The Newsletter of the Northern Delaware Section of the DelMarVa Chapter of the American Society of Safety Engineers, Des Plaines, Il. Vol. 5, N0. 1, January 2015

Cold Stress

By: Marie Wright, Worth & Company Safety Manager and Section Program Chair

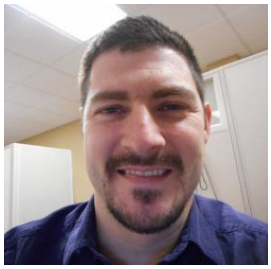
During emergency response activities or recovery operations, workers may be required to work in cold environments, and sometimes for extended periods. Cold stress is a common problem encountered in these types of situations. The following frequently asked questions will help workers understand what cold stress is, how it may affect their health and safety, and how it can be prevented.

How cold is too cold? When the body is unable to warm itself, cold related stress may result. This may include tissue damage and possibly death. Four factors contribute to cold stress: cold air temperatures, high velocity air movement, dampness of the air, and contact with cold water or surfaces. A cold environment forces the body to work harder to maintain its temperature. Cold air,

INSIDE THIS ISSUE

ASSE Delaware wishes you Season's Greetings, and a safe and healthy new year.

Chair's Message



Marcus Suhr, CSP, CHCM

I hope all of you have enjoyed the winter season so far, we are about half thru now. One of the first things I think about when it's cold outside is looking down. I always look down at my footing and where I am stepping. That doesn't mean I don't trip.

On the other hand as a building inspector I was always looking up. I must look interesting from afar, looking up, looking down. Your immediate environment has much to do with your perception of hazards and my thought is we can all help prevent incidents by being more critical about the potential hazards in our immediate area. Constant scanning can help us not only in driving, but in walking too.

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Call for Articles. Do you want to write and get your point of view in print? Our editorial criteria are simple; make it relevant to the Safety and Health Professionals in Delaware, and keep it around 600 words. Send me your ideas and copy at gwpearson38@gmail.com.

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water, and snow all draw heat from the body. Wind chill is the combination of air temperature Cold air, water, and snow all draw heat from the body. Wind chill is the combination of air temperature and wind speed. For example, when the air temperature is 40°F, and the wind speed. For example, when the air temperature is 40°F, and the wind speed is 35 mph, your exposed skin receives conditions equivalent to the air temperature being 11° F. While it is obvious that below freezing conditions combined with inadequate clothing could bring about cold stress, it is also important to understand that it can also be brought about by temperatures in the 50's coupled with some rain and wind.

How does the body react to cold conditions? When in a cold environment, most of your body's energy is used to keep your internal temperature warm. Over time, your body will begin to shift blood flow from your extremities (hands, feet, arms, and legs) and outer skin to the core (chest and abdomen). This allows exposed skin and the extremities to cool rapidly and increases the risk of frostbite and hypothermia. Combine this with cold water, and trench foot may also be a problem.

What are the most common cold induced problems? Hypothermia, Frostbite, and Trench Foot.

What is Hypothermia? *Hypothermia* which means "*low heat*", is a potentially serious health condition. This occurs when body heat is lost faster than it can be replaced. When the core body temperature drops below the normal 98.6° F to around 95° F, the onset of symptoms normally begins. The person may begin to shiver and stomp their feet in order to generate heat. Workers may lose coordination, have slurred speech, and fumble with items in the hand. The skin will likely be pale and cold. As the body temperature continues to fall these symptoms will worsen and shivering will stop. Workers may be unable to walk or stand. Once the body temperature falls to around 85° F severe hypothermia will develop and the person may become unconscious, and at 78°, the person could die.

Anyone working in a cold environment may be at risk for cold stress. However, older people may be at more risk than younger adults, since older people are not able to generate heat as quickly. Certain medications may prevent the body from generating heat normally. These include *anti-depressants, sedatives, tranquilizers* and *others.*

Treatment depends on the severity of the hypothermia. For cases **of mild hypothermia** move to warm area and stay active. Remove wet clothes and replace with dry clothes or blankets, cover the head. To promote metabolism and assist in raising internal core temperature drink a warm (not hot) sugary drink. Avoid drinks with caffeine. For **more severe cases** do all the above, plus contact emergency medical personnel (Call 911 for an ambulance), cover all extremities completely, place very warm objects, such as hot packs or water bottles on the victim's head, neck, chest and groin. Arms and legs should be warmed last. In cases of **severe hypothermia** treat the worker very gently and do not apply external heat to re-warm. Hospital treatment is required.

If worker is in the water and unable to exit, secure collars, belts, hoods, etc. in an attempt to maintain warmer water against the body. Move all extremities as close to the torso as possible to conserve body heat.

What is Frostbite? *Frostbite* occurs when the skin actually freezes and loses water. In severe cases, amputation of the frostbitten area may be required. While frostbite usually occurs when the temperatures are 30° F or lower, wind chill factors can allow frostbite to occur in above freezing temperatures. Frostbite typically affects the extremities, particularly the feet and hands. The affected body part will be cold, tingling, stinging or aching followed by numbness. Skin color turns red, then purple, then white, and is cold to the touch. There may be blisters in severe cases.

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Do not rub the area to warm it. Wrap the area in a soft cloth, move the worker to a warm area, and contact medical personnel. Do not leave the worker alone. If help is delayed, immerse in warm (maximum 105 °F), not hot, water. Do not pour water on affected part. If there is a chance the affected part will get cold again do not warm. Warming and re-cooling will cause severe tissue damage.

What is Trench Foot? *Trench Foot* or immersion foot is caused by having feet immersed in cold water at temperatures above freezing for long periods of time. It is similar to frostbite, but considered less severe. Symptoms usually consist of tingling, itching or burning sensation. Blisters may be present. Soak feet in warm water, then wrap with dry cloth bandages. Drink a warm, sugary drink.

What preventive measures should I take? Plan to work in cold weather. Wearing appropriate clothing and being aware of how your body is reacting to the cold are important to preventing cold stress. Avoiding alcohol, certain medications and smoking can also help to minimize the risk.

Protective Clothing is the most important way to avoid cold stress. The type of fabric also makes a difference. Cotton loses its insulation value when it becomes wet. Wool, silk and most synthetics, on the other hand, retain their insulation even when wet. The following are recommendations for working in cold environments:

- Wear at least three layers of clothing. An inner layer of wool, silk or synthetic to wick moisture away from the body. A middle layer of wool or synthetic to provide insulation even when wet. An outer wind and rain protection layer that allows some ventilation to prevent overheating.
- Wear a hat or hood. Up to 40% of body heat can be lost when the head is left exposed.
- Wear insulated boots or other footwear.
- Keep a change of dry clothing available in case work clothes become wet.
- With the exception of the wicking layer do not wear tight clothing. Loose clothing allows better ventilation of heat away from the body.

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Do not underestimate the wetting effects of perspiration. Oftentimes wicking and venting of the body's sweat and heat are more important than protecting from rain or snow.

Work Practices and planning are important preventative measures. Drink plenty of liquids, avoiding caffeine and alcohol. It is easy to become dehydrated in cold weather. If possible, heavy work should be scheduled during the warmer parts of the day. Take breaks out of the cold. Try to work in pairs to keep an eye on each other and watch for signs of cold stress. Avoid fatigue since energy is needed to keep muscles warm. Take frequent breaks and consume warm, high calorie food such as pasta to maintain energy reserves.

Engineering controls can be effective in reducing the risk of cold stress. Radiant heaters may be used to warm workers. Shielding work areas from drafts or wind will reduce wind chill. Use insulating material on equipment handles, especially metal handles, when temperatures drop below 30° F.

Training in recognition and treatment is important. Supervisors, workers and coworkers should watch for signs of cold stress and allow workers to interrupt their work if they are extremely uncomfortable. Supervisors should also ensure that work schedules allow appropriate rest periods and ensure liquids are available. They should use appropriate engineering controls, personal protective equipment and work practices to reduce the risk of cold stress. All of these measures should be incorporated into the relevant health and safety plans.

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Marie Wright is the Safety Manager for Worth & Company a highly respected, full-service mechanical contractor serving the Mid-Atlantic region. She compiled this article from various governmental and private sources plus her personal experience. At Worth & Company she oversees a Zero injury culture

Schedule of Upcoming Meetings/Events:

February 2015 - Social with AIHA

March 2015 - Voigt & Schweitzer Galvanizing Plant Tour

April 9 2015 - Dr Norman Wood – Suspension Trauma (confirmed, thanks to Vito DeMaio)

April or May 2015 - Joint 4 hour seminar/ symposium with AIHA

June 2015 - possible social at a Blue Rocks baseball game.

Where specific dates are not shown, date is to be determined.

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Reminder Poster from US OSHA:

Starting January 1, 2015:

All employers* must report:

- All work-related fatalities within 8 hours

Within 24 hours, all work-related:

- Inpatient hospitalizations
- Amputations
- Losses of an eye

How to Report Incident

- Call 1-800-321-OSHA (6742)
- Call your nearest OSHA area office, during normal business hours (www.osha.gov/html/RAmap.html)
- Visit http://www.osha.gov /report_online

Transcribe UEL's into your browser.

Photo on the Masthead: This photo of the downtown Wilmington, DE skyline was taken from the Riverfront across the Christiana River the winter of 2015. Previous photos of our newsletter's masthead were of the same motif but taken in the fall of 2014. We will try to depict all four seasons in future Newsletter editions.

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News from the Source:

US OSHA

New reporting requirements now in effect

Beginning Jan 1, 2015, there is a change to what covered employers are required to ***report*** to the Occupational Safety and Health Administration. Employers are now required to report all work-related fatalities within 8 hours and all inpatient hospitalizations, amputations, and losses of an eye within 24 hours of finding out about the incident. Copy the following link for more information:

https://www.osha.gov/as/opa/quicktakes/qt010215.html An electronic Reporting form for employers should be available in Jan 2015.

NIOSH, Also Reports on Cold Stress

Workers who are exposed to extreme cold or work in cold environments may be at risk of cold stress. Extreme cold weather is a dangerous situation that can bring on health emergencies in susceptible people, such as those without shelter, outdoor workers, and those who work in an area that is poorly insulated or without heat. What constitutes cold stress and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered factors for "cold stress." Whenever temperatures drop decidedly below normal and as wind speed increases, heat can more rapidly leave your body. These weather-related conditions may lead to serious health problems.

US EPA, January is Radon Month

Test, Fix, Save a Life

Radon is a colorless, odorless natural gas. Radon kills more than 21,000 people each year and is the leading cause of lung cancer in non-smokers.
See http://www.epa.gov/ for more information.

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Chair's Message – continued

We are looking forward to bringing you some interesting topics and events this year. We are attempting to meld our efforts with the local AIHA section possibly even doing some more social type events. As always, let us know your thoughts for any topics or subjects that you want to learn more about. Please come out and support your section as we look to gain knowledge from you too!

May you mitigate your risk adequately, and see you at the next meeting.

Marcus

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News from the Source – continued

US DOT Continuing the Safety Conversation with the Automotive Industry

Fast Lane Blog - Posted by Mark Rosekind

For automotive enthusiasts, the North American Auto International Show, which began on Jan 12th in Detroit, is an exciting glimpse into the future of performance, styling, and *safety*.

For NHTSA, it's our opportunity to visit with industry leaders and reinforce with them our commitment to the safety of the American public and to personally tell auto executives how we will approach our mission of saving lives and preventing injuries... http://www.dot.gov/fastlane/nhtsa-continues-afety-conversation

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Members of the N. Delaware Section enjoying Holiday cheer at our Holiday Social Event in December 2014.

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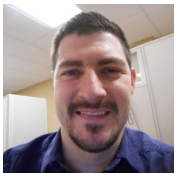
ASSE Northern Delaware Section Leadership:

Chair:



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