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Electricity: Fact vs. fiction

In 2011, exposure to electricity resulted in 174 worker fatalities and more than 2,000 cases involving days away from work, according to the 2014 edition of the National Safety Council's "Injury Facts." Understanding electrical safety on the job is critical. But can you separate electrical safety myths from facts?

NSC states that misunderstandings about electricity can lead to injuries and deaths, and that supervisors must ensure their employees know how to work safely with and around electricity. The following are six common misconceptions about electricity, according to NSC:

MYTH: Electricity will always take the path of least resistance.

TRUTH: An electrical current will take any conductive path, regardless of its resistance level.

MYTH: If an electrical tool falls into water, it will short out and trip the circuit breaker.

TRUTH: This is not necessarily true. If the body of water the tool fell into is non-conductive, then it is not part of a loop to the ground. However, a worker should never reach into water to retrieve an item. Because the water acts

as a conducting path for the electricity in the tool, a worker may receive a serious or even fatal shock if he or she puts one hand in the water while another part of the body is touching a grounded object.

MYTH: Electricity generally goes to ground.

TRUTH: When electricity goes to ground, it does not just disappear. Instead, ground acts as an "electrical loop" that an electrical current uses to return to the grounded power source.

MYTH: Alternating current reverse polarity is not dangerous.

TRUTH: Electrical tools, attachment plugs and receptacles must be properly wired so that the designated polarity cannot be reversed, according to the National Electrical Code. Often, tools have switches in one of the two conductors for the tool. NEC states that the switch should be on the "hot" conductor supplying the energy.

MYTH: The voltage level has to be high to cause a fatality.

TRUTH: Although voltage plays a role

in determining how strong of a current flows, current is what kills. An AC voltage of only 60 volts can kill a worker.

MYTH: Double-insulated tools will always protect against electricity.



TRUTH: Always read the manufacturer's instructions, and never place all of your trust in any electrical safety device.

To help reduce incidents of electric shock among employees, ensure your workplace has an effective electrical safety policy in place and that workers are properly trained on electrical hazards.

Operate sanding equipment safely

Sanding machines can be dangerous if not properly handled, notes the Canadian Centre for Occupational Health and Safety. To help stay safe, CCOHS advises workers to read the owner's manual of the sander and thoroughly understand how to use it.

The agency recommends the following tips for workers operating a sander:

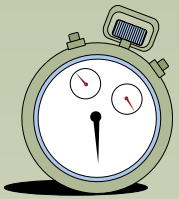
- Wear proper personal protective equipment, including safety glasses, goggles or a faceshield.
- Use hearing protection appropriate for the noise level you will be exposed to.
- Wear proper footwear.
- Operate sanders with the local exhaust ventilation on.
- Wear respiratory protection when sanding and during cleanup.
- Keep hands and fingers clear of the sander's abrasive surface.
- Ensure abrasive belts are the same width as the pulley drum used.
- Use a small piece of stock in a holding device or jig to help prevent hand or finger injuries.
- Check the sander's abrasive belts before operating the machine. Replace the belts if they are excessively worn.

- Drum, disk or belt sanding machines should be enclosed with an exhaust dust hood that covers the entire machine (except for the portion designed for the work feed).

When working with a sander, do not:

- Sand small or handheld objects.
- Wear loose clothing or jewelry. Make sure to tie back hair or wear hair protection.
- Operate a sander unless it is properly guarded.
- Operate a sander unless its work rest is correctly placed.

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Five Minute Safety Meeting

Stranded in winter weather?
Know how to stay safe in your vehicle

Whether you drive as part of your job or simply commute to the office, winter weather can present headaches on the roadways. As winter approaches, do you know what to do if you find yourself stranded in your vehicle during bad weather? The following tips from the Massachusetts Department of Transportation – Highway Division may help save your life:

- **Call for help:** If you have a cell phone, call 911. Be prepared to provide the operator with your location, and follow any instructions given. Tie something bright to your car's antenna or door handle to aid emergency responders in their search for you.
- **Stay put:** Do not wander into the storm to search for help. You may lose your way, succumb to exhaustion and collapse. Stay in your vehicle and preserve your energy.
- **Avoid exerting yourself:** Do not try to push your vehicle into a new position; these actions take a lot of effort and could result in an injury. Additionally, avoid overworking yourself. Sweaty, wet clothing means lost insulation from the cold.



- **Remain calm:** Remind yourself that the bad weather eventually will end and you will be found.
- **Stay smart:** Crack your window periodically for fresh air. MassDOT notes that you are better off keeping fresh air in your car and being chilly rather than becoming warm and potentially passing out. For heat, run your vehicle's engine at 10-minute intervals, but only if you are sure your vehicle's exhaust system is not blocked by ice or snow. A blocked exhaust system can lead to carbon monoxide poisoning.
- **Maintain warmth:** Although you should avoid overexertion, do your best to keep your blood circulating, including loosening tight clothing, frequently moving your arms and legs, and rubbing your hands and feet for warmth.

Avoid getting pinched

Pinch points – sometimes called nip points – are a serious hazard when working with machinery that has rotating parts. Pinch points are caused by machinery parts that move toward each other or a part that moves past something stationary, according to OSHA. If a worker gets caught in a pinch point, part of his or her body may be mangled, crushed or severed.

To help prevent pinch-point injuries, OSHA recommends using machine guarding, noting that if you purchase a machine without a guard, you should install one. Other machine guarding tips from OSHA include:

- Before installing a machine guard, have it reviewed by an equipment manufacturer.
- Any guards purchased for use should be designed and installed by a competent and qualified person.
- Moving parts of a machine that may cause injury must be safeguarded. This includes the machine's point of operation, power transmission apparatus and rotary parts.
- Employees should not be able to remove, circumvent or tamper with a guard.

The human factor

Although machine guarding is a common

Photo: iStock/Thinkstock

FACEValue

NIOSH's **F**atality **A**ssessment and **C**ontrol **E**valuation Program

Case report: #12-NJ-010*

Issued by: New Jersey Fatality Assessment and Control Evaluation

Date of incident: Winter 2012

LABORER CRUSHED TO DEATH

A 34-year-old male laborer at a snow removal company was killed after being crushed between the lift arms and the chassis of a small skid-steer loader. The victim, working alone at the time of the incident, had been attempting to repair the pedal of the loader that controls the lift arms. To access the pedal for repairs, the victim attached a 3-ton overhead chain hoist to the loader to lift the bucket. As he was working on the pedal, the bucket/lift arms came free of the hoist, crushing him.



TO HELP PREVENT SIMILAR OCCURRENCES:

- Never work alone in potentially hazardous situations.
- Ensure lift arm support devices are in place if the bucket of a loader needs to be raised.
- Employers should ensure all equipment is in sound operating condition, and maintenance on heavy machinery should be conducted by a well-trained, qualified person.
- A safety and health plan based on a job hazard analysis should be developed by employers and followed by workers.

To download the full report, go to www.cdc.gov/niosh/face/pdfs/12NJ010.pdf.

*The following report is the product of the National Institute for Occupational Safety and Health's Cooperative State partner. The findings and conclusions in each report are those of the individual Cooperative State partner and do not necessarily reflect the views or policy of NIOSH.

FACE photo: NIOSH



engineering control, OSHA recommends work practice controls to help prevent pinch-point injuries, including:



- Allow only properly trained workers to operate and maintain equipment.
- Inspect machines and guards often, keeping records as you go. OSHA states that inspection records should identify the machine, provide the date of the inspection, and note any issues and corrective actions taken. If a problem is detected, employees on all shifts should be made aware of it.
- Never walk away from a machine that is turned on or coasting.
- Keep floors clean and free of debris to help prevent trips and falls near machinery.
- Ensure workers use any necessary personal protective equipment.

Photo: iStock/Thinkstock

Safety Stat

Contract workers accounted for more than **15 percent** of all fatal work injuries in 2012.

Source: Bureau of Labor Statistics

Photo: Thinkstock

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News Briefs



BLS: Workplace deaths declined in 2013

WASHINGTON – The number and rate of workers killed on the job in 2013 declined from 2012, according to preliminary data released Sept. 11 by the Bureau of Labor Statistics.

A preliminary total of 4,405 fatal work injuries occurred in 2013, resulting in a rate of 3.2 deaths per 100,000 full-time equivalent workers. In 2012, the final fatal work injury count and rate were 4,628 and 3.4, respectively.

The 2013 figures likely will be revised upward in final data that BLS said it intends to release in the spring. Over the past five years, BLS has seen an average of 165 cases added to the preliminary count.

Among the preliminary data for 2013:

- The 3,929 fatal work injuries that occurred in private industry is the lowest total since BLS began collecting this data more than 20 years ago.
- Fatal work injuries among Hispanic or Latino workers increased 7 percent between 2012 and 2013.
- Transportation-related incidents accounted for 40 percent of all fatal work injuries but declined in 2013.
- One out of six fatal work injuries was the result of violence – including suicide and homicide.

Commuters who drive to work weigh more: study

LONDON – People who commute to work by walking, biking or taking public transportation weigh less than those who commute by car or motorcycle, according to a recent study.

Researchers from the London School of Hygiene and Tropical Medicine and the University College London looked at body mass index – a measure of body fat using weight and height – in more than 7,500 participants and body fat percentage in nearly 7,500 in the United Kingdom.

Men who walked, biked or took public transportation such as a bus or train had BMI scores about 1 point and body fat 1.4 to 1.5 percentage points lower than men who drove to work. That translated to a weight difference of about 6.6 pounds for the average man.

Women who walked, biked or took public transportation to work had BMI scores 0.7 to 0.9 points and body fat 1.4 to nearly 2.0 percentage points lower than women who drove to work. That equaled a weight difference of about 5.5 pounds.

The study was published online Aug. 19 in *BMJ*.