LOYOLA UNIVERSITY CHICAGO
WEATHER CONDITION GUIDELINES
(HEAT AND COLD)

Although OSHA does not have a specific standard that covers working in hot or cold environments, under the Occupational Safety and Health Act (OSH Act) of 1970, employers have a duty to protect workers from recognized hazards, including heat and cold stress hazards that could cause potential harm in the workplace.

REFERENCES:

Winter Weather - Cold Stress | Occupational Safety and Health Administration (osha.gov)

https://www.mayoclinic.org/diseases-

HEAT:

Occupational risk factors for heat related illness include heavy physical activity, warm or hot environmental conditions, lack of acclimatization, dehydration, and wearing clothing that holds in body heat. An underlying medical condition may also put a person at greater risk for a heat-related illness. Hazardous heat exposure can occur indoors or outdoors and can occur during any season if the conditions are right, not only during heat waves.

HEAT ILLNESSES:

Heat Rash (Prickly Heat): A stinging skin irritation which turns a person's skin red when blocked sweat pores trap sweat. Heat rash occurs when sweat is trapped in the skin. Symptoms can range from small blisters to deep, inflamed lumps. Some forms of heat rash are very itchy. In adults, it develops in skin folds and where clothing rubs against the skin.

Additional symptoms may include heavy sweating, fatigue, muscle cramps, and thirst. Heat rash usually goes away when the skin cools down.

To help prevent heat rash:

- Dress in loose, lightweight clothing that wicks moisture away from the skin.
- Limit physical activity in hot weather.
- Stay in the shade or an air-conditioned building. If possible, use a fan to circulate the air.
- Avoid creams and ointments that can block pores.
- Avoid drugs that cause sweating, such as clonidine, opioids and beta blockers.

Heat Cramps: Involuntary muscle spasms that are caused by dehydration and the loss of salt and electrolytes through sweating. When a person experiences heat cramps, they feel uncomfortable, sometimes very painful, tightening of their muscles. Heat cramps can occur in the abdomen, arms, legs, hands, feet, rib cage and shoulders or any other muscles used during work or exercise in high temperatures. Other symptoms may include clammy skin, dizziness, heavy sweating nausea or vomiting and tiredness or weakness. Heat cramps are the initial symptom of a more serious heat illness.

To help prevent heat cramps:

- Remain hydrated at all times by drinking lots of water or fluids containing electrolytes
- Avoid beverages that contain caffeine, like energy drinks.
- Avoid strenuous activity during the hottest part of the day.
- If possible, stay in the shade or near a fan.
- Plan for short breaks to rest and cool down.
- Wear a hat and light, loose-fitting clothing.
- Wear sunscreen. Sunburn can dehydrate you and affect your body's ability to cool itself.

If a person is experiencing heat cramps:

- Rest briefly and cool down.
- Drink clear juice or an electrolyte-containing sports drink.
- Practice gentle, range-of-motion stretching and gently massage the affected muscle group.
- Do not resume strenuous activity for several hours or longer after heat cramps go away.
- Go to a health clinic if the cramps are severe or do not go away within one hour or so.

Heat Stress (Exhaustion): A condition which occurs when the body cannot get rid of excess heat caused by combination of factors including, the environment, metabolic heat, and clothing. Heat stress is usually caused by hot weather and strenuous activity, but can also be caused by dehydration, over dressing, and alcohol use. If untreated, heat stress can lead to heat stroke which is a life-threatening medical condition. Symptoms may include breathing that may be fast and shallow, a fast, weak pulse, headache, nausea and vomiting, dizziness or fainting, cool, pale, clammy skin, weakness, extreme fatigue, irritability, slurred speech, confusion, extreme thirst, muscle cramps, and excessive sweating.

If a person is experiencing heat stress (exhaustion):

- Stop all activity and rest.
- Move to a cooler place.
- Drink cool water or sports drinks with electrolytes.
- Contact a doctor if the symptoms get worse or do not improve within one hour.
- If you are with someone who you believe is suffering from heat exhaustion, seek medical help if they become confused or distressed, lose consciousness, or are unable to drink.

To help prevent heat stress (exhaustion):

- Wear loose fitting, lightweight clothing. Wearing excess clothing or clothing that fits tightly will not allow a person's body to cool properly.
- Protect against sunburn as sunburn affects a person's ability to cool itself. Use a wide-brimmed hat (if possible), sunglasses, and broad-spectrum sunscreen with an SPF of at least 15. Apply sunscreen generously and reapply every two hours. Reapply more often if you are sweating.
- Drink plenty of fluids. Staying hydrated will help the body sweat and maintain a normal body temperature.
- Be careful with certain medicines. Certain medications can affect a body's ability to stay hydrated and dissipate heat.
- Where feasible, try to schedule physical labor for cooler parts of the day, such as early morning or evening.
- Get acclimated. People who are not used to hot weather are especially susceptible to heat-related illness. It can take several weeks for someone's body to adjust to hot weather.
- Be cautious if you are at increased risk. If you take medicines or have a condition that increases your risk of heat-related problems, such as a history of prior heat illness, be cautious. Act quickly if you notice symptoms of overheating.

Heat Stroke: A medical condition which occurs when the body becomes overheated, usually because of prolonged exposure to or physical exertion in high temperatures. If there is not a quick response to lower a person's body temperature, complications may occur. The brain, heart, kidneys, and muscles can swell and become permanently damaged. If left untreated, in addition to vital organ damage, death may occur.

Symptoms include: high body temperature, altered mental state or behavior, hot/dry skin, nausea, vomiting, flushed (red) skin, rapid breathing, racing heart rate, and headache.

If a person is experiencing heat stroke:

- Call 911 immediately. Heat stroke is a life-threatening emergency.
- While waiting for emergency responders, take immediate action to cool the overheated person.
- Get the person into shade or indoors.
- Remove excess clothing.
- Do not give the person anything to eat or drink.

- Cool the person with whatever means available; put in a cool tub of water or a cool shower, spray with a garden hose, sponge with cool water, fan while misting with cool water, or place ice packs or cold, wet towels on the person's head, neck, armpits, and groin.

To help prevent heat stroke:

- Wear loose fitting, lightweight clothing. Wearing excess clothing or clothing that fits tightly will not allow a person’s body to cool properly.
- Protect against sunburn as sunburn affects a person’s ability to cool itself. Use a wide-brimmed hat (if possible), sunglasses, and broad-spectrum sunscreen with an SPF of at least 15. Apply sunscreen generously and reapply every two hours. Reapply more often if you are sweating.
- Drink plenty of fluids. Staying hydrated will help the body sweat and maintain a normal body temperature.
- Be careful with certain medicines. Certain medications can affect a body's ability to stay hydrated and dissipate heat.
- Where feasible, try to schedule physical labor for cooler parts of the day, such as early morning or evening.
- Get acclimated. People who are not used to hot weather are especially susceptible to heat-related illness. It can take several weeks for someone’s body to adjust to hot weather.
- Be cautious if you are at increased risk. If you take medicines or have a condition that increases your risk of heat-related problems, such as a history of prior heat illness, be cautious. Act quickly if you notice symptoms of overheating.

COLD:

Cold Stress: Cold stress occurs by driving down the skin temperature and eventually the internal body temperature. When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result.

What constitutes cold stress and its effects can vary across different areas of the country. In regions that are not accustomed to winter weather, near freezing temperatures are considered factors for "cold stress." Increased wind speed also causes heat to leave the body more rapidly (wind chill effect). Wetness or dampness, even from body sweat, also facilitates heat loss from the body.

Types of cold stress include: trench foot (immersion), frostbite, hypothermia, and chilblains.

Trench foot (Immersion): A non-freezing injury of the feet caused by prolonged exposure to wet and cold conditions. It can occur in temperatures as high as 60°Fahrenheit, if feet are constantly wet. Injury occurs because wet feet lose heat 25 times faster than dry feet.

Symptoms including numbness, tingling, itching, leg cramps, and pain are early symptoms of trench foot. These occur as the feet are being warmed. As the condition worsens swelling, cold and blotchy skin, redness or blueness of the skin are typical symptoms. In severe cases people may develop blisters, open sores, bleeding under the skin, experience skin or tissue dying or falling off and potentially gangrene.

If a person is experiencing trench foot (immersion):

- Call 911 immediately in an emergency; otherwise seek medical assistance as soon as possible.
- Remove wet shoes/boots and wet socks.
- Dry the feet and avoid working on them.
- Keep affected feet elevated and avoid walking on feet as this may cause tissue damage.

To help prevent trench foot:

- Change out of wet socks and shoes/boots as soon as possible.
- Let your feet air-dry and make sure your feet stay dry.
- Keep your feet elevated when possible.
- Change into a new pair of clean and dry socks at least once a day.
- Wear properly fitting boots or shoes.

Frostbite: Frostbite is caused by the freezing of the skin. The early stage of frostbite is called frostnip. It causes a cold feeling followed by numbness. As frostbite gets worse, the affected skin may change color and become hard or waxy looking. In severe cases, it can lead to amputation. The risk of frostbite is increased in people with reduced blood circulation and among people who are not dressed properly for extremely cold temperatures. Exposed skin is at risk of frostbite in conditions that are freezing cold and windy or wet. Frostbite also can occur on skin covered by gloves or other clothing. Mild frostbite gets better with rewarming. Seek medical attention for anything more serious than mild frostbite because the condition can cause permanent damage to skin, muscle, bone and other tissues.

Symptoms include reddened skin that develops patches that are shades of red, white, blue, gray, purple, or brown. The color of affected skin depends on how serious the frostbite is and the usual skin color. This may occur anywhere including the fingers, toes, nose, or ear lobes. Other symptoms may include numbness, tingling, a stinging or burning sensation, aching, a loss of feeling, firm/hard areas of the skin, cold and hard waxy looking skin, clumsiness due to joint stiffness and pain. Blisters may occur in the affected areas after the skin is rewarmed in cases of superficial frostbite.

If a person is experiencing frostbite:

- Get into a warm room as soon as possible.
- Unless necessary, do not walk on frostbitten feet or toes.
- Follow the recommendations described for hypothermia.
- Protect the frostbitten area (ie: wrap loosely in a dry cloth and protect the area from contact until first responders arrive).
- DO NOT rub or massage the affected area (rubbing causes damage to the skin and tissue).
- DO NOT try to re-warm the frostbitten area before getting medical help (do not use heating pads or place in warm water). If a frostbitten area is rewarmed and gets frozen again, more tissue damage will occur. It is safer for the frostbitten area to be rewarmed by medical professionals.
- Give warm sweetened drinks, if alert (no alcohol)

To help prevent frostbite:

- Limit time outdoors when it's freezing cold and wet or windy.
- Dress in loose layers. Air trapped between the layers helps insulate you from the cold. Choose undergarments that wick moisture away from the skin. Next put on something made of fleece or wool. For the outer layer, wear something windproof and waterproof. Change out of wet gloves, hats and socks as soon as possible.
- Wear a hat or headband made for cold weather.
- Wear mittens. Mittens provide better protection than gloves.
- Wear socks and sock liners. Make sure they fit well, wick moisture and provide insulation.
- Watch for symptoms of frostbite. Early signs of frostbite are slight changes in skin color, prickling and numbness. Seek warm shelter if you notice symptoms of frostbite.
- Eat well-balanced meals and stay hydrated.
- Keep moving. Exercise can get your blood flowing and help you stay warm.

Hypothermia: Occurs when the normal body temperature (98.6°Fahrenheit) drops to less than 95°F. Exposure to cold temperatures causes the body to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up the body's stored energy and result in hypothermia, an abnormally low body temperature. Hypothermia is usually associated with very cold temperatures, but it can occur even at cool temperatures (above 40°F) if a person becomes chilled from rain, sweat, or immersion in cold water.

A body temperature that is too low affects the heart, the nervous system and other vital organs. It also affects the brain, making a person unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know what is happening and will not be able to do anything about it.

An important symptom of mild hypothermia is uncontrollable shivering, which should not be ignored. Moderate to severe symptoms of hypothermia include loss of coordination, confusion, slurred speech, memory loss, drowsiness, exhaustion or feeling very tired, heart rate/breathing slow, unconsciousness and possible death.

If a person is experiencing hypothermia:

- Call 911 immediately.
- Move the person to a warm room or vehicle.
- Be gentle. When helping someone with hypothermia, handle them gently. Only move the person as much as is necessary. Don't massage or rub the person. Vigorous or jarring movements may trigger cardiac arrest.
- Remove any wet clothing and replace it with dry clothing. Wrap the entire body (including the head and neck) in layers of blankets and with a vapor barrier (ie: tarp, garbage bag) Do not cover the face.
- Give warm sweetened drinks, if alert (no alcohol) to help increase the body temperature. Never try to give a drink to an unconscious person.
- Place bottles filled with warm water or place warm first-aid compresses in armpits, sides of chest, and groin. Do not apply them to the arms or legs. Heat applied to the arms and legs forces cold blood back toward the heart, lungs and brain, causing the core body temperature to drop. This can be fatal.
- Don't apply direct heat. Don't use hot water, a heating pad or a heating lamp to warm the person. Extreme heat can damage the skin. It also can trigger irregular heartbeats that cause the heart to stop.
- Monitor breathing. A person with severe hypothermia may appear unconscious, with no clear signs of a pulse or breathing. If the person's breathing has stopped or if the person has no pulse, cardiopulmonary resuscitation (CPR) should be provided and continued until the person responds or medical aid becomes available.

To help prevent hypothermia:

- Limit time outdoors when it's freezing cold.
- Dress in dry, waterproof, loose layers. Air trapped between the layers helps insulate you from the cold.
- Cover all your body parts, including head, face, hands, neck, and ankles
- Wear a hat made for cold weather.
- Watch for symptoms of hypothermia. These include excessive shivering, skin discoloration, such as pale, gray, or blue lips, slowed breathing (apnea), slurred speech, clumsiness, and confusion.
- Seek warm shelter immediately if you notice symptoms of hypothermia.
- Eat well-balanced meals and stay hydrated.
- Keep moving. Exercise can get your blood flowing and help you stay warm.

Chilblains: Painful inflammation of small blood vessels in the skin, most often in the hands or feet, caused by the repeated exposure of skin to damp air with temperatures just above freezing. Chilblains, also known as perniosis, usually clears up in 2 or 3 weeks, especially if the weather gets warmer. Although this condition does not usually result in permanent injury, you may get the symptoms of chilblains each cold season for years.

Symptoms include redness, itching, sores or blistering, swelling, pain or stinging, inflammation, and possible ulceration in severe cases.

If a person is experiencing chilblains:

- Avoid scratching.
- Slowly warm the skin.
- Use corticosteroid cream to relieve itching and swelling.
- Keep blisters and ulcers clean and covered.
- Seek medical care for chilblains if you have symptoms that are long lasting or go away then flare, think you might have an infection, have symptoms that aren't improving after two weeks of home care, have symptoms that extend into the warm season, or aren't sure whether you were in below-freezing temperatures, as you might have frostbite.

To help prevent chilblains:

- Avoid or limit your exposure to the cold.
- When you come in from the cold, rewarm the skin gradually.
- Dress in layers of loose clothing and wear mittens, a scarf and a hat, and warm, water-resistant footwear.
- Cover all exposed skin as completely as possible when going outside in cold weather.
- Keep your hands, feet and face dry and warm.
- Keep your home and workplace comfortably warm.
- Don't smoke.

Cold Weather Protection Tips:

- Wear layers of loose-fitting, lightweight, warm clothing.
- Wear a waterproof and windproof jacket as an outer layer.
- Wear a hat that will cover the ears to help maintain body heat.
- Cover all body parts to help maintain body heat.
- Try to stay dry and out of the wind.
- Cover your mouth to protect your lungs from extreme cold.
- Mittens, snug at the wrist, are better than gloves.
- Wear waterproof footwear with good traction.
- Eat well-balanced meals.
- Stay hydrated.
- Keep moving. Exercise can get your blood flowing and help you stay warm.
- Avoid or, when possible, limit your exposure to the cold.
- Change out of wet socks and shoes/boots as soon as possible.

  Always remain alert for any signs of frostbite, trench foot, hypothermia, or chilblains. If you notice any of the signs or symptoms of these conditions seek medical advice and treatment right away to prevent possible permanent damage.