



MIOSHA Fact Sheet

Consultation Education & Training Division

Fabricated Metal Product Manufacturing

Fabricated metal product manufacturing (NAICS 332) is considered a high hazard industry based on the annual number of recordable injuries and illnesses occurring in this industry. The processes (i.e. shearing, bending, welding) used to prepare and assemble metal parts to customer specifications from metal stock create numerous hazards. Due to the nature of metal fabrication operations, there may be employee exposure to machinery, power tools, electricity, chemicals, noise, and air contaminants. The need for an effective safety and health management system is essential in metal fabrication operations.

In 2012, over 1200 employees in Michigan working in this industry experienced an injury and/or illness that involved days away from work. Half (600) of these injuries/illnesses were serious enough to involve 10-31+ days away from work. Most of these injuries and illnesses were related to either musculoskeletal disorders, contact with an object or equipment, and lacerations. The majority of the employees injured had over five years of service with the employer. In an attempt to raise the awareness of those who work in these industries, MIOSHA has compiled this fact sheet which outlines training and education services available, safety and health program related topics, and industry injury and illness statistics.

#	Top 10 Most Frequently Cited Part and Rule Numbers (NAICS 332 - Fabricated Metal Product Mfg.) FY 11, 12, 13	# of Citations / Part #
1	Part 39, Design Safety Standards for Electrical Systems. Rule 1910.305(g)(1)(iv) - Prohibit use of flexible cords and cables as a substitute for the fixed wiring of a structure; where run through holes in walls, ceilings, or floors; where run through doorways, windows, or similar openings; where attached to building surfaces; or where concealed behind building walls, ceilings, or floors.	392
2	Part 1, General Provisions. Rule 4081.0036(1) - Assure that air pressure at a discharge end of a portable blow gun or hose shall be less than 30 psig when dead-ended.	331
3	Part 85, The Control of Hazardous Energy Sources (Lockout/Tagout). Rule 1910.147(c)(4)(i) - Develop, document, and utilize procedures for the control of potentially hazardous energy when employees are engaged in service or maintenance of machines or equipment where unexpected energization, start-up or release of stored energy could occur and cause injury.	213
4	Part 26, Metalworking Machinery. Rule 4081.2635(1)(b) - A vertical metal band saw shall be guarded as follows: The portion of the blade between the table and the front side of the upper wheel shall have an adjustable blade guard that is maintained with 1/4 inch of the work to be cut or the holder of the material being cut.	207
5	Part 33, Personal Protective Equipment. Rule 4081.3312(1) - An employer shall ensure that each affected employee uses appropriate eye or face protection, when exposed to eye or face hazards.	195
6	Part 92, Hazard Communication. Rule 1910.1200(e)(1) - Employers shall develop, implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, safety data sheets, and employee information and training will be met.	193
7	Part 24, Mechanical Power Presses. Rule 4081.2412(1) - An employer shall establish and follow an inspection program for each press to ensure that its parts, auxiliary equipment, and safeguards are in a safe operating condition and are properly adjusted. An inspection shall be conducted at least semiannually. The employer shall maintain a certification record of inspections.	181
8	Part 21, Powered Industrial Trucks. Rule 4081.2154(1) - An employer shall provide the employee with a permit to operate a powered industrial truck only after meeting the requirements prescribed in R 408.12151, R 408.12152, and R 408.12153.	177
9	Part 7, Guards for Power Transmission. Rule 4081.0727(1) - A belt and pulley which is 7 feet or less above the floor or platform and which is exposed to contact shall be guarded pursuant to R 408.10751 to R 408.10754.	175
10	Part 12, Welding and Cutting. Rule 4081.1223(1) - A chain, bracket, or other restraining device shall be used at all times to prevent cylinders from falling.	161

Summary of 2011 - 2013 Fatalities

- Two employees were moving steel coils. One was operating an overhead crane and the other was operating the coil car. When the employee set the coils down on the coil car, one was unstable and fell off the coil car, landing on the employee.
- An employee was cleaning debris and adjusting a conveyor belt, while the conveyor was still running. The employee became caught in the running belt and idler roller of the unguarded conveyor.
- An employee was working inside a robot work cell, with interlocked gates closed, when he was struck from behind by a transfer robot, crushing his chest and neck. Employee did not lock out the robot cell. His lock was attached to his belt loop.
- An employee was pulled into a lathe when clothing became entangled in the machinery.
- While cleaning a conveyor, an employee climbed on top of it and then became entangled in the conveyor.
- A maintenance worker was performing an adjustment on a belt wrapper arm which was located at the exit end of the coating line. He contacted the line operator by radio and entered through an interlocked gate. The line operator was distracted by another operation and didn't see the maintenance worker. Believing the adjustment had been completed, the line operator lowered the belt wrapper, trapping the worker between it and the machine frame. No radio confirmation was made that the worker had cleared the area and the interlocked gate did not de-energize the control panel button that controlled the belt wrapper.
- An employee was sitting on powered feed rolls exiting a tank through a manhole. The tank was still turning, which resulted in the employee being crushed between the tank and frame of the feed rolls.
- An employee fell from a height of seven feet to the surface below and struck his head.
- An employee was removing parts from a pit, during the automatic operation of a transfer cart on a conveyor line. The employee was caught between the horizontal beam and lower portion of the cart and received crushing injuries from a portion of the cart.

Other Important Facts to Consider: Noise and Musculoskeletal Disorders

Exposure to high noise levels can result in hearing loss. Noise monitoring must be conducted in order to determine if employers are required to institute a hearing conservation program (HCP); if employee noise exposure equals or exceeds the action level (AL) of 85 dBA, as averaged over an 8-hour work-shift. Almost half of the lost time injuries for NAICS 332 and 333 in 2012 were related to musculoskeletal disorders. Although MIOSHA does not have a standard to specifically address these types of injuries, in some instances the General Duty Clause could apply.

Resources

MIOSHA's Consultation Education and Training (CET) Division offers statewide safety and health assistance to employers and employees. To learn more about free services available from the CET Division, or to request a visit, call the Lansing office at 517-284-7720 or 800-866-4674, or submit your request electronically at www.michigan.gov/cetrca.

To download free materials from the MIOSHA website:

- Go to www.michigan.gov/mioshapublications.

Through the OSHA and Precision Metalforming Association (PMA) Alliance, PMA developed the following checklists to help employers identify potential workplace hazards:

- Ergonomics Checklist (<http://www.pma.org/osha/docs/ergo-checklist.pdf>): (October 2007)
- Lockout/Tagout Checklist (http://www.pma.org/public/osha_alliance/pdf/lockout-checklist.pdf): (December 2011)
- Machine Guarding Checklist (http://www.pma.org/public/osha_alliance/pdf/machine-guarding-checklist.pdf): (March 2012)
- Mechanical Power Presses (<http://www.pma.org/osha/docs/mechanical-power-press-checklist.pdf>): (November 2007)



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Auxiliary aids, services and other reasonable accommodations are available upon request to individuals with disabilities.

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(MIOSHA/CET-0190 • Revised 09/19/14)

