergency eyewash or shower?
			Other
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have workers been trained to visually inspect a ladder just prior to using it?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are damaged ladders labeled "Do Not Use" and removed from service when found?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are compressed air spray nozzles equipped with safety tips?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is a properly maintained emergency eyewash facility available in the work area?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is the eyewash station inspected and flushed on a weekly basis?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do sprinkler heads have at least 18" of unobstructed clearance?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are spill kits adequate for the work being performed?