TRAIN-THE-TRAINER: WEATHER HAZARDS

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Objectives:

- Educate workers about weather and environmental hazards and the illnesses and injuries that could result if the proper safety measures are not taken to prevent/reduce exposure.
- Explore the reasons why workers do not pay close attention to the weather as a hazard at the workplace.
- To be able to identify environmental hazards, symptoms of heat and cold illnesses, first aid and methods of prevention.

Icebreaker: The hat of questions

Place different questions in sheets of paper and put them in a hat. Using a wheel have participants stand around and spin the wheel. When it stops, the person that the needle from the wheel is pointing at will have to pick a question from the hat and answer it. This will be repeated until each question from the hat has been asked. This activity will serve as an icebreaker and pre-test.

Activity 1: Introduction to the Silent Hazards

In any workplace, there are hazards that are easy to identify, those that pose an obvious threat to the safety of those that perform that type of job. For example, when using a ladder, most people are aware that being in high places can lead to falls, or that there's always the potential for cuts when using a power saw. However, there are hazards that are not as easy to identify and more often than not, workers ignore or disregard their existence, the weather is one of those hazards that workers oftentimes do not pay attention to.

Many day laborers have to work outdoors, which means weather conditions are going to interfere with having a safe working environment. Moreover, some weather conditions pose a serious risk to their health and safety due to different factors such as the individual's health, the interference of weather on a particular task or in the workers ability to have a grip on tools and equipment, changes in the environment that affect the work space, etc. For that reason, it is important to pay close attention to how the weather conditions my affect the workspace and how workers can protect themselves from weather and environmental hazards at their jobs. This training will focus on identifying environmental or weather hazards, symptoms associated with heat and cold illnesses, first aid and methods of prevention.

Activity 2: Weather Hazards

Through the use of information cards, we will review some of the most common health risks that workers are exposed to in different weather conditions. Each card contains information about an illness caused by weather conditions, the symptoms associated with the illness and a list of first aid measures. There are illustrations of the symptoms of the illness on the back of the card.

Note that the cards do not have any preventative information. Each participant will have the opportunity to participate in the creation of a plan to prevent becoming victims of any of the following illnesses: heat stroke, heat exhaustion, heat syncope, heat cramps, heat rash, UV radiation, hypothermia, cold water immersion, frostbite, trench foot, and chilblains.

Explain to the participants that day laborers can be exposed to a lot of different weather hazards, depending on where they are working, the season, the time of day and the duration of time they're working outdoors and how prepared they are for that environment. During the summer months, workers are at risk to the health effects of extreme heat, such as heat stroke, heat rash and heat exhaustion, as well as ultraviolet (UV) radiation. On the other hand, during the winter months, workers are at risk to the effects of extreme cold, including hypothermia and frostbite.

Ask participants: What is the most extreme weather condition that you have been exposed to at work? Give participants room to respond. Once workers have responded, ask them if they have fallen sick or have been hurt because of the weather or temperature in which they were working.

Say to the participants that it is important to talk to the workers about weather and environmental hazards so that they can learn to identify such hazards and how to protect themselves from dangerous situations due to the weather.

HEAT STRESS

Overview

First we will explore the illnesses caused by hot temperatures. Workers who are exposed to extreme heat or work in hot environments may be at risk of heat stress. Heat stress can result in heat stroke, heat exhaustion, heat cramps, or heat rashes. Heat can also increase the risk of injuries in workers.

Ask the participants: Why do you think heat can increase the risk of injuries at the workplace? Possible answers may include: heat it may result in sweaty palms,

fogged-up safety glasses, and dizziness. Burns may also occur as a result of accidental contact with hot surfaces or steam.

Has anyone in this room worked in very hot work environments? Let participants respond. Ask those participants to share how they felt; did they get dizzy? Get a headache? Did they faint? Allow time for them to share how the heat affected their bodies.

As, who is affected by heat? Workers at risk of heat stress include outdoor workers and workers in hot environments. Workers at greater risk of heat stress include those who are 65 years of age or older, are overweight, have heart disease or high blood pressure, or take medications that may be affected by extreme heat. Additionally, workers that are not used to hot weather might be at a greater risk.

Prevention of heat stress in workers is important. We will review what heat stress is, how it affects workers health and safety, and how it can be prevented.

Types of Heat Stress

Starting from the least severe form of heat illness, show participants images that depict the illness. Each card will contain a description of the illness, symptoms and first aid measures on one side and images on the other so that participants can look at the images while the facilitator reads the information from the back of the card.

Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.

Symptoms

Symptoms of heat rash include:

- Heat rash looks like a red cluster of pimples or small blisters.
- It is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creases.

First Aid

Workers experiencing heat rash should:

- Try to work in a cooler, less humid environment when possible.
- Keep the affected area dry.
- Dusting powder may be used to increase comfort.

Heat Cramps

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles

cause painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Symptoms

Muscle pain or spasms usually in the abdomen, arms, or legs.

First Aid

Workers with heat cramps should:

- Stop all activity, and sit in a cool place.
- Drink clear juice or a sports beverage.
- Do not return to strenuous work for a few hours after the cramps subside because further exertion may lead to heat exhaustion or heat stroke.
- Seek medical attention if any of the following apply:
 - The worker has heart problems.
 - The worker is on a low-sodium diet.
 - The cramps do not subside within one hour.

Heat Syncope

Heat syncope is a fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Symptoms

Symptoms of heat syncope include:

- Light-headedness
- Dizziness
- Fainting

First Aid

Workers with heat syncope should:

- Sit or lie down in a cool place when they begin to feel symptoms.
- Slowly drink water, clear juice, or a sports beverage.

Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.

Symptoms

Symptoms of heat exhaustion include:

- Heavy sweating
- Extreme weakness or fatigue
- Dizziness, confusion
- Nausea
- Clammy, moist skin
- Pale or flushed complexion
- Muscle cramps
- Slightly elevated body temperature
- Fast and shallow breathing

First Aid

Treat a worker suffering from heat exhaustion with the following:

- Have them rest in a cool, shaded or air-conditioned area.
- Have them drink plenty of water or other cool, nonalcoholic beverages.
- Have them take a cool shower, bath, or sponge bath.

Heat Stroke

Heat stroke is the most serious heat-related disorder. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106 degrees Fahrenheit or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

Symptoms

Symptoms of heat stroke include:

- Hot, dry skin or profuse sweating
- Hallucinations
- Chills
- Throbbing headache
- High body temperature
- Confusion/dizziness
- Slurred speech

First Aid

Take the following steps to treat a worker with heat stroke:

- Call 911 and notify their supervisor.
- Move the sick worker to a cool shaded area.
- Cool the worker using methods such as:
 - Soaking their clothes with water.
 - Spraying, sponging, or showering them with water.
 - Fanning their body.

It's important for workers to understand the risks associated with heat stress to ensure they will be aware of such risks and participate actively in their prevention. Employers should also be informed about those risks, but even more so, of how to protect workers. Here are some recommendations for employers:

Recommendations for Employers

Employers should take the following steps to protect workers from heat stress:

- Schedule maintenance and repair jobs in hot areas for cooler months.
- Schedule hot jobs for the cooler times of the day.
- Acclimatize workers by exposing them progressively to longer periods in hot work environments.
- Reduce the physical demands of workers.
- Use relief workers or assign extra workers for physically demanding jobs.
- Provide cool water or liquids to workers.
 - Avoid drinks with caffeine, alcohol, or large amounts of sugar.
- Provide rest periods with water breaks.
- Provide cool, shaded areas for use during break periods.
- Monitor workers who are at risk of heat stress.
- Provide heat stress training that includes information about:
 - Worker risk
 - Prevention
 - Symptoms
 - The importance of monitoring yourself and coworkers for symptoms
 - Treatment
 - Personal protective equipment

Recommendations for Workers

Workers should avoid exposure to extreme heat, sun exposure, and high humidity when possible. When these exposures cannot be avoided, workers should take the following steps to prevent heat stress:

- Wear light-colored, loose-fitting, breathable clothing such as cotton.
 - Avoid non-breathing synthetic clothing.
- Gradually build up to heavy work.
- Schedule heavy work during the coolest parts of day.
- Take more breaks in extreme heat and humidity.
 - Take breaks in the shade or a cool area when possible.
- Drink water frequently even if you are not thirsty. Drink enough water that you never become thirsty.
- Avoid drinks with caffeine, alcohol, and anything that contains large amounts of sugar.
- Be aware that protective clothing or personal protective equipment may increase the risk of heat stress.
- Monitor your physical condition and that of your coworkers.
- If you feel any of the symptoms described in the cards, take a break and make sure to cool down before you go back to work.
- Seek medical help if symptoms do not get better.

UV RADIATION

Overview

Ask participants if they have ever been exposed to the sun and been affected by that in a serious way?

Explain to participants that Ultraviolet (UV) rays are a form of radiation from the sunlight that is invisible. UV rays can penetrate and change the structure of skin cells, which can lead to skin cancer. There are three types of UV rays: ultraviolet A (UVA), ultraviolet B (UVB), and ultraviolet C (UVC). UVA is the most abundant source of solar radiation at the earth's surface and penetrates beyond the top layer of human skin. Scientists believe that UVA radiation can cause damage to connective tissue and increase a person's risk for developing skin cancer. UVB rays penetrate less deeply into skin, but can still cause some forms of skin cancer. Natural UVC rays do not pose a risk to workers because they are absorbed by the Earth's atmosphere.

Sunlight exposure is highest during the summer and between 10:00 a.m. and 4:00 p.m. Working outdoors during these times increases the chances of getting sunburned. Snow and light-colored sand reflect UV light and increase the risk of sunburn. At work sites with these conditions, UV rays may reach workers' exposed

skin from both above and below. It is also important to understand that workers are at risk of UV radiation even on cloudy days.

Risks of UV Radiation

Sunburn

Sunburn is an often-painful sign of skin damage from spending too much time outdoors without wearing protective sunscreen. Years of overexposure to the sun lead to premature wrinkling, aging of the skin, age spots, and an increased risk of skin cancer. In addition to the skin, eyes can get burned from sun exposure. Sunburned eyes become red, dry, and painful, and feel gritty. Chronic exposure of eyes to sunlight may cause pterygium (tissue growth that leads to blindness), cataracts, and perhaps macular degeneration, a leading cause of blindness.

Symptoms

Unlike other burns, sunburn is not immediately apparent. Symptoms usually start about 4 hours after sun exposure, worsen in 24-36 hours, and resolve in 3-5 days. Symptoms may include:

- Red, warm, tender and swollen skin
- Blistering
- Headache
- Fever
- Nausea
- Fatigue

The pain from sunburn is worse 6-48 hours after sun exposure. Skin peeling usually begins 3-8 days after exposure.

First Aid

There is no quick cure for minor sunburn:

- Take aspirin, acetaminophen, or ibuprofen to relieve pain and headache and reduce fever.
- Drink plenty of water helps to replace fluid losses.
- Cool baths or the gentle application of cool wet cloths on the burned area may also provide some comfort.
- Avoid further exposure until the skin is better.
- Apply moisturizing cream, aloe, or 1% hydrocortisone cream for additional relief.

If blistering occurs:

- Lightly bandage or cover the area with gauze to prevent infection.
- Don't break or pop the blisters to avoid infection.
- When the blisters break and the skin peels, remove dried fragments and apply an antiseptic ointment or hydrocortisone cream.
- Seek medical attention if any of the following occur:
 - Severe sunburns covering more than 15% of the body
 - Dehydration
 - High fever (>101°F)
 - Extreme pain that persists for longer than 48 hours

Skin Cancer

Because day laborers are often exposed to long periods of sun exposure, it is important for them to be able to identify different skin cancer types. Oftentimes, workers are oblivious to the negative effects that UV radiation can have on their bodies and therefore, they disregard the symptoms and signs of skin abnormalities. Here is some information that can be useful:

Basal Cell

- A small raised bump that looks smooth, shiny, and translucent.
- A small, pink, crater-like growth with a raised, rolled border and an indentation in the center.
- A scar-like area that is white, yellow, or waxy.
- Reddish, irritated patches of skin.
- A sore that does not heal.
- Can usually be removed by excision or topical treatments.
- If diagnosed and treated early, basal cell cancers can be cured.



Squamous Cell

- Crusty, warty appearance.
- A raised growth with a depression in the center.

- Scaly, red patch area.
- A sore that does not heal.
- Can usually be removed by excision or topical treatments.
- If diagnosed and treated early, squamous cell cancers can be cured.



Melanoma

Changes in the size, shape, or color of moles.

- Dark mole-like appearance.
- Flat or slightly elevated discolored patch (tan, brown, red, black, blue, or white).
- Change on the skin:
- New spot developing.
- Change in size, color, or shape of existing spot or mole.
- Malignant melanoma carries significant, even fatal implications.
- Incidence of melanoma has been steadily rising, affecting people of all ages.



Symptoms



In particular, watch for:

- Irregular borders on moles (ragged, notched, or blurred edges).
- Moles that are not symmetrical (one half doesn't match the other).
- Colors that are not uniform throughout.
- Moles that are bigger than a pencil eraser.
- Sores that bleed and do not heal.
- Itchy or painful moles.
- Red patches or lumps.
- New moles.

Recommendations for Employers

Employers should take the following steps to protect workers from exposure to UV radiation:

- When possible, avoid scheduling outdoor work when sunlight exposure is the greatest.
- Provide shaded or indoor break areas.
- Provide training to workers about UV radiation including:
 - Their risk of exposure
 - How to prevent exposure
 - The signs and symptoms of overexposure

Recommendations for Workers

- Wear sunscreen with a minimum of SPF 15.
 - SPF refers to the amount of time a person will be protected from a burn. An SPF of 15 will allow a person to stay out in the sun 15 times longer than they normally would be able to stay without burning. The SPF rating applies to skin reddening and protection against UVB exposure.
 - Sunscreen performance is affected by wind, humidity, perspiration, and proper application.
- Old sunscreens should be thrown away because they lose their potency after 1-2 years.
- Sunscreens should be liberally applied (a minimum of 1 ounce) at least 20 minutes before sun exposure.
 - Special attention should be given to covering the ears, scalp, lips, neck, tops of feet, and backs of hands.
- Sunscreens should be reapplied at least every 2 hours and each time a person gets out of the water or perspires heavily.
 - Some sunscreens may also lose efficacy when applied with insect repellents, necessitating more frequent application when the two products are used together.

- Another effective way to prevent sunburn is by wearing appropriate clothing. Light layers of clothing work best, in light colors, which reflect heat, rather than dark ones, which absorb it. Try a shell or tank top, and then wear a light camp shirt open over that. Natural fibers like cotton are coolest.
- A lot of clothing, especially that from outdoor activity stores, will carry a label indicating the UV protection level of the clothing. Use this as a guide in choosing your layers of clothing.
 - High-SPF clothing has been developed to provide more protection for those with photosensitive skin or a history of skin cancer.
- Workers should also wear wide-brimmed hats and sunglasses with almost 100% UV protection and with side panels to prevent excessive sun exposure to the eyes.

Note: If you have access to the internet, you can visit the UV index to check how dangerous the UV rays are in your area and the protections you need:

http://www.epa.gov/sunwise/uvindex.html

COLD STRESS

Overview

Say to the participants: 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.

Types of Cold Stress

Chilblains

Chilblains are caused by the repeated exposure of skin to temperatures just above freezing to as high as 60 degrees F. The cold exposure causes damage to the capillary beds (groups of small blood vessels) in the skin. This damage is permanent and the redness and itching will return with additional exposure. The redness and itching typically occurs on cheeks, ears, fingers, and toes.

Symptoms

Symptoms of chilblains include:

- Redness
- Itching
- Possible blistering
- Inflammation
- Possible ulceration in severe cases

First Aid

Workers suffering from chilblains should:

- Avoid scratching
- Slowly warm the skin
- Use corticosteroid creams to relieve itching and swelling
- Keep blisters and ulcers clean and covered

Trench Foot

Trench foot, also known as immersion foot, is an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60 degrees F if the feet are constantly wet. Injury occurs because wet feet lose heat 25-times faster than dry feet. Therefore, to prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of lack of oxygen and nutrients and due to the buildup of toxic products.

Symptoms

Symptoms of trench foot include:

- Reddening of the skin
- Numbness
- Leg cramps
- Swelling
- Tingling pain
- Blisters or ulcers
- Bleeding under the skin
- Gangrene (the foot may turn dark purple, blue, or gray)

First Aid

Workers suffering from trench foot should:

- Remove shoes/boots and wet socks.
- Dry their feet.
- Avoid walking on feet, as this may cause tissue damage.

Frostbite

Frostbite is an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in the affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage body tissues, and severe cases can lead to amputation. In extremely cold temperatures, the risk of frostbite is increased in workers with reduced blood circulation and among workers who are not dressed properly.

Symptoms

Symptoms of frostbite include:

- Reduced blood flow to hands and feet (fingers or toes can freeze)
- Numbness
- Tingling or stinging
- Aching
- Bluish or pail, waxy skin

First Aid

Workers suffering from frostbite should:

- Get into a warm room as soon as possible.
- Unless absolutely necessary, do not walk on frostbitten feet or toes-this increases the damage.
- Immerse the affected area in warm-not hot-water (the temperature should be comfortable to the touch for unaffected parts of the body).
- Warm the affected area using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers.
- Do not rub or massage the frostbitten area; doing so may cause more damage.
- Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.

Hypothermia

When exposed to cold temperatures, your body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up your body's stored energy. The result is hypothermia, or abnormally low body temperature. A body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and will not be able to do anything about it.

Symptoms

Symptoms of hypothermia can vary depending on how long you have been exposed to the cold temperatures.

Early Symptoms

- Shivering
- Fatigue
- Loss of coordination
- Confusion and disorientation

Late Symptoms

- No shivering
- Blue skin
- Dilated pupils
- Slowed pulse and breathing
- Loss of consciousness

First Aid

Take the following steps to treat a worker with hypothermia:

- Alert the supervisor and request medical assistance.
- Move the victim into a warm room or shelter.
- Remove their wet clothing.
- Warm the center of their body first-chest, neck, head, and groin-using an electric blanket, if available; or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets.
- Warm beverages may help increase the body temperature, but do not give alcoholic beverages. Do not try to give beverages to an unconscious person.
- After their body temperature has increased, keep the victim dry and wrapped in a warm blanket, including the head and neck.
- If victim has no pulse, begin cardiopulmonary resuscitation (CPR).

Cold Water Immersion

Cold water immersion creates a specific condition known as immersion hypothermia. It develops much more quickly than standard hypothermia because water conducts heat away from the body 25 times faster than air. Typically people in temperate climates don't consider themselves at risk from hypothermia in the water, but hypothermia can occur in any water temperature below 70°F.

Symptoms

Symptoms may include:

- Panic and shock (which may lead to cardiac arrest).
- Severe strain of the body.
- Total disorientation.
- Numbed extremities (to the point of uselessness).
- Severe pain.
- Unconsciousness.
- Hypothermia.

Late symptoms ("near" drowning) may include:

- Blue skin.
- No detectable breathing.
- No apparent pulse or heartbeat.
- Pupils fully dilated.

Survival times can be lengthened by wearing proper clothing (wool and synthetics and not cotton), using a personal flotation device (PFD, life vest, immersion suit, dry suit), and having a means of both signaling rescuers (strobe lights, personal locator beacon, whistles, flares, waterproof radio) and having a means of being retrieved from the water.

First Aid

Treatment for hypothermia depends on the condition of the person. Mild hypothermia victims who show only symptoms of shivering and are capable of rational conversation may only require removal of wet clothes and replacement with dry clothes or blankets.

In more severe cases where the victim is semi-conscious, immediate steps must be taken to begin the rewarming process.

- Get the person out of the water and into a warm environment. Remove the clothing only if it can be done with a minimum of movement of the victim's body. Do not massage the extremities.
- Lay the semi-conscious person face up, with the head slightly lowered, unless vomiting occurs. The head down position allows more blood to flow to the brain.
- If advanced rescue equipment is available it can be administered by those trained in its use. Warm humidified oxygen should be administered by facemask.

- Immediately attempt to rewarm the victim's body core. If available, place the person in a bath of hot water at a temperature of 105 to 110 degrees. It is important that the victim's arms and legs be kept out of the water to prevent "after-drop". After-drop occurs when the cold blood from the limbs is forced back into the body resulting in further lowering of the core temperature. After-drop can be fatal.
- If a tub is not available, apply hot, wet towels or blankets to the victim's head, neck, chest, groin, and abdomen. Do not warm the arms or legs.
- If nothing else is available, a rescuer may use his or her own body heat to warm a hypothermia victim.
- Never give alcohol to a hypothermia victim.

Recommendations for Workers for cold water immersion

- Alert the supervisor and request medical assistance.
- Cold water robs the body's heat 32 times faster than cold air. If you should fall into the water, all efforts should be given to getting out of the water by the fastest means possible.
- Physical exercise such as swimming causes the body to lose heat at a much faster rate than remaining still in the water. Blood is pumped to the extremities and quickly cooled. Remain as calm as possible and avoid swimming.
- Should you find yourself in the water, avoid panic. Air trapped in clothing can provide buoyancy as long as you remain still in the water. Swimming or treading water will greatly increase heat loss and can shorten survival time by more than 50%.
- The major body heat loss areas are the head, neck, armpits, chest and groin. If you are not alone, huddle together or in a group facing each other to maintain body heat.

Cold Stress Recommendations for Employers

Employers should take the following steps to protect workers from cold stress:

- Schedule maintenance and repair jobs in cold areas for warmer months.
- Schedule cold jobs for the warmer part of the day.
- Reduce the physical demands of workers.
- Use relief workers or assign extra workers for long, demanding jobs.
- Provide warm liquids to workers.
- Provide warm areas for use during break periods.
- Monitor workers who are at risk of cold stress.

- Provide cold stress training that includes information about:
 - Worker risk
 - Prevention
 - Symptoms
 - The importance of monitoring yourself and coworkers for symptoms
 - Treatment
 - Personal protective equipment

Recommendations for Workers

Workers should avoid exposure to extremely cold temperatures when possible. When cold environments or temperatures cannot be avoided, workers should follow these recommendations to protect themselves from cold stress:

- Wear appropriate clothing.
 - Wear several layers of loose clothing. Layering provides better insulation.
 - Tight clothing reduces blood circulation. Warm blood needs to be circulated to the extremities.
 - When choosing clothing, be aware that some clothing may restrict movement resulting in a hazardous situation.
- Make sure to protect the ears, face, hands and feet in extremely cold weather.
 - Boots should be waterproof and insulated.
 - Wear a hat; it will keep your whole body warmer. (Hats reduce the amount of body heat that escapes from your head.)
- Move into warm locations during work breaks; limit the amount of time outside on extremely cold days.
- Carry cold weather gear, such as extra socks, gloves, hats, jacket, blankets, a change of clothes and a thermos of hot liquid.
- Include a thermometer and chemical hot packs in your first aid kit.
- Avoid touching cold metal surfaces with bare skin.
- Monitor your physical condition and that of your coworkers.

Activity 3: The Weather Wheel

After listening to all of the different illnesses and risks that workers can encounter when working under difficult weather conditions, participants will be part of a game called the "the weather wheel." Using the information they have received, they will be asked several questions about the illness, symptoms and first aid measures; but in addition to that, they will have to come up with a prevention plan in order to get the points necessary to win the game. The wheel will be broken into several sections; each section will represent either hot or cold weather. This activity will also help enhance the information reviewed and the facilitator will have an opportunity to assess how much of the information provided have participants retained. This activity will serve as the post-test.

Rules of the game:

Divide the participants into three to four groups. To figure out what group will go first, have them pick a piece of paper from a hat. Each piece of paper will have a number from 1 to 4. Whoever gets number 1 will go first and so on.

Each group will have a chance to spin the wheel, and depending on where it stops (hot or cold slot), that group will have to answer a question related to that weather condition. The facilitator will have a deck of blue (cold) cards and a deck of orange (hot) cards that will contain the questions that participants will have to answer. He or she will let the group pick a card from whatever weather condition the slot stopped on. The group must answer the question in order to get the points from the slot they got.

If they answer correctly, they will earn the points from the slot, and will have the chance to go again for a total of two turns. If they answer incorrectly, then the next group gets to spin the wheel.

The two groups that earn the most points at the end of 30 minutes get to go on for the next part of the game. In this section, each group will have to create a prevention plan for a weather condition that will be given to them. They will have 15 minutes to come up with a plan to protect workers. At the end of the 15 minutes, each group will have 5 minutes to present their plan and explain to the judges how their prevention plan will protect workers.

The rest of the participants (the other groups that got the least points) will serve as the judges for the prevention plan.

The group that presents the best prevention plan wins. (We may have a prize available for the winner).

Basal Cell

- A small raised bump that looks smooth, shiny, and translucent.
- A small, pink, crater-like growth with a raised, rolled border and an indentation in the center.
- A scar-like area that is white, yellow, or waxy.
- Reddish, irritated patches of skin.
- A sore that does not heal.
- Can usually be removed by excision or topical treatments.
- If diagnosed and treated early, basal cell cancers can be cured.







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Symptoms

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First Aid

Workers suffering from chilblains should:

- Avoid scratching
- Slowly warm the skin
- Use corticosteroid creams to relieve itching and swelling
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- Severe strain of the body.
- Total disorientation.
- Numbed extremities (to the point of uselessness).
- Severe pain.
- Unconsciousness.
- Hypothermia.

Late symptoms ("near" drowning) may include:

- Blue skin.
- No detectable breathing.
- No apparent pulse or heartbeat.
- Pupils fully dilated.

First Aid

In severe cases where the victim is semi-conscious, immediate steps must be taken to begin the rewarming process.

- Get the person out of the water and into a warm environment. Remove the clothing only if it can be done with a minimum of movement of the victim's body. Do not massage the extremities.
- Lay the semi-conscious person face up, with the head slightly lowered, unless vomiting occurs. The head down position allows more blood to flow to the brain.
- If advanced rescue equipment is available it can be administered by those trained in its use. Warm humidified oxygen should be administered by facemask.
- Immediately attempt to rewarm the victim's body core. If available, place the person in a bath of hot water at a temperature of 105 to 110 degrees. It is important that the victim's arms and legs be kept out of the water to prevent "after-drop". After-drop occurs when the cold blood from the limbs is forced back into the body resulting in further lowering of the core temperature. After-drop can be fatal.
- If a tub is not available, apply hot, wet towels or blankets to the victim's head, neck, chest, groin, and abdomen. Do not warm the arms or legs.
- If nothing else is available, a rescuer may use his or her own body heat to warm a hypothermia victim.
- Never give alcohol to a hypothermia victim.



Frostbite

Frostbite is an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in the affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage body tissues, and severe cases can lead to amputation. In extremely cold temperatures, the risk of frostbite is increased in workers with reduced blood circulation and among workers who are not dressed properly.

Symptoms

Symptoms of frostbite include:

- Reduced blood flow to hands and feet (fingers or toes can freeze)
- Numbness
- Tingling or stinging
- Aching
- Bluish or pail, waxy skin

First Aid

Workers suffering from frostbite should:

- Get into a warm room as soon as possible.
- Unless absolutely necessary, do not walk on frostbitten feet or toes-this increases the damage.
- Immerse the affected area in warm-not hot-water (the temperature should be comfortable to the touch for unaffected parts of the body).
- Warm the affected area using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers.
- Do not rub or massage the frostbitten area; doing so may cause more damage.
- Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.



Heat Cramps

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles cause painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Symptoms

• Muscle pain or spasms usually in the abdomen, arms, or legs.

First Aid

Workers with heat cramps should:

- Stop all activity, and sit in a cool place.
- Drink clear juice or a sports beverage.
- Do not return to strenuous work for a few hours after the cramps subside because further exertion may lead to heat exhaustion or heat stroke.
- Seek medical attention if any of the following apply:
 - The worker has heart problems.
 - The worker is on a low-sodium diet.
 - $_{\circ}~$ The cramps do not subside within one hour.







Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.

Symptoms

Symptoms of heat exhaustion include:

- Heavy sweating
- Extreme weakness or fatigue
- Dizziness, confusion
- Nausea
- Clammy, moist skin
- Pale or flushed complexion
- Muscle cramps
- Slightly elevated body temperature
- Fast and shallow breathing

First Aid

Treat a worker suffering from heat exhaustion with the following:

- Have them rest in a cool, shaded or air-conditioned area.
- Have them drink plenty of water or other cool, nonalcoholic beverages.
- Have them take a cool shower, bath, or sponge bath.











Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.

Symptoms

Symptoms of heat rash include:

- Heat rash looks like a red cluster of pimples or small blisters.
- It is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creases.

First Aid

Workers experiencing heat rash should:

- Try to work in a cooler, less humid environment when possible.
- Keep the affected area dry.
- Dusting powder may be used to increase comfort.









Heat Stroke

Heat stroke is the most serious heat-related disorder. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106 degrees Fahrenheit or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

Symptoms

Symptoms of heat stroke include:

- Hot, dry skin or profuse sweating
- Hallucinations
- Chills
- Throbbing headache
- High body temperature
- Confusion/dizziness
- Slurred speech

First Aid

Take the following steps to treat a worker with heat stroke:

- Call 911 and notify their supervisor.
- Move the sick worker to a cool shaded area.
- Cool the worker using methods such as:
 - Soaking their clothes with water.
 - Spraying, sponging, or showering them with water.
 - $_{\circ}$ Fanning their body.













Heat Syncope/Heat Fainting

Heat syncope is a fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Symptoms

Symptoms of heat syncope include:

- Light-headedness
- Dizziness
- Fainting

First Aid

Workers with heat syncope should:

- Sit or lie down in a cool place when they begin to feel symptoms.
- Slowly drink water, clear juice, or a sports beverage.









Hypothermia

When exposed to cold temperatures, your body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up your body's stored energy. The result is hypothermia, or abnormally low body temperature. A body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and will not be able to do anything about it.

Symptoms

Symptoms of hypothermia can vary depending on how long you have been exposed to the cold temperatures.

Early Symptoms

- Shivering
- Fatigue
- Loss of coordination
- Confusion and disorientation

Late Symptoms

- No shivering
- Blue skin
- Dilated pupils
- Slowed pulse and breathing
- Loss of consciousness

First Aid

Take the following steps to treat a worker with hypothermia:

- Alert the supervisor and request medical assistance.
- Move the victim into a warm room or shelter.
- Remove their wet clothing.
- Warm the center of their body first-chest, neck, head, and groin-using an electric blanket, if available; or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets.
- Warm beverages may help increase the body temperature, but do not give alcoholic beverages. Do not try to give beverages to an unconscious person.
- After their body temperature has increased, keep the victim dry and wrapped in a warm blanket, including the head and neck.
- If victim has no pulse, begin cardiopulmonary resuscitation (CPR).





Melanoma

Changes in the size, shape, or color of moles.

- Dark mole-like appearance.
- Flat or slightly elevated discolored patch (tan, brown, red, black, blue, or white).
- Change on the skin:
- New spot developing.
- Change in size, color, or shape of existing spot or mole.
- Malignant melanoma carries significant, even fatal implications.
- Incidence of melanoma has been steadily rising, affecting people of all ages.



Squamous Cell

- Crusty, warty appearance.
- A raised growth with a depression in the center.
- Scaly, red patch area.
- A sore that does not heal.
- Can usually be removed by excision or topical treatments.
- If diagnosed and treated early, squamous cell cancers can be cured.





Sunburn

Sunburn is an often painful sign of skin damage from spending too much time outdoors without wearing protective sunscreen. Years of overexposure to the sun lead to premature wrinkling, aging of the skin, age spots, and an increased risk of skin cancer. In addition to the skin, eyes can get burned from sun exposure. Sunburned eyes become red, dry, and painful, and feel gritty. Chronic exposure of eyes to sunlight may cause pterygium (tissue growth that leads to blindness), cataracts, and perhaps macular degeneration, a leading cause of blindness.

Symptoms

Unlike other burns, sunburn is not immediately apparent. Symptoms usually start about 4 hours after sun exposure, worsen in 24-36 hours, and resolve in 3-5 days. Symptoms may include:

- Red, warm, tender and swollen skin
- Blistering
- Headache
- Fever
- Nausea
- Fatigue

The pain from sunburn is worse 6-48 hours after sun exposure. Skin peeling usually begins 3-8 days after exposure.

First Aid

There is no quick cure for minor sunburn:

- Take aspirin, acetaminophen, or ibuprofen to relieve pain and headache and reduce fever.
- Drink plenty of water helps to replace fluid losses.
- Cool baths or the gentle application of cool wet cloths on the burned area may also provide some comfort.
- Avoid further exposure until the skin is better.
- Apply moisturizing cream, aloe, or 1% hydrocortisone cream for additional relief. *If blistering occurs:*
- Lightly bandage or cover the area with gauze to prevent infection.
- Don't break or pop the blisters to avoid infection.
- When the blisters break and the skin peels, remove dried fragments and apply an antiseptic ointment or hydrocortisone cream.
- Seek medical attention if any of the following occur:
 - \circ Severe sunburns covering more than 15% of the body
 - Dehydration
 - High fever (>101°F)
 - Extreme pain that persists for longer than 48 hours







Trench Foot

Trench foot, also known as immersion foot, is an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60 degrees F if the feet are constantly wet. Injury occurs because wet feet lose heat 25-times faster than dry feet. Therefore, to prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of lack of oxygen and nutrients and due to the buildup of toxic products.

Symptoms

Symptoms of trench foot include:

- Reddening of the skin
- Numbness
- Leg cramps
- Swelling
- Tingling pain
- Blisters or ulcers
- Bleeding under the skin
- Gangrene (the foot may turn dark purple, blue, or gray)

First Aid

Workers suffering from trench foot should:

- Remove shoes/boots and wet socks.
- Dry their feet.
- Avoid walking on feet, as this may cause tissue damage.









PRE/POST QUESTIONS: WEATHER HAZARDS

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<u>Heat Stress</u>

- 1. Name the symptoms for heat stroke.
- 2. How can you treat heat rash?
- 3. Who is affected by heat?
- 4. Why are risks at the workplace increased in hot environments?
- 5. Name the symptoms of heat rash.
- 6. What are heat cramps?
- 7. What should you do if you get heat cramps?
- 8. Name the symptoms of heat syncope.
- 9. What is heat stroke?
- 10. What are the first aid measures to help a worker with heat exhaustion?
- 11. What causes heat stroke?

12. List 3 recommendations for employers to prevent workers from getting heat stress.

13. True or False: Workers should wear light-colored, loose-fitting, breathable clothing such as cotton when exposed to the sun.

14. True or False: You don't have to drink water unless you are really thirsty.

15. What are the times of the day when sunlight exposure is the highest?

16. True or False: UV rays can penetrate and change the structure of skin cells causing cancer.

17. Name the three different types of skin cancer we reviewed.

18. Describe the symptoms of squamous cells.

19. What is melanoma?

20. How can you protect yourself from getting skin cancer?

<u>Cold Stress</u>

- 1. Name the different types of cold stress.
- 2. What are chilblains?
- 3. Name the symptoms of chilblains.
- 4. What is trench foot?
- 5. Name the symptoms of trench foot?

6. True or False: Workers with trench foot should walk as much as they can to warm up their feet.

- 7. What areas of the body are affected by frostbite?
- 8. What is frostbite?
- 9. Name the symptoms of frostbite.
- 10. What are the first aid measures you should take to help a worker with frostbite?
- 11. What is hypothermia?
- 12. What happens to the human body during hypothermia?
- 13. Name the early symptoms of hypothermia.
- 14. Name the late symptoms of hypothermia.
- 15. What makes hypothermia particularly dangerous?
- 16. What steps should you take to help a worker with hypothermia?
- 17. What is immersion hypothermia?

18. True or False: Immersion hypothermia can occur in any water temperature below 70°F.

- 19. Name the symptoms of immersion hypothermia.
- 20. How can you help a person that is suffering from immersion hypothermia?

Facilitator:		_ Date: _				
Time:	Location: _					
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The training met my expectations.		0	0	0	0	0
2. The training objectives were identified and followed.		0	0	0	0	0
3. The content was easy to understand.		0	0	0	0	0
4. The materials distributed were useful.		0	0	0	0	0
5. The trainer was knowledgeable.		0	0	0	0	0
6. Class participation and interaction were encouraged.		0	0	0	0	0
7. Adequate time was provided for questions and discussion.		0	0	0	0	0
8. How do you rat	e the training overall	?				
Excellent Good		Average		Poor		Very poor
0	0	0			0	0
9. What aspects o	of the training could b	e improve	ed?			

The Weather Hazards Evaluation Form

10. Please list the three most important things you learned today.

THANK YOU FOR YOUR PARTICIPATION!

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