

# The Current Flow

A Safety News & Info Publication of the Loss Control Department



## TARGET PRACTICE: A BULL'S-EYE APPROACH TO INCIDENT ANALYSIS *By Mike Williams*



You and a friend are sighting in your rifles in preparation for the upcoming hunting season. You both fire target patterns of ten shots each. A review of the targets shows your buddy's pattern with no constant error, but rather large variable errors. His shots are all in the middle three rings of the target, one or two bull's-eye, a couple more a few inches away, but the grouping is poor. He is high-fiving and just trashing you for all it's worth.

While you look at your target you see that your pattern has a large constant error, but small variable errors. Your shots fell into a tight cluster but at some distance from the bull's-eye. What do these patterns tell us? Let's look at two types of error; constant and variable and distinguish the difference.

Looking only at the target scores it appears your friend is the better shot, but if you look at the grouping this is not the case. The varied shot placement by your friend gives us an indication of his consistency of shooting and reveals a variable error. Your shot placement, albeit away from the center, reveals a constant error.

Another acceptable view of this is that your friend is a rather unsteady shot with accurately aligned sights, while you are an expert marksman whose sights are out of true! This leads us to discuss the topic of predictable errors, subtitled: The Importance of Incident Analysis.

Given another ten shots each, with your sights still unadjusted, we could predict with a high degree of confidence where your shots will fall. On the other hand, if your friend with the unsteady hand takes another ten shots, we can anticipate poor grouping but no precise prediction where his shots will fall.

Adopting the practice of investigating and analyzing all incidents is a win-win. There are a multitude of common thoughts about which incidents are investigated and which should be analyzed. Should we investigate and analyze all incidents, all close calls, no close calls, lost-time incident only, no first aid incidents etc.? With so many of our cooperatives setting goals related to safety and creating Safety Improvement Plans, this is an ideal time for safety committees to identify not only the target(s), but to distinguish patterns as well.

A common error is to rely only on lagging indicators as fuel for the fire. Let's use an example with Days Away Restricted Transferred indices as a goal; "Our DART rate last year was 4.0, our goal next year is to lower that to 2.0". If all we do is "hope", and nothing else, will our DART rate go down? Well we could hope so with a little luck. Would it not be more advantageous to identify the patterns, reveal root causes and make adjustments?



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## Heavy Equipment Load Securement by Royce Anderson



This will be a review for many and a reminder for others. We transport heavy equipment on a daily basis and may not be in compliance. What does the law say about how to secure a backhoe or any other piece of heavy equipment being transported?

The Federal Motor Carrier Safety Association (FMCSA) requires that, while transporting, heavy equipment must be secured from movement.

The rules apply to trucks, truck tractors, semitrailers, full trailers, and pole trailers; to prevent against loss of load. Each commercial motor vehicle must, when transporting cargo on public roads, be loaded and equipped, and the cargo secured to prevent the cargo from leaking, spilling, blowing or falling from the motor vehicle.



The rules apply to the transportation of heavy vehicles; equipment and

machinery which operate on wheels or tracks, such as front end loaders; bulldozers, tractors, and power shovels; and which individually weigh 10,000 lb. or more.

### How do we prepare heavy equipment to be transported?

1. Accessory equipment, such as hydraulic shovels, must be completely lowered and secured to the vehicle.
2. Articulated vehicles shall be restrained in a manner that prevents articulation while in transit.



### How do we restrain heavy equipment with crawler tracks or wheels?

All loads of heavy vehicles, equipment, or machinery with crawler tracks or wheels, must be restrained against movement in the lateral, forward, and vertical direction using a minimum of four tie downs. Each of the tie downs must be affixed as close as practical to the front and rear of the vehicle, or mounting points on the vehicle, that have been “specifically designed” for that purpose.

FMCSA states that accessory devices (plows, trencher bars, etc.) may be transported in a raised position pro-

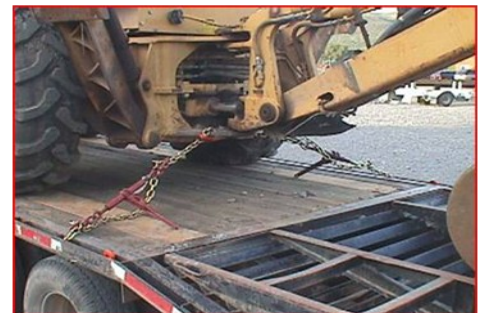


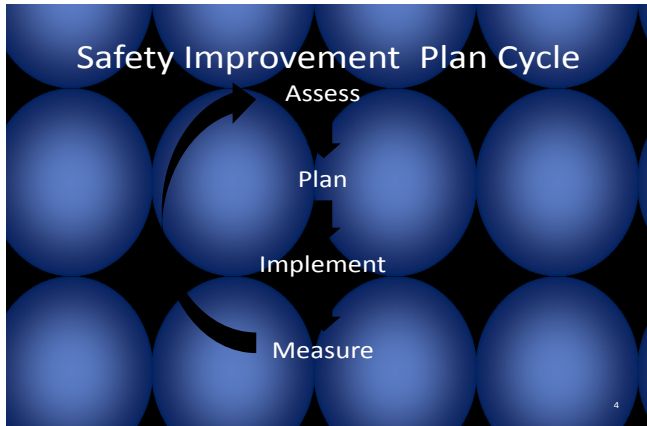
vided “they are designed” to be transported in that manner. However, the accessory equipment must be locked in place for transport to ensure that neither the accessories nor the equipment itself shifts during transport.

FMCSA continues stating, when a tractor loader-backhoe having accessories that are each equipped with locking devices or mechanisms that prevent them from moving up and down and from side-to-side while being transported on the trailer; chains are not required to secure it to the trailer.

We should keep in mind that some enforcement personnel may have a different understanding of the law. You may receive different or diluted information one from the next. This is the most recent information available from FMCSA’s website.

[http://www.fmcsa.dot.gov/rules-regulations/administration/fmcsr/rules\\_search\\_results.aspx?Cat\\_type=A&keyword=393.130&Google\\_URL=&Image3=Go](http://www.fmcsa.dot.gov/rules-regulations/administration/fmcsr/rules_search_results.aspx?Cat_type=A&keyword=393.130&Google_URL=&Image3=Go)





**“SAFETY IS NEVER DONE!  
YOU’RE ALWAYS WORKING ON IT!”**



### JTS Schedule January

Date	Location	Details
January 4, 2012	HEA	Hazard Recognition
January 5, 2012	Y-W Electric	Crew Visits
January 10, 2012	MCREA	Hazard Recognition
January 11, 2012	UPI	Grounding
January 19, 2012	GVP, WREA	



### Safety Resolutions for the New Year

- Take advantage of safety training** to learn what I need to know to protect myself from workplace hazards and prevent accidents.
- Pay attention** while I’m working and avoid distractions.
- Wear assigned PPE** every time it is required-no exceptions, no excuses.
- Keep alert for hazards** and correct or report safety or health hazards I see.
- Talk with my supervisor** when I have a safety-related question or concern.
- Encourage co-workers to work safely.** Report accidents, near misses, or other incidents to my supervisor right away.
- Take care of my health** so I come to work well rested and ready to work every shift.
- Practice the safety precautions** I learn at work at home, too.

## Multitasking & Perceptual Blindness vs. Safety *By Teri Jirik*

Consider the future of safety in utilities directly correlated to the understanding of the human brain and its limitations. The human brain can remain the number one cause of workplace injury or, alternatively, potentially save thousands of lives each year.

In industries where the exposure for occupational injuries or death is elevated, it should be counter-intuitive to attempt multitasking; a myth that multiple complicated processes or actions are being successfully conducted concurrently.

As remarkable an organ as the brain is, it has restrictions on attention capacity. For the most part we simply cannot focus on more than one thing at a time. What we can do is shift our focus from one thing to the next with astonishing speed. In reality we are not paying attention to various details simultaneously, but switching between them very rapidly. There are several reasons the brain has to switch among tasks: One is that similar tasks compete to use the same part of the brain. Because the brain cannot fully focus when multitasking, people actually take longer to complete tasks and are predisposed to error.

The human brain is innately determined to focus upon one thing at a time, reveling in the serenity and high performance state that comes with concentrating completely upon a task. This process, called 'creative flow', is when the human brain is at maximum efficiency.

While concentrating on one task at a time has its advantages for accuracy, it leaves us unable to process other information in our surroundings, and may be the answer to why workers fail to notice obvious dangers in their work environment. This phenomenon known as "inattentive blindness" or "perceptual blindness", is when a person fails to notice some stimulus that is in plain sight. This stimulus is usually unexpected but fully visible. This typically happens because we are overloaded with inputs, and humans are simply not hardwired to pay attention to every single input that is presented. The research that has been done on inattentive or perceptual blindness suggests that there are four possible causes for this phenomena. These include: conspicuity, mental workload, expectation and capacity.

**1. Conspicuity:** Conspicuity refers to an object's ability to catch a person's attention. When something is conspicuous it is easily visible. There are two factors which determine conspicuity: sensory conspicuity and cognitive conspicuity. Sensory conspicuity factors are the physical properties an object has. If an item has bright colors, flashing lights, high contrast with environment, or other attention-grabbing physical properties; it can attract a person's attention much easier. Cognitive conspicuity factors pertain to objects that are familiar to someone. People tend to notice objects faster if they have some meaning to their lives, capturing their attention in some way. If the object isn't visually prominent or relevant, there is a higher chance that it will be missed or overlooked.

**2. Mental Workload:** Mental workload has to do with how much a person has on their mind. When a person focuses a lot of attention on one stimulus, he/she focuses less attention on other stimuli. When people have most of their attention focused on one thing, they are more vulnerable to inattentive blindness. However, the opposite is true as well. When a person has a very small mental workload – he/she is doing an everyday task – that person tends to go into autopilot. In autopilot, people tend to do things without thinking about them. This can cause a person to miss crucial details and to become inattentively blind to their surroundings.

**3. Expectation:** When a person expects certain things to happen, he/she tends to block out other possibilities. This can lead to inattentive blindness. Because of expectations, experts are more prone to inattentive blindness than beginners. An expert knows what to expect when certain situations arise. Therefore, that expert will know what to look for. This could cause that person to miss out on other important details that he/she may not have been looking for.

**4. Capacity:** Attentional capacity is a measure of how much attention must be focused on a task to complete it. For example, an expert pianist can play a piano without thinking much, but a beginner would have to consciously think of every note they hit. This capacity can be lessened by drugs, alcohol, fatigue, and age. With a small capacity, it is more possible to miss things. If your attentional capacity is large, you are less likely to experience inattentive blindness.

*Cont'd on Pg. 9*

NRECA Supports EEI Petition for Waiver FMCSA Restricting Cell Phone Use Time Extension



December 15, 2011

The Honorable Anne S. Ferro, Administrator  
Federal Motor Carrier Safety Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590-0001

**Re: Edison Electric Institute Request for Waiver from Final Rule in  
Docket No. FMCSA-2010-0096: Drivers of CMVs: Restricting the Use  
of Cellular Phones**

Dear Administrator Ferro:

On behalf of the National Rural Electric Cooperative Association (“NRECA”), I write to support the above captioned Request for Waiver filed pursuant to 49 C.F.R. Part 381, Subpart B, by the Edison Electric Institute (“EEI”) on December 14, 2011. EEI requests a waiver for a period of three months from the Final Rule’s effective date of January 3, 2012.

By way of background, NRECA is the national service organization for more than 900 not-for-profit rural electric utilities that provide electric energy to approximately 42 million consumers in 47 states or twelve percent of the nation’s population.

To be clear, NRECA supports the Final Rule as an important step in increasing highway safety in the United States. But, we do agree with EEI that additional time is needed for implementation of the Final Rule. The vast majority of NRECA’s members are “small” as defined under the Small Business Regulatory Enforcement Fairness Act (SBREFA). As small businesses, the burden of regulatory compliance falls more heavily on them than it does on larger enterprises.

Additional time is needed to allow NRECA’s member cooperatives to provide information and training to staff, and to assess whether additional or different communications devices are required by the Final Rule. Given the challenges of limited coverage and differing degrees of latency of communications networks in rural America, our members use a variety of communications devices to dispatch, report, record field data, and provide emergency restoration services to customers. Some of our members’ field workers carry both cellular phones and radios in order to be able to be in communication with home offices as well as with remotely located customers. Our members will need to assess how to implement the ban on hand held equipment and if the Final Rule requires ordering new equipment.



## Eye Safety *By Greg Burrell*

Each day about 2000 U.S. workers have a job-related eye injury that requires medical treatment.

- About one third of the injuries are treated in hospital emergency departments and more than 100 of these injuries result in one or more days of lost work.
- The majority of these injuries result from small particles or objects striking or abrading the eye.
- Examples include metal slivers, wood chips, dust, and cement chips that are ejected by tools, wind blown, or fall from above a worker. Some of these objects, such as nails, staples, or slivers of wood or metal penetrate the eyeball and result in a permanent loss of vision.
- Large objects may also strike the eye/face, or a worker may run into an object causing blunt force trauma to the eyeball or eye socket.
- Chemical burns to one or both eyes from splashes of industrial chemicals or cleaning products are common. Thermal burns to the eye occur as well.
- Among welders, their assistants, and nearby workers, UV radiation burns (welder's flash) routinely damage workers' eyes and surrounding tissue.

### Are you in danger of becoming a statistic?

- Thousands of people are blinded each year from work-related eye injuries that could have been prevented with the proper selection and use of eye and face protection.
  - Eye injuries alone cost more than \$300 million per year in lost production time, medical expenses, and worker compensation.

Engineering controls should be used to reduce eye injuries and to protect against ocular infection exposures. Personal protective eyewear, such as goggles, face shields, safety glasses, or full face respirators must also be used when an eye hazard exists.

The eye protection chosen for specific work situations depends upon the nature and extent of the hazard, the circumstances of exposure, other protective equipment used, and personal vision needs.

1. Eye protection should be fit to an individual or adjustable to provide appropriate coverage.
2. It should be comfortable and allow for sufficient peripheral vision.
3. Selection of protective eyewear appropriate for a given task should be made based on a hazard assessment of each activity, including regulatory requirements when applicable.
4. Personal protective equipment (PPE) for the eyes and face is designed to prevent or lessen the severity of injuries to workers.
5. The employer must assess the workplace and determine if hazards that necessitate the use of eye and face protection are present or are likely to be present before assigning PPE to workers. [29 CFR 1910.132(d)]. A hazard assessment should determine the risk of exposure to eye and face hazards, including those which may be encountered in an emergency.
6. Employers should be aware of the possibility of multiple and simultaneous hazard exposures and be prepared to protect against the highest level of each hazard. [29 CFR 1910 Subpart I App B]

Hazard Assessment		
Hazard type	Examples of Hazard	Common Related Tasks
<b><u>Impact</u></b>	Flying objects such as large chips, fragments, particles, sand, and dirt.	Chipping, grinding, machining, masonry work, wood working, sawing, drilling, chiseling, powered fastening, riveting, and sanding.
<b><u>Heat</u></b>	Anything emitting extreme heat.	Furnace operations, pouring, casting, hot dipping, and welding.
<b><u>Chemicals</u></b>	Splash, fumes, vapors, and irritating mists.	Acid and chemical handling, degreasing, plating, and working with blood.
<b><u>Dust</u></b>	Harmful Dust.	Woodworking, buffing, and general dusty conditions.
<b><u>Optical Radiation</u></b>	Radiant energy, glare, and intense light	Welding, torch-cutting, brazing, soldering, and laser work.

**Eye Safety** By Greg Burrell...Cont'd from Pg. 6

**PPE Devices for Impact Hazards**

<b>Spectacles</b>	Primary protectors intended to shield the eyes from a variety of impact hazards.
<b>Goggles</b>	Primary protectors intended to shield the eyes against flying fragments, objects, large chips, and particles.
<b>Face Shields</b>	Secondary protectors intended to protect the entire face against exposure to impact hazards.

**PPE Selection - Impact Hazards**

The majority of impact injuries result from flying or falling objects, or sparks striking the eye. Most of these objects are smaller than a pin head and can cause serious injury such as punctures, abrasions, and contusions.

While working in a hazardous area where the worker is exposed to flying objects, fragments, and particles, primary protective devices such as safety spectacles with side shields or goggles must be worn. Secondary protective devices such as face shields are required in conjunction with primary protective devices during severe exposure to impact hazards.

**Eye Safety Check List**

1. Create a safe work environment
  - Minimize hazards from falling or unstable debris.
  - Make sure that tools work and safety features (machine guards) are in place.
  - Make sure that workers know how to use tools properly.
  - Keep bystanders out of the hazard area.
2. Evaluate safety hazards.
  - Identify the primary hazards at the site.
  - Identify hazards posed by nearby workers, machinery, and falling/shifting debris.

3. Wear the proper eye and face protection.
  - Select the appropriate Z87 eye protection for the hazard.
  - Make sure the eye protection is in good condition.
  - Make sure the eye protection fits properly and will stay in place.
4. Use good work practices.
  - Caution - Brush, shake or vacuum dust and debris from hardhats, hair, forehead, the top of the eye protection before removing the protection.
  - Do not rub eyes with dirty hands or clothing.
  - Clean Eyewear regularly.
5. Prepare for eye injuries and first aid needs. Have an eye wash or sterile solution on hand.

**How can you reduce the eye hazards at your site?**

**Eye Safety Strategy**

Use engineering controls (best) such as machine guards that prevent the escape of particles or welding curtains for arc flash protection.

Use administrative controls (good) such as making certain areas “**off limits**” unless that is your work assignment area or putting passage ways out of active work zones.

Use the proper protective eyewear (required, but doesn't remove all risk).

**What is safety eye and face protection?**

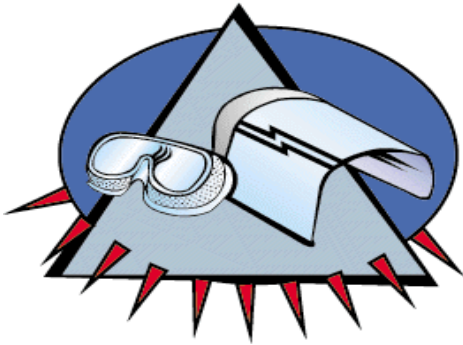
1. Find the Z87 marking on your safety glasses.
2. Safety eye and face protection includes:
  - non-prescription and prescription safety glasses,
  - clear or tinted goggles,
  - faceshields,
  - welding helmets and,
  - some full-face type respirators that meet the ANSI Z87.1 Eye and Face Protection Standard.
3. The safety eyewear must have “Z87” or “Z87+” marked on the frame and in some cases the lens.

**When are you required to have "side protection" or "side shields" on your safety glasses?**

1. Side protection is required any time that there are hazards from flying particles or objects.
2. Older styles used side shields.
3. Many newer styles provide side protection as wrap around safety glasses.
4. Some styles also have brow protection along the top of the glasses.
5. Many eye injuries have occurred because there was not adequate side protection, proper fit, or particles fell from above such as when drilling overhead.

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**Eye Safety By Greg Burrell...Cont'd from Pg. 7**



**When should you wear goggles?**

- Goggles are stronger than safety glasses.
- Goggles are used for higher impact protection, greater particle protection, chemical splashes, and welding light protection.
- Goggles for splash or high dust protection should have indirect venting.
- Goggles with direct venting (a mesh of small holes around the sides) tend to fog less, but should not be used with liquid or fine dust hazards.
- Common tasks: sawing, chipping, grinding, masonry work, using a nail gun, pouring cement, and working with chemicals.

When goggles are used for welding make sure they are the proper shade # (the shade number is marked on the lens and shows how dark the lens is).

**When should you use a face shield?**

- Face shields are used for even higher impact protection and to protect the wearer's face in addition to the eyes.
- Face shields should always be used over safety glasses or goggles.
- Particles or chemicals can easily go around a face shield and the curve of the face shield can direct them into the eye.
- Face shields are frequently lifted

leaving the eyes unprotected without the safety glasses or goggles.

- Common tasks: spraying, chipping, grinding, drilling.

**Check the fit of your safety glasses.**

1. Where are the biggest gaps?

The biggest gaps are usually near the corners of the glasses. The bigger the gap the more exposure to hazards coming from a slight angle from above or below.

2. Do the glasses fit snugly against the face or slide down your nose?

Glasses that are not snug against the face also create larger gaps in protection.

3. Some safety glasses are made in different sizes to fit different shape faces.

Different styles also may fit one person better than another.

Adjustable temples and eyewear retainers or straps help hold the glasses in the proper position close to the face.

**Ways to increase safety eyewear use at your job site**

(Examples of what others have said.)

They would use their safety eye protection if:

- ⇒ They had well-fitting, stylish, and comfortable eyewear,
- ⇒ They had a choice of safety eyewear,
- ⇒ They had both dark and clear lenses,
- ⇒ They had safety eyewear holders/cases/straps to make safety eyewear always accessible and help prevent scratching,
- ⇒ The bosses always wore their safety glasses on site,

- ⇒ Their employer had a company policy that eye protection be worn on the job at all times,
- ⇒ The policy was enforced.



The most common answer given by workers with eye injuries when asked, "Why weren't you wearing safety glasses?"

**"I didn't think that I needed it!"**

**Target Practice...Cont'd from Pg. 1**

To follow that thought, think back to our two shooters and the differences in the patterns on their respective targets. True, both of them hit their targets, however, only one offers predictability. And so it is with incident investigation protocol.

If we thoroughly analyze all incidents then we have a better chance of identifying patterns. These may show up in outdated work procedures, incomplete hazard assessments, ill-advised equipment selection, work routines, driving habits, and improper training; to name just a few. Identifying the patterns allows us to adjust our sights accordingly and focus on the important part: preventing reoccurrence. Now let's go practice...SAFETY!!

**Multitasking...** *Cont'd from Pg. 4...*

We miss things because they occur outside our field of focus, even if within our field of vision. This illusion of attention can lead to faulty assumptions; deluding workers to take risks and underuse the safety tools available to them, resulting in complacency and noncompliance.

Once we are aware of the physical limits of the neural networks, workers are more likely to make better choices, pay more attention during critical tasks, invite a second set of eyes, invest more energy into hazard identification and limit the amount of multitasking they attempt to do at attention-critical times.

(Info Source: Incident Prevention - Safety Circuitry: The Power in the Brain, Pub. Date Oct. 20, 2011, Wikipedia: Human Multitasking, [www.workmadeeasier.com/multitasking](http://www.workmadeeasier.com/multitasking), IP: Mind Control: Distractions, Stress and Your Ability to Work Safely, Pub. Date Nov. 2, 2010,



**Safety Quote Corner**

Safety doesn't happen by accident.

We now have unshakable conviction that accident causes are man-made and that a man made problem can be solved by men and women. ~W.H. Cameron

Safety isn't expensive, it's priceless.

**Top 10 Most Frequently Cited Standards**

*By Michael Weideman*



OSHA has released data on its most frequently cited standards for fiscal year 2011 (October 1, 2010 through September 30, 2011). Below are the Top 10 most frequently cited standards:

1. 1926.451 Scaffolding
2. 1926.501 Fall Protection
3. 1910.1200 Hazard Communication
4. 1910.134 Respiratory Protection
5. 1910.147 Lockout/Tagout
6. 1910.305 Electrical, Wiring Methods
7. 1910.178 Powered Industrial Trucks (Forklifts)
8. 1926.1053 Ladders
9. 1910.303 Electrical, General Requirements
10. 1910.212 Machine Guarding

(NOTE: 1910 = General Industry and 1926 = Construction)

Here are the Top 10 citations issued to Electrical Generation, Transmission and Distribution companies during the same time period along with total penalties for each standard cited:

<u>Standard</u>	<u>#Cited</u>	<u>#Insp.</u>	<u>\$Penalty</u>	<u>Description</u>
1910.269	32	15	468,070	Electric Power Generation, Transmission, & Distribution
1904.29	7	2	0	Forms
1910.146	7	2	1,500	Permit-required Confined Space
1904.32	6	3	0	Annual Summary
1910.1200	6	5	1,500	Hazard Communication
1910.132	5	3	8,110	General Requirements
1910.67	4	4	7,900	Vehicle-mounted elevating work platforms
1910.212	4	3	4,250	General requirements for all machines
1926.1101	3	1	6,375	Asbestos
5A.001	3	2	8,220	General Duty clause



Invest your money in employee safety and programs rather than in fines and lawyers.

**NRECA Supports EEI Petition for Waiver FMCSA Restricting Cell Phone Use Time Extension  
(Letter, Page 2)**

Honorable Anne S. Ferro  
December 15, 2011

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Finally, NRECA is concerned that the January 3, 2012 effective date does not provide sufficient time to enforcement authorities to establish appropriate processes to enforce the new rule. As EEI points out in its petition, enforcement agencies may require training on which devices are covered by the rule, and which are not in order to minimize the possibility of inappropriate citation and risk to the driver's Commercial Driver's License.

In conclusion, we reiterate our support for the Federal Motor Carrier Safety Agency's important work in improving the safety of the nation's highways by minimizing distracted driving. We support EEI's Petition for Waiver in order to allow electric cooperatives (and enforcement agencies) sufficient time to properly implement the Final Rule.

Respectfully Submitted,



Martha A. Duggan  
Senior Principal, Regulatory Affairs

cc: Hon. Larry W. Minor, Assistant Administrator

## What You Can Do to Prevent Cold Stress Injuries

*By Dan Whitesides*

Winter weather is just around the corner, but did you know cold stress, or "hypothermia," can occur any time of year? In fact, most cases of cold stress develop in air temperatures between 30 and 50 degrees Fahrenheit. People who are exposed to lower temperatures are at risk for injuries ranging from frostbite to serious loss of body heat which could result in brain damage or death.

### What you can do to protect yourself from cold stress injuries

**Dress warmly, in layers.** Preserving an air space between the body and the outer layer of clothing will help retain body heat. Choose fabrics such as cotton or wool which insulate but also allow sweat to evaporate. It is especially important to protect the feet, hands, head, and face. These parts of the body are farthest from the heart and are the hardest to keep warm. Almost half your body heat can be lost through the head, so cover it up as well.

**Keep dry.** Wetness greatly increases the chance of cold stress. Always have extra clothing available if there's a chance you could get wet. Keep your feet dry, they are very susceptible to frostbite.

**Take a break.** You may think it is wise to keep on working in cold temperatures. After all, working makes you break a sweat and you feel warmer. But if you become fatigued during physical activity, your body loses its ability to properly retain heat. This causes rapid cooling which can quickly lead to cold stress. When you take a break, be sure to replace lost fluids and calories by drinking warm, sweet, caffeine-free nonalcoholic drinks and soup.

**Eat right.** A proper diet provides your body with the nutrients it needs to withstand cold stress. A restrictive diet may deprive your body the ability to work well in cold temperatures.

**Don't work alone.** In cold-stress prone environments, a buddy system should be used. Look out for one another and be alert for the symptoms of cold stress.

**Learn what to look out for.** The effects of cold stress may not be apparent to its victim. The first symptoms of hypothermia are uncontrollable shivering and the sensation of cold. The heartbeat slows and may become irregular, and the pulse weakens. As the condition worsens, severe shaking or rigid muscles may be evident. The victim may also have slurred speech, memory lapses, and drowsiness. Cool skin, slow, irregular breathing, and exhaustion occur as the body temperature drops even lower. This is a serious condition requiring immediate medical attention.

Frostbite can occur without accompanying hypothermia. Frostbite occurs when the fluids around the body's tissues freeze. The most vulnerable parts of the body are the nose, cheeks, ears, fingers, and toes. Symptoms of frostbite include coldness and tingling in the affected part, followed by numbness; changes in skin color to white or grayish-yellow, initial pain which subsides as the condition worsens, and possibly blisters. Frostbite can cause irreversible tissue damage and requires immediate medical attention.

If you work in lower-temperature environments, always be alert for the possibility of cold stress. Follow these guidelines to help protect yourself from injury. Remember, it doesn't have to be freezing for cold stress to occur. Take steps to protect yourself.

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The Current Flow is a publication of the Safety Training & Loss Control Department of the Colorado Rural Electric Association.

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