City of Baltimore
Department of Public Works

Heat-Illness Prevention Plan

(Updated as of 10/23/2024)

(DRAFT- Subject to Approval)

Table of Contents

I. INTRODUCTION

The following Heat-illness Prevention Plan was prepared using guidelines provided by the Occupational Safety and Health Administration (OSHA), National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH). This heat-illness prevention plan is provided as a resource and not designed to address all work site scenarios and heat stress hazards. It is designed to help reduce the development of heat-related illnesses in healthy, physically fit workers. **Workers with pre-existing medical conditions or are predisposed to conditions that put them at risk of heat-stress will follow the recommendations of their physician. Workers should contact human resources regarding pre-existing medical concerns.** The general approach addresses five (5) key areas of heat-illness prevention, as outlined below.

1. **Training workers and supervisors** on heat-illness prevention strategies, as well as recognizing and reporting the signs and symptoms of heat-related illnesses.
2. **Monitoring weather and workplace conditions**.
3. **Conducting a heat hazard assessment** of common environmental and work- related heat stress factors, when appropriate.
4. **Implementing heat-illness prevention strategies** to reduce heat stress. This includes:
    a. Reducing worker exposures to heat-stress conditions.
    b. Establishing an acclimatization program to help workers adapt to working in the heat.
    c. Ensuring workers are provided adequate water, shade and rest periods.
    d. Monitoring workers for early signs and symptoms of heat stress, including the use of physiological measures of body temperature, recovery heart rate and/or body weight.
5. **Planning for heat-related medical emergencies** and ensuring victims receive prompt medical attention.

II. PURPOSE

This heat-illness prevention plan was developed to provide supervisors and workers with the training and tools to help protect them from heat-related exposures and illnesses. The written plan shall be made available and accessible to employees and MOSH upon request.

III. SCOPE

Each work site and job task can be unique and contain a number of heat stress hazards that must be addressed prior to the beginning work and during work activities. Supervisors and workers are responsible for assessing these hazards and taking necessary corrective actions to reduce heat-related illnesses.

IV. DEFINITIONS

Acclimatization: The body's temporary adaptation to work in heat that occurs as a person is exposed over time. The physiological changes that occur in response to a succession of days of exposure to environmental heat stress and reduce the strain caused by the heat stress of the environment; and enable a person to work with greater effectiveness and with less chance of heat injury.

Alternative Cooling and Control Measures: Engineering, work-practice, administrative, or other controls to manage heat including job rotation, mechanical ventilation systems, misting equipment, cooling vests, air or water-cooled garments, and access to recreational water.

Drinking water: Potable water that is safe to drink and cool in temperature.

Emergency Operations and Essential Service: Work in connection with an emergency that requires the involvement of (a) law enforcement, (b) emergency medical services, (c) firefighting, (d) rescue and evacuation operations, or (e) emergency restoration of essential utilities or telecommunications.

Heat Cramp: A heat-related illness characterized by spastic contractions of the voluntary muscles (mainly arms, hands, legs, and feet), usually associated with restricted salt intake and profuse sweating without significant body dehydration.

Heat Exhaustion: A heat-related illness characterized by elevation of core body temperature above 38°C (100.4°F) and abnormal performance of one or more organ systems, without injury to the central nervous system. Heat exhaustion may signal impending heat stroke.

High Heat Conditions: Working conditions where the heat index of the work area equals or exceeds 90 degrees Fahrenheit.

Heat Index: A measure of how hot it feels when relative humidity is taken into account along with the actual air temperature which can be extrapolated from temperature and relative humidity using the National Weather Service Heat Index Calculator.

Heat Strain: The physiological response to the heat load (external or internal) experienced by a person, in which the body attempts to increase heat loss to the environment in order to maintain a stable body temperature.

Heat Stress: The net heat load to which a worker is exposed from the combined contributions of metabolic heat, environmental factors, and clothing worn which results in an increase in heat storage in the body.

Heat Stroke: An acute medical emergency caused by exposure to heat from an excessive rise in body temperature [above 41.1°C (106°F] and failure of the temperature-regulating mechanism. Injury occurs to the central nervous system characterized by a sudden and sustained loss of consciousness preceded by vertigo, nausea, headache, cerebral dysfunction, bizarre behavior, and excessive body temperature.

Heat Syncope: Collapse and/or loss of consciousness during heat exposure without an increase in body temperature or cessation of sweating, similar to vasovagal fainting except that it is heat induced.

Heat Tolerance: The physiological ability to endure heat and regulate body temperature at an average or better rate than others, often affected by the individual's level of acclimatization and physical conditioning.

Humidity, Relative (RH): The ratio of the water vapor present in the ambient air to the water vapor present in saturated air at the same temperature and pressure.

Hyperpyrexia: A body core temperature exceeding 40°C (104°F).

Hyperthermia: A condition where the core temperature of an individual is higher than 37.2°C (99°F). Hyperthermia can be classified as mild (37.2–38.5°C; 99–101.3°F), moderate (i.e., heat exhaustion [38.5–39.5°C; 101.3–103.1°F]), profound (>39.5°C; 103.1°F), or profound clinical hyperthermia (i.e., heat stroke [>40.5°C; 104.9°F]), and death can occur without treatment (>45°C; 113°F).

Metabolism (M): Transformation of chemical energy into free energy that is used to perform work and produce heat.

Pressure, Atmospheric (Pa): Pressure exerted by the weight of the air, which averages 760 mmHg at sea level and decreases with altitude.

Pressure, Water Vapor (Pa): The pressure exerted by the water vapor in the air.

Radiant Heat Exchange (R): The net rate of heat exchange by radiation between two radiant surfaces of different temperatures.

Recommended Alert Limit (RAL): The NIOSH-recommended heat stress alert limits for unacclimatized workers.

Recommended Exposure Limit (REL): The NIOSH-recommended heat stress exposure limits for acclimatized workers.

Rhabdomyolysis: A medical condition associated with heat stress and prolonged physical exertion, resulting in the rapid breakdown of muscle and the rupture and necrosis of the affected muscles.

Shade or Shaded Areas: Blockage of direct sunlight.

Sweating, Thermal: Response of the sweat glands to thermal stimuli.

Temperature, Ambient (ta): The temperature of the air surrounding a body. Also called air temperature or dry bulb temperature.

Temperature Regulation: The maintenance of body temperature within a restricted range under conditions of positive heat loads (environmental and metabolic) by physiologic and behavioral mechanisms.

Thermal Insulation, Clothing: The insulation value of a clothing ensemble.

Work: Physical efforts performed using energy from the metabolic rate of the body.

V. DPW POLICY

DPW is dedicated to protecting employees from on-the-job illnesses and injuries. All employees have the responsibility to work safely on the job. The purpose of this plan is to supplement our existing safety and health program and to ensure employees recognize heat stress hazards and act appropriately to address those hazards. The general approach addresses five (5) key areas of heat-illness prevention, as outlined below. The written plan shall be made available and accessible to employees and MOSH upon request.

Main Elements of Heat-Illness Prevention Plan	
Control	**Description**
1. Train supervisors and workers	Train supervisors and workers on heat-illness prevention strategies, as well as to recognize and report the signs and symptoms of heat-related illnesses.
2. Monitor weather and workplace conditions	Monitor weather workplace conditions and take preventative measures to protect workers when the heat index temperatures exceed 80 °F (21 °C).
3. Implement heat-illness prevention strategies	Implement appropriate heat-illness prevention strategies based on established risk levels for heat stress.
4. Plan for heat-related medical emergencies	Ensure adequate supervision, first aid and medical services are readily available in the event a worker suffers from a heat illness.

Employee Training and Responsibilities

Each employee will be trained in heat-illness prevention and will strictly adhere to the recommended practices, except when doing so would expose him/her to a greater hazard. If, in the employee's opinion, this is the case, the employee is to notify their supervisor of their concern and have the concern addressed before proceeding.

Employer Responsibilities

On the job, it is the responsibility of Management to implement this Heat-Illness Prevention Plan. Continual observational safety checks of work operations and the enforcement of the safety policy and procedures shall be regularly enforced. The supervisor is responsible for correcting any unsafe practices or conditions immediately.

It is the responsibility of the employer to ensure that all employees understand and adhere to the policies and procedures of this plan. It is also the responsibility of the employee to bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees. Management must approve any changes to the Heat-Illness Prevention Plan.

Supervisors of Workers Responsibilities

For each work site, the Supervisor of that site is responsible for the development and maintenance of that site's specific heat illness prevention plan.

VI. TRAINING

When training will be provided:

1. prior to an employee's first exposure to heat;
2. annually prior to exposure; and
3. immediately following any incident at the worksite involving a suspected or confirmed heat-related illness;

Who will be trained:

1. Management
2. Supervisor's
3. Team leads or other Direct Supervisor's of workers.
4. Workers

Training records will be maintained:

1. Any training sessions attendance records will be held by Management will be recorded and records maintained by Site supervisors/management.
2. A copy of any training records will be provided to the DPW Office of Environmental Regulatory Compliance and Safety.
3. Any training sessions held by DPW Office of Environmental Regulatory Compliance and Safety will be recorded and records maintained by DPW ERCS.
4. All training sessions will utilize a standard attendance record sheet or use digital means of recording (Teams, Webex, Zoom, workday, google meets) attendance logs, etc.
5. A standardized training attendance sign in sheet is available here: **(Link)**

VII. HEAT-ILLNESS PREVENTION STRATEGIES

The heat-illness prevention strategies are broken down into five (5) steps:

1. Training of supervisor's and workers.
2. Modify and Implement changes to normal procedures to Reduce Hazard and Risk Level
3. Implement engineering controls to reduce heat stress conditions.
4. Implement administrative controls to address acclimatization issues and/or reduce heat stress conditions.
5. Provide workers personal protective clothing and equipment to reduce heat stress conditions.

The heat-illness prevention strategies vary slightly for unacclimated workers. If workers have not worked in a hot environment within the previous week, then those workers must be placed in an acclimatization program designed to gradually acclimate them to work in a hot environment.

Step 1. Training of supervisor's and workers.

Training will be presented in a language and manner that all employees and supervisors can understand.

To ensure workers are prepared to work safely under hot conditions, all employees and supervisors who may be exposed to heat stress and heat-related illnesses will receive training on the following:

Elements of DPW's Heat-Illness Prevention Plan

1. Training
2. Monitoring
3. Hazard Assessment
4. Heat-Illness Prevention Strategies
5. Emergency Preparedness

Risk Factors for Heat Stress

Environmental risk factors for heat stress

1. Temperature
2. Humidity
3. Air movement
4. Radiant heat (e.g., sun exposure)

Work-related risk factors for heat stress

1. Physical exertion
2. Clothing

Personal risk factors for heat stress

1. Age
2. Physical fitness
3. Acclimatization
4. Medical conditions
5. Medications
6. Alcohol and/or drug use
7. Caffeine

How the Body Handles Heat

1. Increased heart rate
2. Increased blood circulation to skin
3. Evaporative cooling from sweating

The importance of acclimatization.

1. Reduces risks of dehydration and salt loss
    a. Sweating and evaporative cooling becomes more efficient
    b. Salt loss becomes more efficient
2. Core body temperature maintained more efficiently
3. Reduces strain on heart
    a. Blood circulation to skin becomes more efficient
    b. Recovery heart rate improves
4. Human body needs to acclimate to hot environments, typically 10-14 days
    a. Gradually increase exposure to hot environment over 7-14 days
    b. Avoid prolonged exertion during hottest times of day
    c. Schedule heavy exertion for cooler parts of day
5. Acclimatized workers will need 2-3 days of re-acclimatization if they stop working under heat stress conditions more than a week.

The importance of consuming water throughout the work shift

1. One cup (8 oz.) of cool water or an electrolyte replacement fluid every 15-20 minutes; four cups of water every hour.
2. Increased water intake may be needed to account for increased physical exertion and/or sweating.
3. However, too much water intake can be dangerous and lead to headache, nausea, vomiting and/or mental confusion.

The importance of rest breaks and shade throughout the work shift

1. Prolonged physical exertion and muscle activity increases the body's core temperature and reduces the body's ability to cool itself. Short rest breaks are necessary to allow blood to flow to the skin to be cooled.
2. Rest breaks slow down the buildup of heat in the body from prolonged muscle activity.
3. Rest breaks are also important for the heart and allow your heart rate to recover from sustained heat stress and physical exertion.
4. Rest breaks in the shade help will cooling, especially if there is air movement with cool air.

Heat-Related Illnesses

The following information is covered in training on heat-related illnesses, including cause, preventative measures, signs and symptoms, first aid treatment and reporting requirements.

OSHA Heat Safety Tool App(Link)

Heat Cramps

1. Cause: Depletion of salt and water in body due to excessive sweating. This is a precursor to more serious heat exhaustion and/or heat stroke.
2. Preventative measures:
    a. Acclimatization to heat helps reduce salt and water loss
    b. Drink adequate amounts of water throughout the day
    c. Salt your foods to taste
3. Signs and symptoms:
    a. Muscle cramps, spasms and/or pain
    b. Common to major muscles used for work (e.g., arms, legs, abdominal and back muscles)
4. First aid treatment:
    a. Move person to a cool location
    b. Provide person with an electrolyte replacement fluid to replace lost salt and water
    c. Seek medical treatment if cramps persist or other heat-illness symptoms develop (e.g., elevated body temperature, elevated heart rate, headache, dizziness, etc.)
5. Reporting: Report to supervisor and safety manager

Heat Syncope

1. Cause: Prolonged standing or sudden rising from a sitting or resting (supine) position; dehydration can be a contributing factor
2. Preventative measures:

    a. Acclimatization to heat helps reduce dehydration
    b. Drink adequate amounts of water throughout the day
    c. Break up long periods of standing with small rest breaks
    d. Rise slowly from sitting or resting positions
3. Signs and symptoms:
    a. Light-headedness or dizziness
    b. Fainting
4. First aid treatment:
    a. If he/she is only slightly dizzy and able to move, have two people assist and carefully move to a cool location and have the person lay down on back with feet elevated above heart level; provide small amounts of water
    b. If the dizziness persists, request immediate first aid and/or medical attention
    c. If he/she fainted, then secure the area, elevate his/her feet above heart level and request immediate first aid and/or medical attention; do not allow him/her to get up quickly or walk about
5. Reporting: Report to supervisor and safety manager

Heat Exhaustion

1. Cause: The body's inability to cool itself, often due to a combination of several factors (e.g., high temperatures, humidity, physical exertion, dehydration, clothing that blocks sweat evaporation and/or alcohol use). This is a serious condition that can lead to a life-threatening heat stroke.
2. Preventative measures:
    a. Acclimatization to heat helps reduce dehydration
    b. Drink adequate amounts of water throughout the day
    c. Take small rest breaks in shade to allow body to recover from heavy physical exertion and heat exposure
    d. Protect skin against sunburn, which reduces body's ability to cool itself
    e. If possible, perform heavier physical labor towards cooler part of the day (e.g., early morning or evening)
3. Signs and symptoms:
    a. Elevated core body temperature of 100.4 to 102.2 F (38 to 39 C); oral temperature 99.6 to 101.4 F
    b. Weak, but rapid pulse (elevated heart rate)
    c. Cool, moist skin (person may appear pale with clammy skin)
    d. Excessive sweating
    e. Headache and possible irritability
    f. Fatigue or weakness

g. Dizziness and/or feeling faint
h. Nausea and/or vomiting

4. First aid treatment:
    a. Seek immediate medical care (call 911)
    b. Immediately help the person cool off
        i. Move to a cool location
        ii. Remove or loosen unnecessary clothing
        iii. Have them drink small amounts of cool water
        iv. Spray skin with cool water and fan rapidly to increase evaporation and cooling
        v. Monitor body temperature and continue cooling efforts until body temperature returns to a normal temperature below 99 ◦F (37 ◦C).
        vi. Implement additional heat stroke treatments if body temperature does not decrease below 100 ◦F (37.8 ◦C) after 30 minutes or increases above 102 ◦F (38.9 ◦C).
5. Reporting: Report to supervisor and safety manager

Heat Stroke

1. Cause: Body is unable to cool itself and regulate core body temperature. This is a serious and life-threatening condition that requires immediate medical attention (call 911).
2. Preventable measures: Same as for heat exhaustion
3. Signs and symptoms:
    a. Elevated core body temperature above 104◦ F (40◦ C); oral temperature above 103.2 ◦F
    b. Hot, dry skin or heavy sweating
    c. Mental confusion, agitation and/or irrational behavior
    d. Clumsiness
    e. Slurred speech
    f. Fainting or a loss of consciousness
    g. Seizures or convulsions
4. First aid treatment:
    a. Call 911 and seek immediate medical attention for the victim; do not wait as their life depends on getting immediate medical care.
    b. Provide immediate and aggressive cooling to their body
        i. Elevate feet above heart level
        ii. Remove or loosen unnecessary clothing
        iii. Pack ice in groin and armpit areas
        iv. Soak skin with cool water and fan rapidly and vigorously to increase cooling of skin

v. As an alternative, immerse them in a tub of cool water or spray body with large amounts of cool water
vi. Do not give person fluids to drink, especially is unconscious.
vii. Monitor body temperature and continue cooling efforts until body temperature returns to a normal temperature below 99◦ F (37 ◦C).

c. Administer CPR as needed, if blood circulation or breathing stops, until emergency medical services arrive

5. Reporting: Report to supervisor and safety manager

Rhabdomyolysis

1. Cause: Sometimes caused by a combination of heat stress and prolonged physical exertion, muscle starts to break down and die, releasing proteins and electrolytes into the bloodstream. This is a potentially life-threatening condition affecting the kidneys that requires immediate medical attention.
2. Preventative measures:
    a. Same as for heat exhaustion and heat stroke.
    b. Avoid overexertion, such as lifting objects heavier than you can comfortably lift or straining muscles to a point where they can no longer function properly.
    c. Those with diabetes, thyroid conditions or muscular dystrophy are at greater risk.
    d. Those with a viral infection, such as flu, HIV or herpes, are at greater risk.
    e. Use of alcohol and illegal drugs, such as heroin, cocaine and amphetamines can increase the risk.
    f. Some medications, such as such as antipsychotics or statins, can increase the risk.
3. Signs and symptoms:
    a. Muscle cramps, pain and/or loss of range
    b. Joint pain and/or stiffness
    c. Swelling of muscles
    d. Weakness and a decreased ability to perform physical exertion for even a small amount of time
    e. Dark urine (similar to tea or cola in color)
    f. If kidney damage and/or failure occurs the following life-threatening indicators may be observed:
        i. Shortness of breath
        ii. Irregular heartbeat
        iii. Swelling in the legs and feet
        iv. Seizures
        v. Coma
4. First aid treatment:

    a. Seek immediate medical care for the victim (IV fluids and treatments to combat toxic proteins in blood are needed to prevent kidney failure)
5. Reporting: Report to supervisor and safety manager

Heat-illness prevention strategies

Engineering Controls

1. Reduce physical exertion and physical demands of work through use of powered tools and equipment, especially for tasks involving heavy lifting.
2. Reduce radiant heat loading from the sun or other sources of radiant heat (e.g., furnaces, combustion engines and compressors, hot surfaces, heated transfer lines, windows receiving intense sun, etc.). One effective method is to place line-of-sight, reflective barriers between the heat source and workers. Another method is to insulate hot surfaces, such as furnaces.
3. If air temperatures are below 95◦ F, then increase air speed across skin of workers using fans or air movers, to increase evaporative cooling from skin.
4. If air temperatures are above 95◦ F, then reduce air speed across skin of workers, to reduce convective heat transfer from air to skin.
5. If humidity is below 50%, then evaporative coolers and portable fans with water mist systems can be used to effectively cool the air by about 10 to 20 ◦F.
6. Decrease humidity to below 50% to increase evaporative cooling from sweating.

Administrative Controls

1. Adjust work schedule to ensure workers are acclimated to work in hot conditions.
2. Schedule work or work requiring heavy physical exertion during the coolest parts of the day.
3. Modify the work-rest schedule to shorten heat exposure periods by including frequent rest breaks. Shorter, more frequent breaks are more effective than longer, less frequent rest breaks.
4. Encourage adequate water intake at frequent intervals to prevent dehydration (e.g., one 8-ounce cup of cool water or an electrolyte replacement fluid every 15-20 minutes).
    a. The supervisor or foreman is responsible for making sure drinking water is provided, plus:
        i. Ensure that water containers are clean and sanitary prior to filling.
        ii. Ensure water containers are filled at a sanitary location.
        iii. Provide sufficient disposable cups and a place for disposing cups.
        iv. Ensure workers do not share cups and dispose of used cups.
        v. Prohibit workers from opening the cooler top to fill cups and instead have workers use the provided spigot.

   b. Pure and cool potable water must be made available to workers at no additional cost.
      i. Do not use water from irrigation, sprinklers or firefighting systems.
      ii. Do not use water from a garden hose, as it may contain contaminants from the hose and/or bacteria and other microbes.
   c. Water quantities need to be sufficient and at least 1 quart per worker per hour for the entire shift.
   d. Locate water containers as close as practicable at all times.
   e. Supervisors must encourage workers to frequently drink water and not wait until thirsty.
5. Provide a shaded and/or air-conditioned space nearby for rest and water breaks.
6. Train workers on the recognition of the signs and symptoms of heat-induced illness and on heat-illness prevention strategies.
7. Alert workers to extreme heat events or heat stress conditions and provide a short review of the heat-illness prevention strategies for the day.
8. Work in pairs (buddy system) and monitor each other for signs and symptoms of heat stress or illness.
9. Avoid caffeine and alcohol before and during working in a hot environment.
10. Report illnesses or medical conditions that may put them at risk of heat stress (e.g., diarrhea, fever, infection, etc.)

Protective Clothing and Equipment Controls

1. When possible, provide clothing designed to keep the body cool, such as air, cooled fluid or ice-cooled conditioned clothing.
2. When possible, provide reflective clothing to reduce radiant heat loading from the sun or hot surfaces radiating heat.
3. If air temperatures are below 95◦ F and worker is protected from radiant heat, then decrease clothing coverage or layers (when feasible) to increase evaporative cooling from skin. Caution: Do not remove clothing designed to protect workers from chemical, mechanical or other hazards without conducting a proper evaluation to address those hazards.
4. If air temperatures are above 95 ◦F, then increase clothing coverage to reduce air speed across skin of workers, which can help reduce convective heat transfer from air to skin.

MONITORING WEATHER AND WORKPLACE CONDITIONS

Management and supervisors are responsible for monitoring the daily weather and workplace conditions to determine if workers will be exposed to heat index temperatures

greater than 80 ◦F (32 ◦C). The National Weather Service (www.weather.gov) may be used to monitor weather conditions. Public weather observation alternatives include Intellicast (www.intellicast.com) and Weather Underground (www.wunderground.com). Use the closest weather station to the worksite location. The OSHA Heat Safety Tool App should be used to determine the heat index.

If the heat index temperature will exceed 80 ◦F (32 ◦C) for more than an hour during the work shift, then a heat hazard assessment needs to be performed. The following additional weather information is required for the heat hazard assessment.

- Air temperature (◦F)
- Humidity (%)
- Wind speed (mph)
- Barometric pressure (inches)
- Longitude and latitude
- Cloud cover

An employer whose employees work in buildings and structures that do not have a mechanical ventilation system must directly measure the temperature and humidity at the same time and the location in area(s) where employees perform work.

HEAT HAZARD ASSESSMENT

When weather or workplace conditions will exceed heat index of 80 ◦F (32 ◦C), a heat hazard assessment must be conducted to take into account for environmental and work factors associated with heat stress and heat-related illnesses. Temperature, humidity, wind speed and solar irradiance are environmental factors that must be taken into account.

Work factors include metabolic work rate (physical exertion) and clothing.

Step 2. Modify and Implement changes to normal procedures to Reduce Hazard and Risk Level

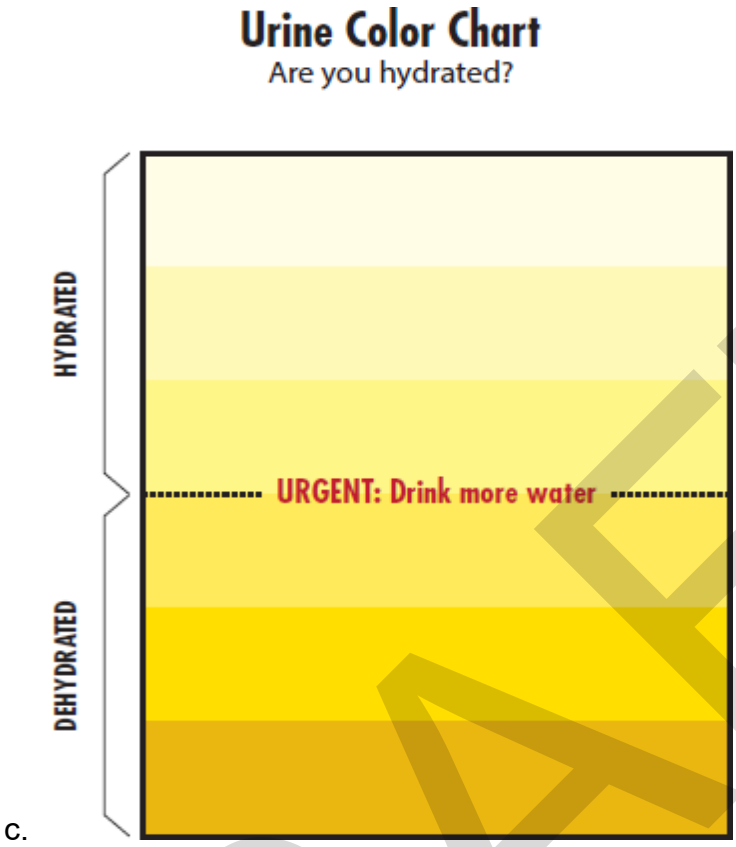
The next step in the heat-illness prevention strategy is to evaluate those factors used in the heat hazard assessment and determine what changes could be made to reduce the hazard. Examples of effective controls include, but are not limited to:

1. Coordinate with relevant stakeholders (Human Resources, Office of the Labor Commissioner, DPW Communications Division) to adjust operational schedules, such as starting residential trash and recycling collections earlier in the day (e.g., 5:30 AM) when the heat index exceeds 100 degrees Fahrenheit. Evaluate the sustainability of scheduled operations under extreme heat conditions.

2. Provide shade or shelter from the sun and eliminate solar irradiance to 0 Watts/m2.
3. When feasible and safe to do so, eliminate use of chemical vapor-barrier coveralls, such as encapsulating suits and whole-body chemical protective suits during hottest parts of day.
4. When feasible, eliminate double clothing layers.
5. When feasible, use mechanical and powered equipment to reduce worker physical exertion, especially heavy physical exertion. This includes the use of forklifts, hoists, earthmoving equipment (backhoes, loaders and excavators), conveyers, portable power tools (e.g., rotary auger in place of hand shoveling), etc.
6. When feasible, change the work-rest schedule to ensure workers receive adequate rest breaks, which will decrease accumulation of body heat. Supervisors shall encourage employees to take rest breaks as needed to prevent heat-illness.
7. If air temperatures are below 95 ◦F (skin temperature) and air velocities are less than 1-2 mph, then increasing the air velocity at workers using portable fans can be an effective control to increase cooling. Caution: If air temperatures are above 95◦F, then heat will be added to workers by convection, which puts them at risk of heat stress.
8. When feasible, adjust work clothing to lighter, more breathable cotton fabrics or change coveralls to a more breathable material.

High Heat Related Rest Procedures

1. DPW will implement high heat procedures when the heat index reaches or exceeds 90 degrees Fahrenheit in the area where the work is being performed.
2. The DPW high heat procedures is to provide:
    a. a minimum rest period of 10 minutes for every 2 hours worked where employees are exposed to a heat index above 90 and below 100 degrees Fahrenheit; and
    b. a minimum rest period of 15 minutes for every hour worked where employees are exposed to a heat index above 100 degrees Fahrenheit;



c.

Source: NIOSH Occupational Exposure to Heat and Hot Environments (2016)

Step 3. Implement Engineering (Physical or Mechanical) Controls

When the risk level is moderate (Heat index above 80 degrees) or above, then implementation of effective engineering controls is recommended over administrative or protective clothing controls. The following are examples of effective engineering controls.

1. Reduce physical exertion and physical demands of work through use of powered tools and equipment, especially for tasks involving heavy lifting.
2. Reduce radiant heat loading from the sun or other sources of radiant heat (e.g., furnaces, combustion engines and compressors, hot surfaces, heated transfer lines, windows receiving intense sun, etc.). One effective method is to place line-of-sight, reflective barriers between the heat source and workers. Another method is to insulate hot surfaces, such as furnaces.
3. If air temperatures are below 95◦F, then increase air speed across skin of workers using fans or air movers, to increase evaporative cooling from skin.
4. If air temperatures are above 95◦F, then reduce air speed across skin of workers, to reduce convective heat transfer from air to skin.

5. If humidity is below 50%, then evaporative coolers and portable fans with water mist systems can be used to effectively cool the air by about 10 to 20 ◦F.
6. Decrease humidity to below 50% to increase evaporative cooling from sweating.

Step 4. Implement Administrative Controls

When the risk level is moderate or above, then implementation of effective administrative controls is recommended when effective engineering controls are not feasible. Additionally, unacclimated workers must be placed in an acclimatization program designed to gradually acclimate them to work in a hot environment. This includes workers that have not previously worked in a hot environment within the previous week.

Acclimatization Program

1. Acclimatization of exposed employees is provided for a period of up to 14 days:
    a. When an employee is newly exposed to heat in the workplace; and
    b. When an employee returns to work after seven or more consecutive days of absence from the workplace.
2. Employees are monitored during the acclimatization period for signs of heat-related illnesses through regular communication via:
    a. phone or radio;
    b. a buddy system; or
    c. other effective means of observation.
3. An acclimatization schedule complies with one of the following:
    a. A schedule which gradually increases exposure time over a 5-14 day period, with a maximum 20% increase each day;
    b. A schedule which uses the current National Institute for Occupational Safety and Health's recommendations for acclimatization; or
    c. A schedule which uses a combination of gradual introduction and alternative cooling and control measures that acclimate an employee to the heat.
4. The acclimatization schedule for each site is writing and considers the following elements:
    a. Acclimated and unacclimated employees;
    b. The environmental conditions and anticipated workload;
    c. The impact of required clothing and personal protective equipment to the heat burden on employees;
    d. The personal risk factors that put an employee at a higher risk of heat-related illness;
    e. Re-acclimatizing employees as necessary, and
    f. The use of alternative cooling and control measures.

Administrative Controls

The following are examples of effective administrative controls.

1. Schedule work or work requiring heavy physical exertion during the coolest parts of the day.
2. Modify the work-rest schedule to shorten heat exposure periods by including frequent rest breaks. Shorter, more frequent breaks are more effective than longer, less frequent rest breaks.
3. Supervisors must encourage adequate water intake at frequent intervals to prevent dehydration (e.g., one 8-ounce cup of cool water or an electrolyte replacement fluid every 15- 20 minutes).
    a. The supervisor or foreman is responsible for making sure drinking water is provided, plus:
        i. Ensure that water containers are clean and sanitary prior to filling.
        ii. Ensure water containers are filled at a sanitary location.
        iii. Provide sufficient disposable cups and a place for disposing cups.
        iv. Ensure workers do not share cups and dispose of used cups.
        v. Prohibit workers from opening the cooler top to fill cups and instead have workers use the provided spigot.
    b. Pure and cool potable water must be made available to workers at no additional cost.
        i. Do not use water from irrigation, sprinklers or firefighting systems.
        ii. Do not use water from a garden hose, as it may contain contaminants from the hose and/or bacteria and other microbes.
        iii. Water quantities need to be sufficient and at least 1 quart per worker per hour for the entire shift.
        iv. Locate water containers as close as practicable at all times.
        v. Supervisors must encourage workers to frequently drink water and not wait until thirsty.
        vi. Provide a shaded and/or air-conditioned space nearby for rest and water breaks.
        vii. When utilized shaded areas is provided to exposed employees as close to the work area as practicable.
        viii. Shaded areas are:
            1. Outside, open, and exposed to air on at least three sides;
            2. Prevent contributing heat sources from reducing effectiveness;
            3. Sufficiently sized for the number of employees utilizing the shaded area;
            4. Arranged in a configuration that allows employees to sit in normal posture; and

5. Accommodate the removal and storage of personal protective equipment during periods of use.

ix. If creating outdoor shade is demonstrably infeasible or unsafe in the work area, alternative cooling and control measures that provide equivalent protection to shade will be implemented.

c. Cooling with an indoor mechanical ventilation system is an alternative to outdoor shade provided that the indoor space is cooled to 80 F.

4. Train workers on the recognition of the signs and symptoms of heat-induced illness and on heat-illness prevention strategies.
5. Alert workers to extreme heat events or heat stress conditions and provide a short review of the heat-illness prevention strategies for the day.
6. Have workers work in pairs (buddy system) and monitor each other for signs and symptoms of heat stress or illness.
7. Instruct workers to avoid caffeine and alcohol before and during working in a hot environment.
8. Instruct workers to report illnesses or medical conditions that may put them at risk of heat stress (e.g., diarrhea, fever, infection, etc.)
9. Medically screen workers for work in hot environments.

Step. 5 Implement Personal Protective Clothing and Equipment Controls

If engineering and/or administrative controls are not feasible, then personal protective clothing and equipment is used to reduce heat stress conditions. The following are examples of effective personal protective clothing and equipment controls.

1. Provide clothing designed to keep the body cool, such as air, cooled fluid or ice-cooled conditioned clothing.
2. Provide reflective clothing to reduce radiant heat loading from the sun or hot surfaces radiating heat.
3. If air temperatures are below 95 ◦F and worker is protected from radiant heat, then decrease clothing coverage or layers (when feasible) to increase evaporative cooling from skin. Caution: Do not remove clothing designed to protect workers from chemical, mechanical or other hazards without conducting a proper evaluation to address those hazards.
4. If air temperatures are above 95 ◦F, then increase clothing coverage to reduce air speed across skin of workers, which can help reduce convective heat transfer from air to skin.

VIII. MEDICAL EMERGENCIES

When workers are exposed to heat stress conditions, it is critical to ensure adequate supervision, first aid and medical services are readily available in the event a worker

suffers from a heat illness. This includes ensuring adequate first aid supplies are available and supervisors and workers are trained on what to do if a co-worker suffers from a heat-related illness.

First Aid Supplies

The following first aid supplies for heat-induced illnesses need to be on hand.

1. Cool water or electrolyte replacement fluids.
2. Cold packs or ice packs for treatment of heat stroke.
3. Spray bottles with water or an available water source for treating heat stroke.

First Aid Guidelines

It is important that all supervisors and workers know how to recognize the signs and symptoms of heat stress, when to call for emergency medical assistance and what steps they need to take to help the victim of heat stress until emergency services arrive.

IX. ENFORCEMENT

Constant awareness of and respect for heat stress hazards, and compliance with all safety rules are required conditions for continued employment. All employees, including supervisors and employees are responsible for ensuring compliance with applicable safety protocols, practices, and procedures. The employer reserves the right to issue disciplinary warnings and actions to employees, including, but not limited to suspensions and termination, for failure to follow the guidelines of this program.

X. INCIDENT INVESTIGATIONS

All incidents that result in a worker suffering from a heat-related illness, regardless of their nature, shall be investigated and reported to management. It is an integral part of any safety program that documentation take place as soon as possible so that the cause and means of prevention can be identified to prevent a reoccurrence. An Employee Incident Report (EIR) is provided in the Appendix. The EIR form is to be completed and used to initiate an incident investigation with the goal of taking corrective actions to prevent future occurrences.

In the event that an employee suffers from a heat-related illness or some other related, serious incident occurs, this plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of incidents from occurring. In addition, if the employee suffers from a heat-related illness,

supervisors must complete additional Supplemental Heat-Related Report Form attached as APPENDIX C

XI. CHANGES TO PLAN

Management will review and approve any changes to the plan. Management shall review this plan at least annually to determine if additional practices, procedures or training needs to be implemented to improve heat-illness prevention measures. Workers shall be notified and trained, if necessary, in the new procedures. A copy of this plan and all approved changes shall be maintained at the jobsite.

APPENDIX A: JOB SPECIFIC HEAT-ILLNESS PREVENTION PLAN

This plan is specific to the following project, in accordance with company policies and procedures as outlined in the Heat-Illness Prevention Plan:

Description	Details
1. Location of Job and Address (attach detailed directions as needed)	
2. Date Prepared or Modified	
3. Plan Prepared By	Name: Phone:
4. Plan Approved By	Name:
5. Plan Supervised By	Name: Phone:
6. First Aid and Emergency Medical Services Contacts	First Aid Name(s): Phone: Alternate Phone: Emergency Medical Services: Phone: Local Hospital: Phone:

Identified Heat Stress Hazards (Check those that apply)

1. Outside work with sun exposure and temperatures above 90 °
2. Work around hot processes and/or radiant heat sources
3. Workers will wear vapor barrier chemical protective suits
4. Work under high relative humidity conditions (e.g., greater than 50%)
5. Low wind speeds or lack of air movement
6. Manual labor and tasks requiring physical exertion
7. Workers not acclimated to work in hot environments
8. Workers wearing multiple layers of clothing
9. Other: _____
10. Other:_____

Does a Heat Hazard Evaluation Need to be Conducted?

Conduct a Heat Hazard Assessment if the answer is “YES” to any of the following:

Condition	NO	YES
Items 1, 2 or 3 were checked above.		
More than two of the above items were checked.		
There is a valid concern regarding heat stress. Concern:		

Corrective Actions that will be taken to Prevent Heat Stress

Step 1: Training of supervisor's and workers.

a) Action: _____
b) Action: _____
c) Action: _____
d) Revised Risk Level:_____

Step 2: Modify and Implement changes to normal procedures to Reduce Hazard and Risk Level

a) Action: _____
b) Action: _____
c) Action: _____
d) Revised Risk Level:_____

Step 3: Implement Engineering Controls

e) Action: _____
f) Action: _____
g) Action: _____
h) Revised Risk Level:_____

Step 4: Implement Administrative Controls

a) Action: _____
b) Action: _____
c) Action: _____
d) Revised Risk Level:_____

Step 5: Implement Protective Clothing or Equipment Controls

a) Action: _____
b) Action: _____
c) Action: _____
d) Revised Risk Level:_____

APPENDIX B: EMPLOYEE INCIDENT REPORT (Click to go to Link)

CITY OF BALTIMORE — **EMPLOYEE'S INCIDENT REPORT**

IF FATALITY SHOW DATE ▶

☐ NEW INJURY

IF EMPLOYEE IS SENT TO CLINIC:
Complete this form before sending employee to Clinic. Keep copy for files. Send form with employee to Clinic.

IF EMPLOYEE IS SENT TO HOSPITAL:
Complete immediately after sending employee to the nearest medical facility for treatment.

CALL 1-877-607-8600 to report claim Date Called: Confirmation #:

☐ RE-INJURY

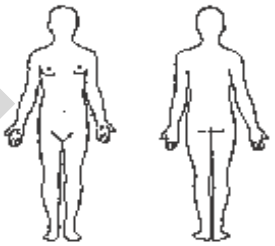
FOR A RE-INJURY CLAIM: FOLLOW CLINIC OR HOSPITAL INSTRUCTIONS ABOVE.
Fax form to Key Risk at 410-554-1255. DO NOT CALL IN CLAIM

1 Date this report

2 Date — Month | Day | Year
INCIDENT OCCURRED — Time | Shift

EMPLOYEE SECTION

3 Employee's Name — Last | First | Middle Initial
4 Social Security Number
5 Job Title
6 Home Address
7 Phone - Home | Phone - Work
8 Agency
9 Division, Region, District, Unit, Etc.
10 Payroll Dept. Code
11 Payroll Location Code
12 Date of Birth | 13 Age | 14 Sex ☐ Male ☐ Female
15 Date of Employment | Date assign. to pres. job
16 GROSS RATE OF PAY $. PER (HOUR, DAY, WEEK)
17 **DISPOSITION** ☐ CLINIC ☐ HOSPITAL Name-Hospital or Clinic
18 Specify exact address where incident occurred. Also specify exact location at this address.
19 Employee's description of how incident occurred. (Use additional signed sheets if necessary)
20 Circle Body Part Injured — FRONT / BACK



21 According to employee, what part(s) of his (her) body was injured.
Employee's Initials:
22 Employee's Signature — Date — ☐ Check here if unable to sign
23 WHEN DID YOU FIRST LEARN OF INCIDENT? DATE — TIME ☐ AM ☐ PM
24 Is the employee's statement in accordance with Supervisor's knowledge of the facts ☐ YES ☐ NO
If no, explain details of incident in your words. (Use additional sheets if needed)

SUPERVISOR SECTION

25 Part of machine on which incident occurred
26 Was safety equipment provided? ☐ YES ☐ NO — Was it in use at time? ☐ YES ☐ NO
27 Was incident caused by injured's failure to observe safety rules? ☐ YES ☐ NO
28 Steps taken to prevent future similar injuries
29 If injury due to vehicle accident:
MAKE/MODEL: SHOP/FLEET # COMPLAINT #
SEATBELT IN USE: ☐ YES ☐ NO PCD IN USE ☐ YES ☐ NO

30 WITNESSES

Name (Print)	City Emp. I.D.	ADDRESS	PHONE

31 Supervisor's Name and Title (Print) | Phone # | Signature | Date

GREY AREA - - POLICE AND FIRE DEPARTMENT USE ONLY

32 Signature - Investigating Officer — Date — Rank
33 Was injured employee acting in a higher grade at the time of this incident? ☐ YES ☐ NO
34 Signature -Commanding Officer or Battalion Chief — Date

28-1608-5149 REV. 3/09 1400-26-13

COPIES TO: 1.) MERCY (With Employee) 2.) KEY RISK 3.) SAFETY (DOS) 4.) AGENCY

APPENDIX C: SUPPLEMENTAL HEAT-RELATED REPORT FORM

1. **Employee Information:**
    a. Name:
    b. Job title:
    c. Department:
    d. Supervisor:
2. **Incident Details:**
    a. Date and time of the incident:
    b. Location of the incident:
    c. Weather conditions at the time (temperature, humidity, etc.):
    d. Description of the task being performed when the incident occurred:
    e. Duration of the employee's exposure to the heat:
3. **Symptoms Observed:**
    a. Describe the symptoms exhibited by the employee (e.g., dizziness, headache, nausea, excessive sweating):
    b. When did the symptoms first appear?
4. **Immediate Response:**
    a. Who reported the incident?
    b. What immediate actions were taken to assist the employee (e.g., moved to a cooler area, provided water)?
    c. Who provided the initial assistance?
    d. Was medical assistance required? If so, describe the medical response (e.g., first aid, ambulance called).
5. **Work Environment:**
    a. Was the employee working indoors or outdoors?
    b. Describe the work environment (e.g., shaded area, direct sunlight, ventilation):
    c. Was the employee provided with any heat illness prevention measures (e.g., water, breaks, shade)?
6. **Preventive Measures:**
    a. Was the employee aware of the heat illness prevention plan?
    b. Did the employee follow the recommended preventive measures?
    c. Were there any factors that may have contributed to the incident (e.g., lack of training, inadequate rest breaks)?
7. **Follow-Up:**
    a. Was the employee transported to a medical facility? If so, which one?
    b. What treatment was provided at the medical facility?
    c. Is the employee able to return to work? If not, what is the expected recovery time?

    d. Are there any recommended changes to the heat illness prevention plan based on this incident?

8. **Witnesses:**
    a. Were there any witnesses to the incident? If so, provide their names and contact information:
    b. Witness statements (if applicable):
9. **Additional Comments:**
    a. Any other relevant information or observations:
10. **Report Prepared By:**
    a. Name:
    b. Job title:
    c. Date of report:

APPENDIX D: DPW HEAT ILLNESS INCIDENT INVESTIGATION EVALUATION SHEET

Identify and describe any of the below factors that contributed to the incident:	
1. Failure to follow safety procedures	
2. Faulty equipment, machinery or tools	
3. An unidentified heat stress hazard(s)	
4. The work environment and conditions	
5. Environmental conditions (e.g., weather)	
6. Improper work procedures	
7. Lack of proper training	

Recommend corrective actions that should be initiated to prevent future incidents:

_____
_____
_____
_____
_____
_____
_____

Preparer Name: _____

Preparer signature: _____ Date: _____

APPENDIX E: HEAT ILLNESS PREVENTION PLAN – INDIVIDUAL SITE PLAN TEMPLATE (Click to go to Link)

City of Baltimore
Department of Public Works

Heat Illness Prevention Plan Individual Site Plan			
Bureau:		**Site name:**	
Address:			
Site Administration responsible for plan implementation			
Name		**Title**	
Last Revised:			

1) How does management monitor heat conditions throughout the worksite, throughout the day?	
2) How does management ensure that employees are provided sufficient opportunities and encouragement to stay hydrated by drinking water?	
3) How will employees at the worksite recognize the symptoms of heat-related illnesses, including heat exhaustion and heat stroke	
4) What steps will employees follow to respond to suspected heat-related illnesses, including heat exhaustion and heat stroke?	
5) How will employees be provided with sufficient time and space to rest in a shaded or cool, climate-controlled area(s) to cool off?	
6) How has management implemented rest break schedules to accommodate for heat/temperature related risks?	

7) How will management consider environmental conditions, workload, required clothing, personal protective equipment, and alternative cooling and control measures when determining rest break schedules?	
8) How are employees encouraged to take rest breaks as needed to prevent heat-related illness?	
9) How are site employees trained on the hazards of heat exposure and the necessary steps to prevent heat-related illnesses?	
10) Describe the site's use and maintenance of alternative cooling and control measures used to manage heat?	
11) Describe the site's procedures for heat acclimatization:	

12) Describe the procedures for high heat conditions and monitoring employees:	
13) Implement an emergency response plan that includes procedures for: **a) Ensuring effective and accessible means of communication at all times at the worksite to enable an employee to contact a supervisor or emergency medical services.** **b) Responding to signs and symptoms of possible heat-related illness in employees.** **c) Monitoring and providing care to employees who are exhibiting symptoms of heat-related illness.** **d) Contacting emergency medical services and, if necessary, transporting employees to a location accessible to emergency medical services.**	**A)** **B)** **C)** **D)**

APPENDIX F: SAMPLE TRAINING ATTENDANCE SIGN IN SHEET (Click to go to Link)

TRAINING SIGN IN SHEET

LOCATION	DATE	TIME	TRAINING TOPIC

NO	PRINTED NAME	SIGNATURE
1	Trainer-	Trainer-
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

SOP Title:	**Extreme Heat Weather Safe Operating Procedure Policy**
SOP No:	
	Department of Public Works
Original Date:	8/1/2024 **Revision Date:** 10/23/2024
Key Words:	Extreme Heat/Code Red/ Heat Illness/ Stress Safety

Standard Operating Procedure

1. Purpose

This Standard Operating Procedure (SOP) ensures the health and safety of employees working in extreme heat conditions by providing adequate hydration and managing work conditions during extreme heat events.

2. Scope

This SOP applies to all employees whose work activities, whether indoor or outdoor, expose them to a heat index of 80 degrees Fahrenheit or higher.

3. Related SOPs/Policies

- DPW Heat-Related Illness plan
- Safety Training Manuals
- DPW – Heat Illness Prevention Plan- individual site plan (ERCS)
- DPW – Heat illness Prevention Plan (ERCS)
- COB-AM-203-2 Family and Medical Leave
- COB-204-14 Sick Leave
- COB-203-5 Reasonable Accommodations

4. Responsibilities -

Bureau Heads

- Coordinate with relevant stakeholders (Human Resources, Office of the Labor Commissioner, DPW Communications Division) to adjust operational schedules, such as starting residential trash and recycling collections earlier in the day (e.g., 5:30 AM) when the heat index exceeds 100 degrees Fahrenheit.
- Evaluate the sustainability of scheduled operations under extreme heat conditions.

Facility Manager/Designee

- Inspect and ensure all DPW buildings, trucks/vehicles are in good working condition for the heat season before June.
- Maintain a facility checklist including, but not limited to:
    - Cooling systems
    - Ice machines
    - Water coolers
    - Fans
    - Water
    - Electrolytes
    - T-shirts
    - Hats
    - Vehicle air conditioning systems

ERCS/Facility Managers

- Ensure all field employees working outdoors in conditions with heat illness risks complete DPW's mandatory Heat Illness Prevention training and any additional heat-related training as deemed appropriate.

People Leaders (Chief/Superintendent/Manager/Supervisor)

- Implement this SOP and ensure it is available to employees.
- Provide training at the beginning of each heating season (May through September).
- Monitor weather conditions and confer with leadership on procedures.

Employees

- Follow hydration guidelines and use provided resources.
- Report any signs of heat-related illness to their supervisor.
- Notify supervisors when supplies need replenishing while working in the field.

Human Resources

- Manage administrative leave requests.

5. Procedure

5.1 Hydration Protocol – Daily Checklist

Checklist		
Water	Ensure plenty of cold drinking water for employees. Refill water coolers with ice and water throughout the day.	
Training	Verify employees know the signs of heat illness, precautions to prevent it, and the importance of drinking water frequently.	
Emergencies	Confirm everyone knows who to notify in an emergency, can describe their location if they need an ambulance, and has up-to-date emergency contact information.	
Shade	Ensure shade is available for breaks. Supervisors should identify public locations (e.g., libraries, malls) for collection employees.	
Employee Reminders	Drink water often. Take frequent intermittent breaks. Report heat symptoms early. Know what to do in an emergency Call 911 if you notice signs of heat illness in themselves or in co-workers. Communicate any employee health issues to management as soon as possible	
Electrolytes	Provide electrolyte beverages/packets as available	

Daily Morning Setup:

- **Drinking Water:** Ensure each hydration station has sufficient drinkable water and clean dispensers.
- **Ice:** Provide ice to keep liquids cold and fill individual coolers with ice.
- **Electrolyte:** Ensure electrolyte beverages/packets are in the communal coolers located at the hydration station and check use-by dates for safety.

Throughout the Day:

- **Communication: Superintendent or designee to** – Conduct brief early morning roll calls/tailgate meetings at 7 AM with supervisors to review the daily heat safety checklist. Check-in with drivers every two hours via radio.

- **Hydration Breaks:** Schedule mandatory hydration breaks every hour, especially when the temperature exceeds 100 degrees or during code red days.
- **Monitor Consumption:** Supervisors/people leaders should monitor consumption levels and replenish supplies, including delivering hydration fluids to staff in the field as requested.

- **Feasible Hydration Kits:** Provide portable hydration kits for employees working in remote locations.

5.2 Monitoring Outdoor Temperatures

- **Daily Review**: ERSC will provide weather forecasts 24 hours ahead. DPW Bureau Administrations leadership will modify team schedules as necessary. The Site Manager will use the NIOSH Heat Safety Tool application hourly on code red days to determine the heat index
- **Daily Notification:** The Site Manager will monitor the heat index throughout the work shift.

5.2 Monitoring Indoor temperatures

- **Thermometers:** Install thermometers in indoor workspaces to monitor temperatures continuously.
- **Temperature Checks:** When the outdoor heat index or the indoor temperature exceeds 80 F (whichever is greater), designate the site-specific safety coordinator to check and record indoor temperatures every hour.

5.3 High-Heat Protocol

Outdoor Heat Index equals or exceeds 90 Degrees Fahrenheit:

- **Notification:** Notify all employees via established communication channels and prepare to activate earlier operations start schedule.
- **Hydration and Cooling:** Ensure employees have current list of hydration stations, and cooling centers in the city.
- **Mandatory Breaks:** Implement required breaks. Employees on the road can utilize public air-conditioned spaces. A cooldown rest period of:
  - (1) a minimum rest period of 10 minutes for every 2 hours worked where employees are exposed to a heat index above 90 and below 100 degrees Fahrenheit; and
  - (2) a minimum rest period of 15 minutes for every hour worked where employees are exposed to a heat index above 100 degrees Fahrenheit; or
  - (3) a rest period as provided for in the current National Institute for Occupational Safety and Health recommendations for work and rest schedules to manage heat exposures.

Indoor Heat Index equals or exceeds 80 Degrees Fahrenheit:

- **Distribute Cooling Aids:** Provide access to air-conditioned spaces, fans, and cooling cloths if available.
- **Mandatory Breaks:** Implement more frequent breaks in cool areas of the building.

Sending Non-Essential Employees Home:

- **Criteria for Sending Home:** When indoor temperatures consistently exceed the 80-degree heat index despite mitigation efforts.
- **Procedure for Requesting Permission Leave:**
  - **Contact HR:** People leaders should contact HR to arrange for appropriate leave from the Labor Commissioner for employees whose roles are unable to telework.
  - **Documentation:**
    - People leaders identify and record the names of the affected employees and send them to HR to process the permission leave request.
    - HR will maintain records of all leave arrangements.
  - **Notification:** Once HR confirms approval for leave from the Labor Commissioner, people leaders will inform employees when it is time to go home.

5.4. Training and Awareness

- **Heat Safety Training:** Training Officers will conduct yearly training sessions for people leaders on recognizing heat-related illnesses, proper hydration, training staff, and following this SOP. Team leaders will provide training to their supervisory team. In addition, refresher training will be provided immediately following any work site incident involving a suspected or confirmed heat-related illness.
- **Signage:** Place posters and signs strategically to remind employees of hydration practices and emergency procedures.

5.5 Emergency Response

- **First Aid Kits:** Ensure first aid kits are stocked with supplies to treat heat-related illnesses.
- **Emergency Contacts:** Maintain a list of emergency contacts and ensure employees know who to contact in case of a heat-related emergency.
- **Immediate Action:** Each day supervisors are to remind employees should they recognize the symptoms or signs of heat illness in themselves or coworkers to immediately call 911.

6. References

Maryland Occupational Safety & Health (MOSH)

7. Definitions

- **Extreme Heat:** Temperatures that pose a significant risk to health and safety, as defined by local weather services.

- **High Heat Conditions:** working conditions where the heat index equals or exceeds 100 degrees Fahrenheit.
- **Hydration Stations:** Areas where water, ice, and electrolyte beverages are provided to employees.
- **Hydration Kits:** Insulated coolers with ice, water, and electrolyte beverages/packets are stored in each vehicle for use while employees are in the field.
- **Drinking Water:** Potable water that is safe and cool.
- **Heat Index:** A measure of how hot it feels when relative humidity is considered with air temperature.

8. Prerequisites

Heat Illness Training for Leaders

Review and Updates

- The SOP shall be consistent with current regulations. To the extent any provision in this SOP gets superseded by new law, DPW staff shall follow such new regulations as applicable. This SOP will be reviewed annually or as needed based on feedback or regulations/best practices changes.

Approval

- This SOP is approved by Agency Director /Deputy Director and is effective as of 8/1/2024.

City of Baltimore
Department of Public Works

DRAFT

Cold Stress and Illness Prevention Plan

Table of Contents

I. PURPOSE

This Cold-stress and illness prevention plan was developed to provide supervisors and employees with the training and tools to help protect them from Cold-related exposures and illnesses. The written plan shall be made available and accessible to employees and MOSH upon request.

II. SCOPE

Each work site and job task can be unique and contain a number of Cold stress hazards that must be addressed prior to the beginning work and during work activities. Supervisors and employees are responsible for assessing these hazards and taking necessary corrective actions to reduce the impact of cold stress and illnesses.

III. DEFINITIONS

Acclimatization: The body's temporary adaptation to work in Cold that occurs as a person is exposed over time. The physiological changes that occur in response to a succession of days of exposure to environmental Cold stress and reduce the strain caused by the Cold stress of the environment; and enable a person to work with greater effectiveness and with less chance of Cold stress/injury.

Administrative controls: change the way work is done or give employees more information by providing employees with relevant procedures, training, or warnings.

Chillblains: A condition where painful inflammation of blood vessels in the skin occurs, caused by the repeated exposure of skin to temperatures just above freezing, **to as high as 60 degrees Fahrenheit.**

Cold Stress: Cold stress refers to environmental conditions in which body heat is lost faster than the body can produce heat.

Drinking water: Potable water that is safe to drink and cool in temperature.

Emergency Operations and Essential Service: Work in connection with an emergency that requires the involvement of (a) law enforcement, (b) emergency medical services, (c) firefighting, (d) rescue and evacuation operations, or (e) emergency restoration of essential utilities or telecommunications.

Engineering Controls: Engineering controls protect employees by removing hazardous conditions or by placing a barrier between the employee and the hazard.

Frostbite: An injury caused by freezing of the skin and underlying tissues. The lower the temperature, the more quickly frostbite will occur.

Heat Index: The Heat Index is a single numeric value that uses both temperature and humidity to inform the public on how the weather outdoors "feels". The higher the Heat Index, the hotter the weather feels.

Humidity, Relative (RH): The ratio of the water vapor present in the ambient air to the water vapor present in saturated air at the same temperature and pressure.

Hypothermia: A condition where abnormally low body temperature occurs. Most likely to occur at very cold temperatures, however it can occur at cool temperatures (above 40 degrees Fahrenheit) If a person becomes chilled from rain, sweat, or immersion in cold water.

Immersion/Trench Foot: An injury caused by prolonged exposure to wet & cold temperatures. It can occur at temperatures **as high as 60 degrees Fahrenheit if feet are constantly wet.**

Metabolism (M): Transformation of chemical energy into free energy that is used to perform work and produce heat.

Personal protective equipment (PPE): includes clothing and devices to protect employees. PPE needs constant effort and attention (including proper use and training) from employees. Higher-level controls aren't always feasible, and PPE might be needed in conjunction with other control measures.

Pressure, Atmospheric (Pa): Pressure exerted by the weight of the air, which averages 760 mmHg at sea level and decreases with altitude.

Pressure, Water Vapor (Pa): The pressure exerted by the water vapor in the air.

Sweating, Thermal: Response of the sweat glands to thermal stimuli.

Temperature, Ambient (ta): The temperature of the air surrounding a body. Also called air temperature or dry bulb temperature.

Temperature Regulation: The maintenance of body temperature within a restricted range under conditions of positive heat loads (environmental and metabolic) by physiologic and behavioral mechanisms.

Thermal Insulation, Clothing: The insulation value of a clothing ensemble.

Wind Chill: Windchill is the integration of the air temperature and wind velocity, to provide an estimate of the cooling power of the environment.

Work: Physical efforts performed using energy from the metabolic rate of the body.

IV. DPW POLICY

DPW is dedicated to protecting employees from on-the-job illnesses and injuries. All employees have the responsibility to work safely on the job. The purpose of this plan is to supplement our existing safety and health program and to ensure employees recognize Cold stress hazards and act appropriately to address those hazards. The site's plan shall be made available and accessible to employees and MOSH upon request.

Cold Stress and Illness Prevention

The purpose of DPW's Cold-stress and illness prevention plan is to ensure employees recognize Cold stress hazards and act appropriately to address those hazards. The general approach addresses four (4) key areas of Cold illness prevention:

-Proper clothing

-Managing exposure

-Staying dry

-Recognizing and responding to risk

Frostbite and hypothermia are the conditions most often associated with cold exposure. Cooling of the brain leads to confusion and poor co-ordination, which inhibits the ability to recognize danger.

If engineering, administrative and personal protective equipment controls are not in place, or fail, then employees may be exposed to cold conditions that could cause injury to skin and hypothermia.

Main Elements of Cold Stress and Illness Prevention Plan	
Control	**Description**
1. Train supervisors and employees	Train supervisors and employees on Cold stress illness prevention strategies, as well as to recognize and report the signs and symptoms of cold stress related illnesses.
2. Monitor weather and workplace conditions	Monitor weather workplace conditions and take preventative measures to protect employees when the temperature is 40 °F (4.5°C), or below; or during rain events at or below 60 F.

3. Implement cold stress illness prevention strategies	Implement appropriate cold stress illness prevention strategies based on established risk levels for cold stress.
4. Plan for cold- related medical emergencies	Ensure adequate supervision, first aid and medical services are readily available in the event a employee suffers from a cold illness.

Employee Training and Responsibilities

Each employee will be trained in Cold stress Illness Prevention and will strictly adhere to the recommended practices, except when doing so would expose him/her to a greater hazard. If, in the employee's opinion, this is the case, the employee is to notify their supervisor of their concern and have the concern addressed before proceeding.

Employer Responsibilities

On the job, it is the responsibility of Management to implement the Cold stress Illness Prevention Plan. Continual observational safety checks of work operations and the enforcement of the safety policy and procedures shall be regularly enforced. The supervisor is responsible for correcting any unsafe practices or conditions immediately.

It is the responsibility of the employer to ensure that all employees understand and adhere to the policies and procedures of this plan. It is also the responsibility of the employee to bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any employees. Management must approve any changes to the Plan.

Supervisors of Employees Responsibilities

For each work site, the Supervisor of that site is responsible for the development and maintenance of that site's specific Cold Weather Illness prevention plan.

The Cold stress illness prevention strategies are broken down into five (5) steps:

1. Training of supervisor’s and employees.
2. Modify and Implement changes to normal procedures to Reduce Hazard and Risk Level
3. Implement engineering controls to reduce Cold stress conditions.
4. Implement administrative controls to reduce Cold stress conditions.
5. Provide employees personal protective clothing and equipment to reduce Cold stress conditions.

Personal Protective Equipment (PPE) for Working in the Cold

Protective clothing is needed for work at or below 40°F. Clothing should be selected to suit the temperature, weather conditions (e.g., wind speed, rain), the level and duration of activity, and job design.

These factors are important to consider so that the amount of heat and perspiration generated while working can be regulated. If the pace of work is too fast or if the type and amount of clothing are not properly selected, excessive sweating may occur. The clothing closest to the body will become wet and the insulation value of the clothing will decrease dramatically. This increases the risk for cold injuries. Clothing should be worn in multiple layers, which provide better protection than a single thick garment. The air between layers of clothing provides better insulation than the clothing itself. The inner layer should provide insulation and be able to "wick" moisture away from the skin to help keep it dry. Layers should also be easy to open or remove before the person gets too warm to prevent excessive sweating during strenuous activity.

For work in wet conditions, the outer layer of clothing should be waterproof. Almost 50 percent of body heat is lost through the head. Wool knit cap or a liner under a hard hat can reduce excessive heat loss. Clothing should be kept clean since dirt fills air cells in fibers of clothing and destroys its insulating ability. Clothing must be dry. Moisture should be kept off clothes by removing snow prior to entering heated shelters. If fine manual dexterity is not required, gloves should be used below 40°F for light work and below 20°F for moderate work. For work below 0°F, mittens should be used.

Footwear and Face and Eye Protection

Felt-lined, rubber-bottomed, leather-topped boots with removable felt insoles are best suited for heavy work in cold weather as leather is porous, allowing the boots to "breathe" and let perspiration evaporate. Leather boots can be "waterproofed" with some products that do not block the pores in the leather. However, if work involves standing in water or slush, the waterproof boots must be worn.

In extremely cold conditions where face protection is used, eye protection must be separated from the nose and mouth to prevent exhaled moisture from fogging and frosting eye shields or glasses. Protective eye wear should be selected that is appropriate for the work and for protection against ultraviolet light from the sun, glare from the snow, blowing snow/ice crystals, and high winds at cold temperatures.

Cold-Related Illnesses

Medical Emergencies

When employees are exposed to Cold stress conditions, it is critical to ensure adequate supervision, first aid and medical services are readily available in the event a employee suffers from a Cold illness. This includes ensuring adequate first aid supplies are available, and supervisors and employees are trained on what to do if a co-worker suffers from a Cold-related illness.

First Aid Supplies

The following first aid supplies for Cold-related illnesses need to be on hand.

1. Warm (not hot/scalding) water or electrolyte replacement fluids.
2. Warming bottles/bags for treatment of cold illness.
3. Hand warmers
4. Bandages/dressings for covering of open areas.
5. Blankets and other warm layers that can be loosely placed.

First Aid Guidelines

It is important that all supervisors and employees know how to recognize the signs and symptoms of Cold stress, when to call for emergency medical assistance and what steps they need to take to help the victim of Cold stress until emergency services arrive.

Employees and supervisors involved with work in cold weather conditions should be informed about symptoms of adverse effect of exposure to the cold, proper clothing habits, safe work practices, physical fitness requirements for work in cold weather, and emergency procedures in case of cold injury.

The following information is covered in training on Cold-related illnesses, including cause, preventative measures, signs and symptoms, first aid treatment and reporting requirements.

Cold Illness Preventative measures:

1. Prevent cold injuries by dressing appropriately for the weather:
    a. Limit the use of tight clothing as it reduces blood circulation. Warm blood needs to be circulated to extremities.
    b. When possible, Wear at least three layers of loose fitting clothing. Layering provides better insulation.
        i. An inner layer of wool, silk or synthetic (polypropylene) to keep moisture away from the body. Thermal wear, wool, silk or polypropylene, inner layers of clothing that will hold more body heat than cotton.
        ii. A middle layer of wool or synthetic to provide insulation even when wet.
        iii. An outer wind and rain protection layer that allows some ventilation to prevent overheating.
        iv. Water resistant clothing may also be necessary.
    c. If necessary, utilize knit masks to cover face and mouth areas and hats that cover your ears.
    d. Utilize insulated gloves (water resistant if necessary) to protect hands.
    e. Utilize insulated (water resistant if necessary) boots to protect the feet.

    f. Wear appropriate socks and other garments as needed.
    g. Have additional dry clothing available for if you become wet.
2. Avoid prolonged exposure to temperature extremes without protective clothing and equipment.
3. Stay well hydrated and rested.
    a. Avoid alcohol use
    b. Avoid caffeine use.

Illnesses

Chillblains:

Chilblains are painful inflammation of small blood vessels in the skin, caused by the repeated exposure of skin to temperatures just above freezing to as high as 60°F.

1. Cause: The repeated exposure of skin to temperatures just above freezing, to as high as 60 degrees Fahrenheit.
2. Preventative Measures:
3. Signs and Symptoms:
    a. Skin redness
    b. Itching, possible blistering, inflammation.
    c. Breaks in the skin that do not heal naturally in severe cases.
4. First aid treatment:
    a. Avoid scratching, Keep blisters and breaks in the skin clean and covered.
    b. Use corticosteroid creams to relieve itching and swelling.
    c. Slowly warm the skin
5. Reporting: Report to supervisor and safety manager.

Frostnip

is the mildest form of freezing cold injuries and the earliest stage of Frostbite. It occurs when ear lobes, noses, cheeks, fingers, or toes are exposed to the cold and the top layers of the skin freeze. The skin of the affected area turns white, and it may feel numb. The top layer of the skin feels hard, but the deeper tissue still feels normal (soft). Frostnip is treated by gentle re-warming (e.g., holding the affected tissue next to unaffected skin of the victim or of another person). As for all cold-induced injuries, never rub the affected parts - ice crystals in the tissue could cause damage if the skin is rubbed. Do not use very hot objects such as hot water bottles to re-warm the area or person. **Frostnip** is treated by gentle re-warming (e.g., holding the affected tissue next to unaffected skin of the victim or of another person). As for all cold-induced injuries, never rub the affected parts - ice crystals in the tissue could cause damage if the skin is

rubbed. Do not use very hot objects such as hot water bottles to re-warm the area or person.

Frostbite:

a common injury caused by exposure to extreme cold or by contact with extremely cold objects (especially those made of metal). It may also occur in normal temperatures from contact with cooled or compressed gases. Frostbite occurs when the tissue temperature falls below the freezing point (0°C/32°F), or when blood flow is obstructed. Blood vessels may be severely and permanently damaged, and blood circulation may stop in the affected tissue. In mild cases, the symptoms include inflammation of the skin in patches accompanied by slight pain. In severe cases, there could be tissue damage without pain, or there could be a burning or prickling sensation resulting in blisters.

1. Cause: Freezing of the skin and underlying tissues. The lower the temperature, the more quickly frostbite will occur.
2. Preventative Measures:
   Dress in layers
   Protect head, feet ,and hands
   Stay hydrated
3. Signs and Symptoms:
   a. Cold skin, prickling feeling and/or numbness.
   b. Red, white, bluish-white or grayish-yellow skin. Hard or waxy looking skin.
   c. Clumsiness due to joint and muscle stiffness
   d. Blistering after rewarming, in severe cases.
4. First aid treatment:
   a. Call 911 immediately
   b. Move the employee to a warm room or vehicle.
   c. Remove any wet clothing & replace with dry clothing.
   d. Wrap the entire body (including the head and neck) in layers of blankets; and with a vapor barrier (e.g tarp, garbage bag). Do Not cover the face.
   e. Give warm sweetened drinks if alert (no alcohol), to help increase the body temperature. Never try to give a drink to an unconscious person.
   f. Place warm bottles or hot packs in the armpits, sides of chest, and groin.
   g. If the employee has no pulse, Cardiopulmonary resuscitation (CPR) should be provided and continued until the person responds or medical aid becomes available.
   h. Do not rub the affected area to warm it. Do not break blisters. Loosely cover and protect areas from contact.
   i. Unless necessary, do not walk on frostbitten feet or toes.
5. Reporting: Report to supervisor and safety manager.

Hypothermia: a reduction of the core body temperature to below 91°F. As the body temperature drops, a person will exhibit symptoms in stages. Hypothermia is most likely

at 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. At first, muscular weakness and drowsiness are experienced. Additional symptoms of hypothermia include interruption of shivering, diminished consciousness and dilated pupils. When the body temperature reaches 81°F, coma (profound unconsciousness) sets in. Heart activity stops around 68°F and the brain stops functioning around 63°F. Hypothermia is a medical emergency. At the first sign, find immediately medical help. The survival of the victim depends on their co-workers' ability to recognize the symptoms of hypothermia. The victim is generally not able to notice their own condition.

1. Cause: Abnormally low body temperature,
2. Preventative Measures:
    a. Dress in layers.
    b. Wear a warm hat – 30% of heat loss is through the head.
    c. Wear a scarf and gloves.
    d. Drink plenty of fluids and warm/hot drinks.
    e. Eat regular balanced meals to give you energy – good nutrition is important.
    f. Keep active when it's cold, but not to the point where you're sweating.
    g. Keep dry and change out of wet clothes as soon as possible.
    h. Cut down on caffeine, and nicotine, can contribute to heat loss.
    i. Ask your doctor if you are on any medications that affect your ability to maintain a steady body temperature (such as neuroleptic medications and sedative hypnotics).
3. Signs and Symptoms:
    a. Early stage symptoms include: Shivering, fatigue/sleepiness, stiff muscles, loss of coordination, confusion, difficulty speaking, and disorientation.
    b. Late stage symptoms include: a Lack of shivering, dilated pupils, slowed pulse and breathing, loss of consciousness.
4. First aid treatment:
    a. Call 911 immediately
    b. Move the employee to a warm room or vehicle.
    c. Remove any wet clothing & replace with dry clothing.
    d. Wrap the entire body (including the head and neck) in layers of blankets; and with a vapor barrier (e.g tarp, garbage bag). Do Not cover the face.
    e. Give warm sweetened drinks if alert (no alcohol), to help increase the body temperature. Never try to give a drink to an unconscious person.
    f. Place warm bottles or hot packs in the armpits, sides of chest, and groin.
    g. If the employee has no pulse, Cardiopulmonary resuscitation (CPR) should be provided and continued until the person responds or medical aid becomes available.
5. Reporting: Report to supervisor and safety manager.

Immersion/Trench Foot: An injury caused by prolonged exposure to wet & cold temperatures. It can occur at temperatures as high as 60 degrees Fahrenheit if feet are constantly wet.

1. Cause: Prolonged exposure to wet & cold temperatures and even temperatures as high as 60 degrees Fahrenheit if feet are constantly wet.
2. Preventative Measures:
    a. **Wearing proper footwear**: Choose insulated, waterproof boots made from breathable materials.
    b. **Changing wet socks**: Change out of wet socks and shoes as soon as possible.
    c. **Taking breaks**: Take breaks from cold and wet conditions to allow feet to dry.
    d. **Monitoring weather**: Be aware of weather conditions and adjust activities to minimize exposure to cold and damp environments.
    e. **Checking feet**: Check feet for any developing wounds at least once daily.
3. Signs and Symptoms:
    a. Reddening of the skin
    b. Numbness, leg cramps, swelling, and tingling pain.
    c. Blisters, ulcers, bleeding under the skin, and gangrene (foot may turn dark purple, blue, or gray).
4. First aid treatment:
    a. Call 911 immediately in an emergency; otherwise seek medical assistance as soon as possible.
    b. Move the employee to a warm room or vehicle.
    c. Remove any wet clothing, dry the feet, and replace with dry clothing.
    d. Avoid walking on feet, as this may cause tissue damage.
5. Reporting: Report to supervisor and safety manager.

What to do if an injury occurs:

1. If cold weather illness is suspected, Seek help immediately, Call 911 if appropriate. Inform the victim's supervisor
2. Perform First Aid if appropriate. Ensure wet clothing is removed. Remove any restricting clothing.
3. Place the victim between blankets and move them to a warm area.
4. Do **Not** attempt to re-warm the affected area on site by rubbing he area or applying heating bottles, etc.
5. Loosely cover affected areas with sterile dressings if necessary.
6. Supervisor should complete an Employee Incident Report (EIR) and submit per the Baltimore City Administrative Manual .

V. TRAINING

When training will be provided:

1. prior to an employee's first exposure to Cold;
2. annually prior to exposure; and
3. immediately following any incident at the worksite involving a suspected or confirmed Cold-related illness;

Who will be trained:

1. Management
2. Supervisors
3. Team leads or other Direct Supervisor's of employees.
4. Employees

Training records will be maintained:

1. Any training sessions attendance records will be held by Management will be recorded and records maintained by Site supervisors/management.
2. A copy of any training records will be maintained in Workday, personnel files, or approved personnel retention site.

VI. COLD-ILLNESS PREVENTION STRATEGIES

The Cold-illness prevention strategies are broken down into five (5) steps:

1. Training of supervisor's and employees.
2. Modify and Implement changes to normal procedures to Reduce Hazard and Risk Level
3. Implement engineering controls to reduce Cold stress conditions.
4. Implement administrative controls to address acclimatization issues and/or reduce Cold stress conditions.
5. Provide employees personal protective clothing and equipment to reduce Cold stress conditions.

The Cold-illness prevention strategies vary slightly for unacclimated employees. If employees have not worked in a cold environment below 40 F within 10 days, then those employees must be placed in an acclimatization program designed to gradually acclimate them to work in a cold environment.

Step 1. Training of supervisor's and employees.

Training will be presented in a language and manner that all employees and supervisors can understand.

To ensure employees are prepared to work safely under cold conditions, all employees and supervisors who may be exposed to Cold stress and Cold-related illnesses will receive training on the following:

Elements of DPW's Cold-Illness Prevention Plan

1. Training
2. Monitoring
3. Hazard Assessment
4. Cold-Illness Prevention Strategies
5. Emergency Preparedness

Risk Factors for Cold Stress

Environmental risk factors for Cold stress

1. Temperature
2. Humidity
3. Air movement

Work-related risk factors for Cold stress

1. Acclimatization
2. Improper Clothing
3. Exhaustion
4. Wetness and Dampness

Personal risk factors for Cold stress

1. Age
2. Physical fitness
3. Acclimatization
4. Medical conditions
5. Body Weight
6. Clothing
7. Medications
8. Alcohol and/or drug use
9. Caffeine
10. Dehydration

How the Body reacts to Cold conditions

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

The importance of acclimatization.

Supervisors should give employees frequent breaks in warm areas. Acclimatize new employees and those returning after time away from work, by gradually increasing their workload, and allowing more frequent breaks in warm areas, as they build up a tolerance for working in the cold environment.

Studies have shown that those exposed to cold for 10 days showed a delay the onset of shivering and the decrease in the core temperature at the onset of shivering.

Those acclimatized to the cold warm up at a faster rate during breaks.

You begin to lose your acclimatization after about 1 week away from working in the cold.

The importance of consuming water throughout the work shift

1. One cup (8 oz.) of cool water or an electrolyte replacement fluid every 15-20 minutes; four cups of water every hour.
2. Increased water intake may be needed to account for increased physical exertion and/or sweating.
3. However, too much water intake can be dangerous and lead to headache, nausea, vomiting and/or mental confusion.
4. Warming fluids can help to alleviate signs/symptoms of cold stress.

The importance of rest breaks in warming areas and/or heated shelters throughout the work shift

1. Short rest breaks are necessary to allow blood to flow to extremities and vital areas and to rebalance your body's temperature.
2. Rest breaks are also important for the heart and allow your heart rate to recover from sustained Cold stress and physical exertion.
3. Rest breaks in heated rest areas/shelters provide opportunities for heating up the body and replenishing of fluids lost during work.
4. Rest areas provide areas for employees to recuperate from low temperature conditions.

Additional Hazards and Precautions related to Cold weather work

Winter Driving

Although roadway conditions cannot be controlled completely, supervisors should promote safe driving behavior by ensuring employees: recognize the hazards of winter weather driving, for example, driving on snow/ice covered roads; are properly trained for driving in winter weather conditions; and are licensed (as applicable) for the vehicles they operate. Visit OSHA's Safe Winter Driving page for more safe driving tips and Motor Vehicle Safety (OSHA Safety and Health Topic's Page).

Supervisors are responsible for enforcing DPW's driver safety policies which include the following at minimum recommendations.

1. Ensuring all employees assigned to use a DPW vehicle:
    a. Follow all City of Baltimore and DPW driver safety policies.
    b. Have completed Office of Training and Professional Development (OTPD) driving certification program (or have been recertified) before driving a City of Baltimore vehicle.
    c. Have a valid driver's license to operate a motor vehicle.
    d. Perform routine maintenance procedures and equipment checks for all vehicles and mechanized equipment that employees are required to operate.
    e. To stop employee use of any equipment or vehicles that are deemed to be unsafe for use.
2. Ensure the following vehicle systems are checked routinely, at minimum, before operation of a DPW vehicle to determine if they are working properly (Have Routine Preventative Maintenance performed):
    a. Brakes: Brakes should provide even and balanced braking. Also check that brake fluid is at the proper level.
    b. Cooling System: Ensure a proper mixture of 50/50 antifreeze and water in the cooling system at the proper level.
    c. Electrical System: Check the ignition system and make sure that the battery is fully charged and that the connections are clean. Check that the alternator belt is in good condition with proper tension.
    d. Engine: Inspect all engine systems.
    e. Exhaust System: Check exhaust for leaks and that all clamps and hangers are snug.
    f. Tires: Check for proper tread depth and no signs of damage or uneven wear. Check for proper tire inflation.
    g. Oil: Check that oil is at proper level.
    h. Visibility Systems: Inspect all exterior lights, defrosters (windshield and rear window), and wipers. Install winter windshield wipers.
3. Ensure that a roadside emergency kit with the following items is available:
    a. A First Aid Kit
    b. Cellphone or two-way radio
    c. Windshield ice scraper
    d. Snow brush
    e. Flashlight with extra batteries
    f. Shovel
    g. Tow chain
    h. Traction aids (bag of sand or cat litter)
    i. Emergency flares
    j. Jumper cables
    k. Snacks
    l. Water
    m. Road maps
    n. Blankets, change of clothes

Work Zone Traffic Safety

Supervisors are responsible for employees understanding potential hazards of work zones and ensuring that employees follow workplace procedures for traffic and work zone safety. Employees being struck by vehicles or mobile equipment leads to many work zone fatalities or injuries annually, nationwide. Drivers may skid or lose control of their vehicles more easily when driving on snow and/or icecovered roads. It is therefore, important to properly set up work zones with the traffic controls identified by signs, cones, barrels, and barriers, to protect employees. Employees exposed to vehicular traffic should always wear the appropriate high visibility vest, so that they can be visible to motorists. See OSHA's resources on work zone traffic safety at: Work Zone Traffic Safety and Highway Work Zones and Signs, Signals, and Barricades (OSHA Safety and Health Topics Page).

Stranded in a Vehicle

Supervisors should ensure that employees understand safety procedures to follow when severe weather conditions occur including the following:

1. Employees that become stranded in a vehicle, must stay in the vehicle.
2. Call for emergency assistance if needed, response time may be slow in severe winter weather conditions.
3. Notify your supervisor of your situation.
4. Do not leave the vehicle to search for assistance unless help is visible within 100 yards. You may become disoriented and get lost in blowing and drifting snow.
5. Display a trouble sign by hanging a brightly colored cloth on the vehicle's radio antenna and raising the hood.
    a. Also, turn on the vehicle's dome light when the vehicle is running as an additional signal.
6. Turn on the vehicle's engine for about 10 minutes each hour and run the heat to keep warm. Beware of carbon monoxide poisoning.
7. Keep the exhaust pipe clear of snow and open a downwind window slightly for ventilation.
8. Watch for signs of frostbite and hypothermia.
    a. Do minor exercises to maintain good blood circulation in your body. Clap hands and move arms and legs occasionally. Try not to stay in one position for too long. Stay awake, you will be less vulnerable to cold-related health problems.
    b. Use blankets, newspapers, maps, and even the removable car mats for added insulation. Avoid overexertion since cold weather puts an added strain on the heart.

c. Unaccustomed exercise such as shoveling snow or pushing a vehicle can bring on a heart attack or make other medical conditions worse.

Shoveling Snow

Shoveling snow can be a strenuous activity, particularly because cold weather can be taxing on the body. There is a potential for exhaustion, dehydration, back injuries, or heart attacks. During any snow removal follow the following tips for avoiding cold stress:

1. Take frequent breaks in warm areas
2. Warm-up before the activity
3. Scoop small amounts of snow at a time and where possible, push the snow instead of lifting it.
    a. Use proper lifting technique to avoid back and other injuries when shoveling snow:
        i. keep the back straight
        ii. lift with the legs
        iii. do not turn or twist the body.

Using Powered Equipment like Snow Blowers

When working with powered equipment, It is important to make sure that the equipment is properly grounded to protect from electric shocks or electrocutions. In addition required preventative maintenance and cleaning should be performed.

*Snow blowers commonly cause lacerations or amputations when operators attempt to clear jams with the equipment turned on. N*ever attempt to clear a jam by hand. First, turn the snow blower off and wait for all moving parts to stop, and then use a long stick to clear wet snow or debris from the machine. Keep your hands and feet away from moving parts. Refuel a snow blower prior to starting the machine; do not add fuel when the equipment is running or when the engine is hot.

Clearing Snow from Roofs and Working at Heights

Supervisors and employees must evaluate snow removal tasks for hazards and plan how to do the work safely. Employees should be aware of the potential for unexpected hazards due to the weather conditions, for example, layers of ice can form as the environmental temperature drops, making surfaces even more slippery. A surface that is weighed down by snow must be inspected by a competent person to determine if it is structurally safe for employees to access it, because it may be at risk of collapsing. Snow covered rooftops can hide hazards such as skylights that employees can fall through. Electrical hazards may also exist from overhead power lines or snow removal equipment.

See OSHA's additional resources for working at heights here: OSHA's Hazard Alert: Falls and Other Hazards to Workers Removing Snow from Rooftops and Other Elevated Surfaces.

Preventing Slips on Snow and Ice

To prevent slips, trips, and falls, employers should clear walking surfaces of snow and ice, and spread deicer, as quickly as possible after a winter storm. In addition, the following precautions will help reduce the likelihood of injuries:

1. Wear proper footwear when walking on snow or ice is unavoidable
    a. A pair of insulated and water resistant boots with good rubber treads is recommended for walking during or after a winter storm.
    b. Keeping a pair of rubber over-shoes with good treads which fit over your street shoes is a good idea during the winter months.
2. Take short steps and walk at a slower pace so you can react quickly to a change in traction, when walking on an icy or snow-covered walkway.

Encountering Downed or Damaged Power Lines

Damaged or downed power lines in severe winter weather conditions are especially hazardous. Snow, can reduce the insulation value of protective equipment and could cause electrocution. In severe winter weather conditions work near these hazards should be avoided and power utilities notified of affected areas. Qualified employees and supervisors must first do a hazard analysis that includes evaluating the weather conditions and identifying how to safely do the job around or involving compromised power lines. Assume all power lines are energized and stay clear of any downed or damaged power lines. Establish a safe distance from power lines and report any incidents to the responsible authority. Only properly trained electrical utility employees can handle damaged power lines. See additional information from OSHA: Contact with Power Lines and Working Safely Around Downed Electrical Wires (OSHA Fact Sheet).

Other potential hazards include:

1. Electrocution by contacting downed energized power lines, or contacting objects, such as broken tree limbs, in contact with downed energized power lines.
2. Fires caused by an energized line or equipment failure.
3. Being struck or crushed by falling tree limbs, collapsing poles, etc.

Removing Downed Trees

Clearing downed trees is a critical job during severe winter weather conditions. It is usually urgent to remove downed trees that block public roads and damage power lines. Emergency crews are often tasked with clearing downed trees. Employees using chainsaws and chippers to clear downed trees should use: gloves, chaps, foot

protection, eye protection, fall protection, hearing protection and head protection. Supervisors will ensure that employees performing tree removal work:

1. Are trained and certified (if required) to use any equipment
2. Ensure that equipment is always maintained in serviceable condition and inspected before use by a knowledgeable person that can identify any problems with the equipment.
3. Have and use required Personal Protective Equipment
4. Use only equipment that has preventative maintenance performed and is in good condition for use
5. Not use any equipment that is damaged or determined unusable.
6. Use all equipment and tools (saws, chippers, etc.) properly and for the purpose that they are designed for.
7. Equipment must have proper guarding (as applicable)
    a. Safe guards must never be bypassed.
8. All controls and safety features must function as designed by the manufacturer. Learn more at: Tree Trimming and Removal (OSHA QuickCard™).

Potential hazards include:

1. Electrocution by contacting downed energized power lines or contacting broken tree limbs in contact with downed energized power lines. Learn more from OSHA's website at: Line Clearance Tree Trimming Operations.
2. Falls from heights.
3. Struck by flying objects hazards.
4. Being injured by equipment such as chain saws (Chain Saw Safety (OSHA QuickCard™)) and chippers (Chipper Machine Safety (OSHA QuickCard™)).

Hierarchy of Controls

Engineering Controls

Engineering controls can be effective in reducing the risk of cold stress. For example, radiant heaters may be used to warm workplaces like outdoor security stations. If possible, work areas should be shielded from drafts or wind to reduce wind chill.

1. Reduce physical exertion and physical demands of work through use of powered tools and equipment, especially for tasks involving heavy lifting.
2. Reduce employee exposure to cold by ensuring workplaces provide adequate protection from weather and sources of cold stress. Provide warm workplaces when possible and shield areas to reduce wind chill.
    a. Whenever there are exposures to an equivalent wind chill temperature of less than -20°F, a heated shelter will be made available.

3. Create areas that provide warmth and relief from cold stress, allowing employees to rest, re-warm, and replenish fluids.
4. Vehicles or areas with radiant heaters that can be temporarily placed for mobile teams.
5. Ensure heating systems are adequate to provide temperatures suitable in preventing cold stress and illness. Potential illness/injury can occur below 60 degrees Fahrenheit.
6. Worksite supervisors must provide adequate facilities to provide relief to employees that may need to change from wet to dry clothing and require dry blankets to warm with.

Worksites and Use of Temporary heating units, portable heaters, and space heaters

Additional OSHA standard information is available through OSHA's website: https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.154

1. Use of space heaters should not be allowed unless supervisor or management approval is provided prior to use.
2. Units that have been listed or labeled by a nationally recognized testing laboratory such as UL (Underwriters Laboratories), CSA (Canadian Standards Association) or ETL (Intertek) should be the only space heaters permitted for use.
3. Keep at least 36 inches of clearance around every space heater and only use them in areas free of flammable liquids and easily ignited or combustible materials.
4. Proper placement of the space heater is important. Be sure it is not in a high-traffic area or in any area where it may become a tripping hazard.
5. If using an electric space heater, make sure electrical cords and plugs are not frayed or damaged.
6. Always plug the heater directly into the wall outlet, and be sure the power cord is not crossing a walkway.
    a. Never use extension cords or power strips, as these could overheat and lead to a fire.
7. Space heaters are never left unattended. They should be turned off when the employee leaves the room or area of the heater, and they should be unplugged at the end of the day.

Administrative Controls

Acclimatization Program

1. Acclimatization of exposed employees is provided for a period of up to 14 days:
    a. When an employee is newly exposed to Cold in the workplace; and
    b. When an employee returns to work after seven or more consecutive days of absence from the workplace.

2. Employees are monitored during the acclimatization period for signs of cold stress and related illnesses through regular communication via:
    a. phone or radio;
    b. a buddy system; or
    c. other effective means of observation.
3. An acclimatization schedule complies with one of the following:
    a. A schedule which gradually increases exposure time over a 5-14 day period, with a maximum 20% increase each day;
    b. A schedule which uses the current National Institute for Occupational Safety and Health's recommendations for acclimatization; or
4. The acclimatization schedule for each site is writing and considers the following elements:
    a. Acclimated and unacclimated employees;
    b. The environmental conditions and anticipated workload;
    c. The impact of required clothing and personal protective equipment to the Cold burden on employees;
    d. The personal risk factors that put an employee at a higher risk of Cold-related illness;
    e. Re-acclimatizing employees as necessary, and
    f. The use of alternative cooling and control measures.

Administrative controls can be effective in reducing the risk of cold stress. Administrative controls are changes to work practices and policies that can help reduce the risk of cold stress. Examples include: Scheduling changes, training, rotation of duties, hydration, breaks/rest periods, warning signs, acclimation, monitoring plans, and standard operating procedure adjustments.

1. Adjust work schedule to ensure employees are acclimated to work in cold conditions.
2. Schedule work or work requiring heavy physical exertion during the warmer parts of the day.
3. Modify the work-rest schedule to shorten cold weather exposure periods by including more frequent rest breaks. Shorter, more frequent breaks are more effective than longer, less frequent rest breaks.
4. Encourage adequate water intake at frequent intervals to prevent dehydration (e.g., one 8-ounce cup of warm water or an electrolyte replacement fluid every 15- 20 minutes).
    a. The supervisor or foreman is responsible for making sure warm drinking water/fluids are provided, plus:
        i. Ensure that water containers are clean and sanitary prior to filling.
        ii. Ensure water containers are filled at a sanitary location.
        iii. Provide sufficient disposable cups and a place for disposing cups.
        iv. Ensure employees do not share cups and dispose of used cups.

        v. Prohibit employees from opening the cooler top to fill cups and instead have employees use the provided spigot.
    b. Pure potable water must be made available to employees at no additional cost.
        i. Do not use water from irrigation, sprinklers or firefighting systems.
        ii. Do not use water from a garden hose, as it may contain contaminants from the hose and/or bacteria and other microbes.
    c. Water quantities need to be sufficient and at least 1 quart per employee per hour for the entire shift.
    d. Locate water containers as close as practicable at all times.
    e. Ensure employees can receive warm fluids as needed.
    f. Encourage employees to frequently drink water and not wait until thirsty.
5. Provide a heated and wind protected and/ conditioned space nearby for rest and water breaks.
6. Train employees on the recognition of the signs and symptoms of Cold-induced illness and on Cold-illness prevention strategies.
7. Train employees on prevention of slip-fall hazard reduction strategies and how to identify potential hazards.
8. Alert employees to extreme Cold events or Cold stress conditions and provide a short review of the Cold-illness prevention strategies for the day.
9. Work in pairs (buddy system) and monitor each other for signs and symptoms of Cold stress or illness.
10. Avoid caffeine and alcohol before and during working in a cold environment.
11. Report illnesses or medical conditions that may put them at risk of Cold stress (e.g., diarrhea, fever, infection, etc.)

Personal Protective Clothing and Equipment

In cold weather, the most visible form of protection and the last line of defense against the cold is warm, dry clothing. Dressing in loose layers helps to keep the body's core warm and promote blood flow. Layers also allow employees to remove some clothing if they become too warm. Body extremities, including the head, hands and feet, also need to be covered because they are the first areas to become chilled. OSHA does not require employers to provide winter clothing [29 CFR 1910.132(h)(4)(iii),] however DPW requires employees engaging in certain field activities to utilize DPW uniforms and PPE.

1. When possible, Wear at least three layers of loose fitting clothing. Layering provides better insulation.
    a. An inner layer of wool, silk or synthetic (polypropylene) to keep moisture away from the body. Thermal wear, wool, silk or polypropylene, inner layers of clothing that will hold more body heat than cotton.
    b. A middle layer of wool or synthetic to provide insulation even when wet.

    c. An outer wind and rain protection layer that allows some ventilation to prevent overheating.
    d. Water resistant clothing may also be necessary.
2. Limit the use of tight clothing as it reduces blood circulation. Warm blood needs to be circulated to extremities.
3. If necessary, Utilize Knit masks to cover face and mouth areas and hats that coer your ears.
4. Utilize insulated gloves (water resistant if necessary) to protect hands.
5. Utilize insulated (water resistant if necessary) boots to protect the feet.
    a. Ensure employees wear appropriate socks and other garments as needed.
6. Ensure that adequate additional dry clothing is made available for employees that may become wet.
7. Utilize any necessary Personal Protective Equipment (PPE) as required for duties assigned.

MONITORING WEATHER AND WORKPLACE CONDITIONS

Monitor weather workplace conditions and take preventative measures to protect employees when the temperatures equal 40 °F (4.5°C), and below.

The National Weather Service (www.weather.gov) may be used to monitor weather conditions. Public weather observation alternatives include Intellicast (www.intellicast.com) and Weather Underground (www.wunderground.com). Use the closest weather station to the worksite location.

If the temperatures will be 40 °F (4.5°C), and below for more than an hour during the work shift, then a Cold hazard assessment needs to be performed. The following additional weather information is required for the Cold hazard assessment:

- Air temperature (◦F)
- Humidity (%)
- Wind speed (mph)
- Barometric pressure (inches)
- Longitude and latitude
- Cloud cover

<u>Equivalent wind chill temperatures</u>

Whenever there are exposures to an equivalent wind chill temperature of less than -20°F, a heated shelter will be made available.

LOWER HAZARD – there is a risk of exposed skin being affected in less than one hour.

HIGH HAZARD – there is danger of exposed flesh freezing in one minute.

EXTREME HAZARD – there is danger of flesh freezing in 30 seconds.

As a rule of thumb, a cold-stress assessment should be conducted:

- Whenever temperatures are below 40ºF and moderate to high winds prevail.
- Whenever temperatures are below 30ºF and moderate to high winds prevail.
- Whenever temperatures are below 15°F and there is some wind.
- Whenever temperatures are below -5°F, even in calm conditions.

Est. Wind Speed (MPH)		Actual temperature reading (degrees F.)												
		50	41	32	23	14	5	-4	-13	-22	-31	-40	-49	-58
		Equivalent chill temperature												
EST. Wind Speed	0	50	41	32	23	14	5	-4	-13	-22	-31	-40	-49	-58
	5	48	37	28	19	10	0	-9	-18	-27	-36	-47	-56	-65
	10	39	28	19	-7	-4	-17	-27	-36	-49	-58	-71	-81	-92
	15	36	23	12	0	-13	-26	-36	-49	-62	-72	-85	-98	-108
	20	32	19	7	-6	-18	-31	-44	-58	-70	-83	-96	-108	-119
	25	30	18	3	-11	-24	-36	-51	-63	-76	-89	-105	-116	-130
	30	28	14	1	-13	-27	-40	-54	-67	-81	-94	-108	-123	-137
	35	27	12	0	-15	-29	-44	-58	-72	-85	-99	-114	-128	-140
	40	27	12	-2	-17	-31	-45	-60	-74	-87	-101	-116	-130	-144
		Lower Hazard				High Hazard			**Extreme Hazard**					

Table.1 Temperature Equivalent Chill Factors

COLD HAZARD ASSESSMENT

When weather or workplace conditions will 40 °F (4.5°C), and below for more than an hour during work, a Cold hazard assessment must be conducted to take into account for environmental and work factors associated with Cold stress and Cold-related illnesses. Temperature, humidity, wind speed and moisture conditions are environmental factors that must be taken into account. Work factors include metabolic work rate (physical exertion) and clothing. In assessing the hazard presented by cold weather, levels of hazard can be identified in the above Chill Temperature Table. This table divides cold hazards into the three categories. However, if engineering, administrative and personal protective equipment controls are not in place, or fail, then employees may be exposed to cold conditions that could cause injury to skin and hypothermia. At this point work should stop until weather conditions abate, or appropriate corrective/protective measures are put in place.

Step 2. Modify and Implement changes to normal procedures to Reduce Hazard and Risk Level

The next step in the Cold-illness prevention strategy is to evaluate those factors used in the Cold hazard assessment and determine what changes could be made to reduce the hazard. Examples of effective controls include, but are not limited to:

1. 1.Coordinate with relevant stakeholders (Mayor's Office, Director's Office, Human Resources, Office of the Labor Commissioner, DPW Communications Division) to adjust operational schedules (i.e. starting residential trash and recycling collections later in the day or suspension of activities). Evaluate the sustainability of scheduled operations under extreme cold conditions.
2. Reduce employee exposure to cold stress by ensuring workplaces provide adequate protection from affecting conditions sources of cold stress.
3. Provide warm workplaces when possible and shield areas to reduce wind chill.
    a. Whenever there are exposures to an equivalent wind chill temperature of less than -20°F, a heated shelter will be made available.
4. Require winter weather Protective Clothing, including multiple layers as described above.
5. When feasible, use mechanical and powered equipment to reduce employee physical exertion, especially heavy physical exertion. This includes the use of forklifts, hoists, earthmoving equipment (backhoes, loaders and excavators), conveyers, portable power tools (e.g., rotary auger in place of hand shoveling), etc.
6. When feasible, change the work-rest schedule to ensure employees receive adequate rest breaks in warming area, which will allow for body heat to rise again.
7. When feasible, adjust work clothing to thicker, heavier, more insulating fabrics that will allow for appropriate circulation, while retaining body warmth.

Low Temperature/ Cold Stress Related Rest Procedures

1. DPW will implement low temperature/ Cold Stress related rest procedures when the Cold index drops below 40 °F (4.5°C) in the area where the work is being performed.
2. The DPW *Low Temperature/ Cold Stress* procedure is to provide:
    a. a minimum rest period of 10 minutes every 2 hours worked when employees are exposed to temperatures below 40 °F and higher than 20 °F ; and
    b. a minimum rest period of 15 minutes for every hour worked where employees are exposed to a low temperature below 20 °F.

Step 3. Implement Engineering (Physical or Mechanical) Controls

When the risk hazard level is Low or above, then implementation of effective engineering controls is recommended over administrative or protective clothing controls. See Engineering Controls

Step 4. Implement Administrative Controls

When the risk level is Low or above, then implementation of effective administrative controls is recommended when effective engineering controls are not feasible. Additionally, unacclimated employees must be placed in an acclimatization program designed to gradually acclimate them to work in a hot environment. This includes employees that have not previously worked in a hot environment within the previous week. See Administrative Controls

Step. 5 Implement Personal Protective Clothing and Equipment Controls

If engineering and/or administrative controls are not feasible, then personal protective clothing and equipment is used to reduce Cold stress conditions. See Personal Protective Clothing and Equipment.

VII. ENFORCEMENT

Constant awareness of and respect for Cold stress hazards, and compliance with all safety rules are required conditions for continued employment. All employees, including supervisors and employees are responsible for ensuring compliance with applicable safety protocols, practices, and procedures. The employer reserves the right to issue disciplinary warnings and actions to employees, including, but not limited to suspensions and termination, for failure to follow the guidelines of this program.

VIII. INCIDENT INVESTIGATIONS

All incidents that result in a employee suffering from a Cold-related illness, regardless of their nature, shall be investigated and reported to management. It is an integral part of any safety program that documentation take place as soon as possible so that the cause and means of prevention can be identified to prevent a reoccurrence. An Employee Incident Report (EIR) is provided in the Appendix. The EIR form is to be completed and used to initiate an incident investigation with the goal of taking corrective actions to prevent future occurrences.

In the event that an employee suffers from a Cold-related illness or some other related, serious incident occurs, this plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of incidents from occurring. In addition, if the employee suffers from a heat-related illness,

supervisors must complete additional Supplemental Cold-Related Report Form attached as APPENDIX C

IX. CHANGES TO PLAN

Management will review and approve any changes to the plan. Management shall review this plan at least annually to determine if additional practices, procedures or training needs to be implemented to improve heat-illness prevention measures. Employees shall be notified and trained, if necessary, in the new procedures. A copy of this plan and all approved changes shall be maintained at the jobsite.

APPENDIX A: JOB SPECIFIC COLD-ILLNESS PREVENTION PLAN

This plan is specific to the following project, in accordance with company policies and procedures as outlined in the Cold-Illness Prevention Plan:

Description	Details
1. Location of Job and Address (attach detailed directions as needed)	
2. Date Prepared or Modified	
3. Plan Prepared By	Name: Phone:
4. Plan Approved By	Name:
5. Plan Supervised By	Name: Phone:
6. First Aid and Emergency Medical Services Contacts	First Aid Name(s): Phone: Alternate Phone: Emergency Medical Services: Phone: Local Hospital: Phone:

Identified Cold Stress Hazards (Check those that apply)

1. Outside work temperatures is below 40 ° F	
2. Work areas exposed to wind factors	
4. Work involves employees being exposed to water.	
5. Moderate to High wind speeds identified	
6. Manual labor and tasks requiring physical exertion	
7. Employees not acclimated to work in cold environments	
8. Employees wearing multiple layers of clothing	
9. Other: _____	
10. Other:_____	

Does a Cold Hazard Evaluation Need to be Conducted?

Conduct a Cold Hazard Assessment if the answer is “YES” to any of the following:

Condition	NO	YES
Items 1, 2 or 3 were checked above.		
More than two of the above items were checked.		
There is a valid concern regarding Cold stress. Concern:		

Corrective Actions that will be taken to Prevent Cold Stress

Step 1: Training of supervisor's and employees.

a) Action: _____
b) Action: _____
c) Action: _____
d) Revised Risk Level:_____

Step 2: Modify and Implement changes to normal procedures to Reduce Hazard and Risk Level

a) Action: _____
b) Action: _____
c) Action: _____
d) Revised Risk Level:_____

Step 3: Implement Engineering Controls

e) Action: _____
f) Action: _____
g) Action: _____
h) Revised Risk Level:_____

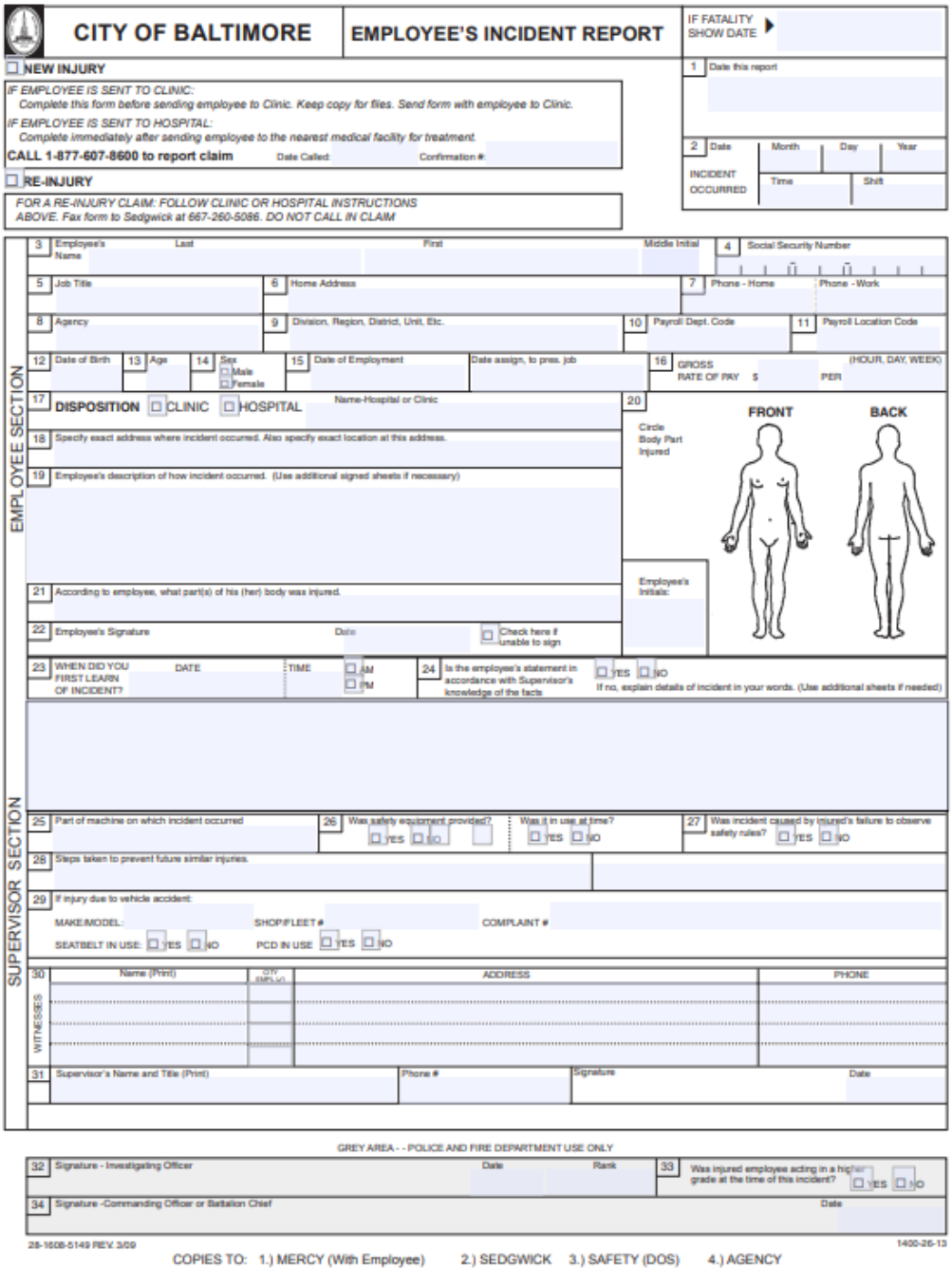
Step 4: Implement Administrative Controls

a) Action: _____
b) Action: _____
c) Action: _____
d) Revised Risk Level:_____

Step 5: Implement Protective Clothing or Equipment Controls

a) Action: _____
b) Action: _____
c) Action: _____
d) Revised Risk Level:_____

APPENDIX B: EMPLOYEE INCIDENT REPORT (Click to go to Link)



CITY OF BALTIMORE

EMPLOYEE'S INCIDENT REPORT

IF FATALITY SHOW DATE

☐ NEW INJURY

IF EMPLOYEE IS SENT TO CLINIC:
Complete this form before sending employee to Clinic. Keep copy for files. Send form with employee to Clinic.
IF EMPLOYEE IS SENT TO HOSPITAL:
Complete immediately after sending employee to the nearest medical facility for treatment.
CALL 1-877-607-8600 to report claim Date Called: Confirmation #:

☐ RE-INJURY

FOR A RE-INJURY CLAIM: FOLLOW CLINIC OR HOSPITAL INSTRUCTIONS ABOVE. Fax form to Sedgwick at 667-260-5086. DO NOT CALL IN CLAIM

1 Date this report

2 Date INCIDENT OCCURRED — Month / Day / Year / Time / Shift

EMPLOYEE SECTION

3 Employee's Name — Last / First / Middle Initial

4 Social Security Number

5 Job Title

6 Home Address

7 Phone - Home / Phone - Work

8 Agency

9 Division, Region, District, Unit, Etc.

10 Payroll Dept. Code

11 Payroll Location Code

12 Date of Birth | 13 Age | 14 Sex ☐ Male ☐ Female | 15 Date of Employment | Date assign. to pres. job | 16 GROSS RATE OF PAY $ PER (HOUR, DAY, WEEK)

17 DISPOSITION ☐ CLINIC ☐ HOSPITAL — Name-Hospital or Clinic

18 Specify exact address where incident occurred. Also specify exact location at this address.

19 Employee's description of how incident occurred. (Use additional signed sheets if necessary)

20 Circle Body Part Injured — FRONT / BACK

Employee's Initials:

21 According to employee, what part(s) of his (her) body was injured.

22 Employee's Signature — Date — ☐ Check here if unable to sign

23 WHEN DID YOU FIRST LEARN OF INCIDENT? DATE TIME ☐ AM ☐ PM

24 Is the employee's statement in accordance with Supervisor's knowledge of the facts ☐ YES ☐ NO
If no, explain details of incident in your words. (Use additional sheets if needed)

SUPERVISOR SECTION

25 Part of machine on which incident occurred

26 Was safety equipment provided? ☐ YES ☐ NO — Was it in use at time? ☐ YES ☐ NO

27 Was incident caused by injured's failure to observe safety rules? ☐ YES ☐ NO

28 Steps taken to prevent future similar injuries.

29 If injury due to vehicle accident:
MAKE/MODEL: SHOP/FLEET # COMPLAINT #
SEATBELT IN USE: ☐ YES ☐ NO PCD IN USE ☐ YES ☐ NO

WITNESSES

30 Name (Print) / CITY EMPLOY. / ADDRESS / PHONE

31 Supervisor's Name and Title (Print) / Phone # / Signature / Date

GREY AREA - - POLICE AND FIRE DEPARTMENT USE ONLY

32 Signature - Investigating Officer / Date / Rank

33 Was injured employee acting in a higher grade at the time of this incident? ☐ YES ☐ NO

34 Signature -Commanding Officer or Battalion Chief / Date

28-1606-5149 REV. 3/09 1400-26-13

COPIES TO: 1.) MERCY (With Employee) 2.) SEDGWICK 3.) SAFETY (DOS) 4.) AGENCY

OBJ

APPENDIX C: SUPPLEMENTAL COLD-RELATED REPORT FORM

1. **Employee Information:**
    a. Name:
    b. Job title:
    c. Department:
    d. Supervisor:
2. **Incident Details:**
    a. Date and time of the incident:
    b. Location of the incident:
    c. Weather conditions at the time (temperature, humidity, etc.):
    d. Description of the task being performed when the incident occurred:
    e. Duration of the employee's exposure to the Cold:
3. **Symptoms Observed:**
    a. Describe the symptoms exhibited by the employee (e.g., dizziness, headache, nausea, shivering):
    b. When did the symptoms first appear?
4. **Immediate Response:**
    a. Who reported the incident?
    b. What immediate actions were taken to assist the employee (e.g., moved to a cooler area, provided water)?
    c. Who provided the initial assistance?
    d. Was medical assistance required? If so, describe the medical response (e.g., first aid, ambulance called).
5. **Work Environment:**
    a. Was the employee working indoors or outdoors?
    b. Describe the work environment (e.g., heated area, exposure to water, direct sunlight, ventilation):
    c. Was the employee provided with any Cold illness prevention measures (e.g., water, breaks, warm area to work/rest in)?
6. **Preventive Measures:**
    a. Was the employee aware of the Cold illness prevention plan?
    b. Did the employee follow the recommended preventive measures?
    c. Were there any factors that may have contributed to the incident (e.g., lack of training, inadequate rest breaks)?
7. **Follow-Up:**
    a. Was the employee transported to a medical facility? If so, which one?
    b. What treatment was provided at the medical facility?
    c. Is the employee able to return to work? If not, what is the expected recovery time?
    d. Are there any recommended changes to the Cold illness prevention plan based on this incident?
8. **Witnesses:**

a. Were there any witnesses to the incident? If so, provide their names and contact information:
b. Witness statements (if applicable):

9. **Additional Comments:**
    a. Any other relevant information or observations:
10. **Report Prepared By:**
    a. Name:
    b. Job title:
    c. Date of report:

APPENDIX D: DPW COLD ILLNESS INCIDENT INVESTIGATION EVALUATION SHEET

Identify and describe any of the below factors that contributed to the incident:	
1. Failure to follow safety procedures	
2. Faulty equipment, machinery or tools	
3. An unidentified COLD stress hazard(s)	
4. The work environment and conditions	
5. Environmental conditions (e.g., weather)	
6. Improper work procedures	
7. Lack of proper training	

Recommend corrective actions that should be initiated to prevent future incidents:

_____
_____
_____
_____
_____
_____
_____

Preparer Name: _____

Preparer signature: _____ Date: _____

SOP Title: **Accident/Incident Notification Standard Operating Procedure**

SOP No:

Agency: **Department of Public Works**

Original Date: 12/4/2024 **Revision Date:**

Key Words:

Standard Operating Procedure

1. Purpose

This Standard Operating Procedure (SOP) provides information and guidance on procedures/actions to be taken when a city employee is injured on the job, involved in a vehicular accident while conducting official city business, or when the accident involves a city owned vehicle or a personal vehicle used while on official city business.

2. Scope

This SOP applies to all managers, supervisors and employees of DPW involved in an accident or incident during official business.

3. Related SOPs/Policies

- AM-501-10 Motor Vehicle Accidents
- COB-AM-203-2 Family and Medical Leave
- COB-204-14 Sick Leave
- COB- AM 204-10- Motor Vehicle License
- OSHA regulation 29 CFR 1904.35
- AM 204-10: Job Related Injuries and Illnesses
- AM 501-2 Part II – Commercial Driver's license
- AM-501-10: Motor Vehicle Accident

4. Definitions

- **Accident**: Any event that results in property damage, vehicular damage, or personal injury/illness while conducting official city business.
- **Incident**: A non-accidental event that disrupts normal operations or poses a risk to employees, property, or the public.
- **Employee Incident Report (EIR)**: A document completed by employees and supervisors to report job-related injuries, illnesses, or accidents.
- **Safety Enforcement Officer (SEO)**: A designated DPW officer responsible for investigating and ensuring compliance with safety protocols during accidents/incidents.

- **Control One**: The central communication hub responsible for coordinating emergency responses and notifications during accidents/incidents involving DPW personnel or property.
- **Third-Party Administrator (TPA)**: An external organization that handles workers' compensation claims for the City of Baltimore.
- **Mercy Clinic**: The designated medical facility for employee checkups and treatment following job-related injuries or illnesses.
- **Mercy Emergency Room:** The designated medical facility after normal business hours: 8:30 am - 4:30 pm, Monday- Friday**.**

5. Overview

All DPW employees will follow the Accident/Incident Notification Procedures outlined below. All accidents and incidents must be reported and investigated.

1. Contact the Baltimore Police Department and Control One whenever an accident/incident involves a City of Baltimore vehicle and/or a physical injury.
2. Do not move the vehicle or equipment until instructed by a Safety Enforcement Officer (SEO) or a Baltimore City Police Officer.
3. Provide detailed information about the accident/incident to the SEO, Baltimore City Police Officer, and the investigating supervisor.
4. Refrain from speaking to bystanders unless they are witnesses.
5. Complete all required policy documents as stipulated in this SOP.
6. Ensure the scene is secured by the SEO or Baltimore City Police Officer assigned to the incident.
7. Do not leave the scene of an accident until authorized to do so by the SEO or the Baltimore City Police Officer.
8. Report any job-related incidents or illnesses to the appropriate supervisors on the date or shift it occurs unless incapacitated.

Employee Responsibilities

1. Dial 911 in case of a medical emergency and request an ambulance. Provide location, nature of injury or illness, hazards involved, and the nearest emergency access point.
2. In case of emergency first call 911. Note If there is a radio available in the vehicle, then via the radio notify Control One immediately. If a radio is not available in the call your supervisor to notify Control One and Safety Office.
3. Notify supervisors promptly to enable quick response and investigation. Be prepared to provide detailed and accurate information.
4. In case of a vehicle accident, ensure the SEO completes the Motor Vehicle Accidents MVAR Form #28-1758. *Exhibit A*
5. For job-related injuries and illnesses, complete sections 1-23 of the Employee Incident Report (EIR) and sign it. *Exhibit B*
6. Depending on the time of the accident/incident, follow the supervisor's instruction to report to Mercy Clinic and or Mercy's Emergency Room if accident/incident happens after normal business hours.
7. Provide the supervisor with the agency's copy of discharge instructions and any related information after leaving Mercy Clinic and/or Emergency Room.

Supervisor Responsibilities

1. Prioritize prompt medical treatment for injured employees. Dial 911 in the event of a serious job-related injury or illness.
2. If there is no radio in the vehicle, supervisor contact Control one and DPW Safety Office immediately upon notification.
3. Complete the supervisor portion (insert numbers) of the EIR.
4. Interview the entire crew and gather as much information as possible.
5. Ask each crew member to provide a written statement of the accident/incident
6. Depending on this situation take the driver or the whole crew to Mercy Clinic for post-accident urinalysis and checkup:
    1. If injury occurs **before** 4:30 PM:
        1. Supervisors bring a completed EIR and employee(s) to Mercy Clinic and give the EIR to front desk.
        2. DPW will ONLY transport employee to Mercy for initial visit. Attending all other follow-up appointments, including specialist appointments offered by Mercy, are the responsibility of the employee.
    2. If injury occurs **after** 4:30 PM:
        1. Take employee and completed EIR to Mercy Emergency Room.
            1. Do not give the EIR to the Emergency room, EIR is for Mercy Clinic use only.
            2. EIR should be given to Mercy Clinic the next day (Monday-Friday 8:00-4:30)
7. Additionally, submit the completed EIR form, including what the employee reported to the Safety Office, Division Chief and DPW-Human Resources Office.
8. Contact the TPA and provide initial injury report information to initiate worker's compensation claims.

Control One Responsibilities

Upon notification of an accident or incident, Control One will:

1. Contact Baltimore City Police and/or Fire Department and the on-duty DPW SEO.
2. Coordinate communication among all relevant departments and personnel.

Safety Enforcement Officer (SEO)/Safety Office Responsibilities

1. Respond to the scene, investigate, and gather all relevant information.
2. Initiate necessary safety protocols in accordance with City Accident and Incident Policy AM-501-10.
3. Notify DPW- Environmental Regulatory and Safety Compliance (ERCS) if necessary.
4. Ensure inter-agency notification depending on the severity of the accident/incident.

5. In case of an accident complete and submit the MVAR, Form 28-175 to the Safety Manager.

Safety Manager

1. Send the MVAR, Form 28-175 to DPW's Fleet Office
2. Contact the Maryland Occupational Safety and Health Administration (MOSH) when applicable.

6. Delayed or Failure to report incidents

Delays or failures by employees and supervisors to report a job-related injury, illness as well as accidents and incidents, complete an EIR, or contact the TPA, shall result in disciplinary action up to and including termination.

7. Review and Updates

The SOP shall be consistent with current regulations. To the extent any provision in this SOP gets superseded by new law, DPW staff shall follow such new regulations as applicable. This SOP will be reviewed annually or as needed based on feedback or regulations/best practices changes.

Approval

This SOP is approved by Agency Director /Deputy Director and is effective as of
---

References:

1. Exhibit A**: Motor** Vehicle Accidents MVAR Form #28-1758.
2. Exhibit B: Employee Incident Report (EIR) and sign it.

WITNESS:

1	NAME	PHONE
	ADDRESS	
2	NAME	PHONE
	ADDRESS	
3	NAME	PHONE
	ADDRESS	

	CITY EMPLOYEE - CHARGE	SUMMONS NO.
	CHARGE	SUMMONS NO.
	CHARGE	SUMMONS NO.

DATE OF TRIAL MONTH DAY YEAR | TIME OF TRIAL ☐ A.M. ☐ P.M.

IMPORTANT

THIS REPORT MUST BE SIGNED BY THE CITY DRIVER AND SUPERVISOR AND MAILED TO CENTRAL BUREAU OF INVESTIGATION (C.B.I.) WITHIN 24 HOURS FOLLOWING THE ACCIDENT

BALTIMORE CITY LAW DEPARTMENT - C.B.I.
100 HOLLIDAY STREET BALTIMORE, MD 21202

TELEPHONE NUMBERS

C.B.I.: 410-396-3400; 410-396-3308

AFTER 4:30 - CALL ASSIGNED DUTY INVESTIGATOR: 410-396-3100

DRIVER'S SIGNATURE	DATE
SUPERVISOR'S SIGNATURE	DATE

☐ COPY FWD

311 SR#:

SAFETY DATA

SUPERVISOR RESPONDED TO SCENE	☐ YES	☐ NO
SAFETY OFFICER RESPONDED TO SCENE	☐ YES	☐ NO
PHOTOS TAKEN	☐ YES	☐ NO
SEAT BELT IN USE	☐ YES	☐ NO
PCD IN CITY DRIVER POSSESSION	☐ YES	☐ NO
PCD IN USE	☐ YES	☐ NO

SAFETY OFFICER'S SIGNATURE | DATE

CITY OF BALTIMORE
CENTRAL BUREAU OF INVESTIGATION
100 HOLLIDAY STREET
BALTIMORE, MARYLAND 21202

MOTOR VEHICLE ACCIDENT REPORT

INSTRUCTIONS:
PRINT OR TYPE: PREPARE 4 COPIES AND FORWARD: 1 - **CENTRAL BUREAU OF INVESTIGATION**, 1 - **OFFICE OF RISK MANAGEMENT/DIVISION OF OCCUPATIONAL SAFETY**, 1 - **CENTRAL GARAGE**, AND 1 - **AGENCY FILE**. *SEE AM-501-10 FOR FURTHER DETAILS.*

VERY IMPORTANT - GIVE EXACT DATE AND HOUR OF ACCIDENT

MONTH DATE YEAR | TIME ☐ AM ☐ PM | DAY OF WEEK

LOCATION OF ACCIDENT | **POLICE REPORT NO.**

PLACE WHERE ACCIDENT OCCURRED (CITY, TOWN, ETC.)

STREET, HIGHWAY, NEAREST INTERSECTION WHERE ACCIDENT OCCURRED

WEATHER CONDITIONS:

NUMBER OF VEHICLES INVOLVED | INVESTIGATED BY POLICE ☐ YES ☐ NO | ☐ PEDESTRIAN INVOLVED

YOUR VEHICLE NO. 1

DRIVER LICENSE NUMBER | CITY PERMIT NUMBER

SEX | DATE OF BIRTH | HOME PHONE NUMBER

DRIVER'S FIRST NAME MIDDLE NAME LAST NAME

DRIVER'S ADDRESS | CDL ☐ YES ☐ NO POST ☐ YES ☐ NO ACCT. TESTING

CITY STATE COUNTY ZIP CODE

AGENCY NAME

BUREAU NAME | BUSINESS PHONE

POINT OF IMPACT ON VEHICLE | EXTENT OF DAMAGE ☐ SLIGHT ☐ HEAVY

VEHICLE TAG NUMBER STATE YEAR | FLEET OR SHOP NUMBER

YEAR, MAKE AND MODEL | SERIAL NUMBER OF VEHICLE

OWNER **MAYOR & CITY COUNCIL CITY OF BALTIMORE** | OTHER - SPECIFY

VEHICLE NO. 2

DRIVER LICENSE NUMBER | EXPIRES | STATE

SEX | DATE OF BIRTH | HOME PHONE NUMBER

DRIVER'S FIRST NAME MIDDLE NAME LAST NAME

DRIVER'S ADDRESS

CITY STATE COUNTY ZIP CODE

NAME OF EMPLOYER

POINT OF IMPACT ON VEHICLE | EXTENT OF DAMAGE ☐ SLIGHT ☐ HEAVY

TAG NUMBER | STATE | YEAR | YEAR, MAKE AND MODEL

OWNER'S FIRST NAME MIDDLE NAME LAST NAME

OWNER'S ADDRESS | DAY PHONE #

OWNER'S INSURANCE COMPANY | POLICY NUMBER

VEHICLE NO.3

DRIVER LICENSE NUMBER	EXPIRES	STATE
SEX / DATE OF BIRTH	HOME PHONE NUMBER	
DRIVER'S FIRST NAME MIDDLE NAME LAST NAME		
DRIVER'S ADDRESS		
CITY STATE COUNTY ZIP CODE		
NAME OF EMPLOYER		
POINT OF IMPACT ON VEHICLE	EXTENT OF DAMAGE ☐ SLIGHT ☐ HEAVY	
TAG NUMBER / STATE / YEAR	YEAR, MAKE AND MODEL	
OWNER'S FIRST NAME MIDDLE NAME LAST NAME		
OWNER'S ADDRESS	DAY PHONE #	
OWNER'S INSURANCE COMPANY	POLICY NUMBER	

OCCUPANT INFORMATION

1

FIRST NAME MIDDLE LAST NAME		
ADDRESS		
☐ KILLED ☐ NO INJURY ☐ INJURED	☐ DRIVER ☐ PASSENGER	NO. OF VEHICLE / ☐ PEDESTRIAN ☐ OTHER VEHICLE
AGE / SEX	NATURE OF INJURY	REMOVED FROM SCENE ☐ AMBULANCE ☐ PERSONAL CAR

2

FIRST NAME MIDDLE LAST NAME		
ADDRESS		
☐ KILLED ☐ NO INJURY ☐ INJURED	☐ DRIVER ☐ PASSENGER	NO. OF VEHICLE / ☐ PEDESTRIAN ☐ OTHER VEHICLE
AGE / SEX	NATURE OF INJURY	REMOVED FROM SCENE ☐ AMBULANCE ☐ PERSONAL CAR

3

FIRST NAME MIDDLE LAST NAME		
ADDRESS		
☐ KILLED ☐ NO INJURY ☐ INJURED	☐ DRIVER ☐ PASSENGER	NO. OF VEHICLE / ☐ PEDESTRIAN ☐ OTHER VEHICLE
AGE / SEX	NATURE OF INJURY	REMOVED FROM SCENE ☐ AMBULANCE ☐ PERSONAL CAR

4

FIRST NAME MIDDLE LAST NAME		
ADDRESS		
☐ KILLED ☐ NO INJURY ☐ INJURED	☐ DRIVER ☐ PASSENGER	NO. OF VEHICLE / ☐ PEDESTRIAN ☐ OTHER VEHICLE
AGE / SEX	NATURE OF INJURY	REMOVED FROM SCENE ☐ AMBULANCE ☐ PERSONAL CAR

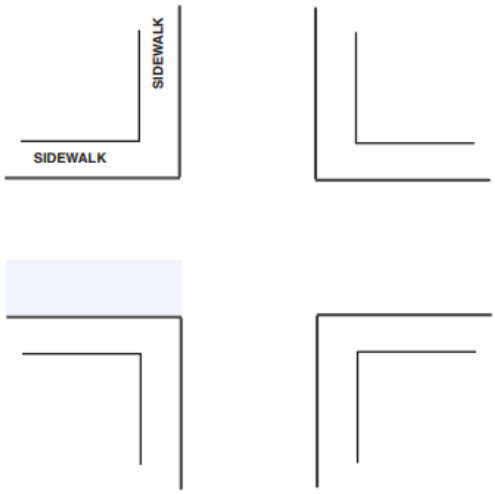
PROPERTY DAMAGE (OTHER THAN MOTOR VEHICLES)

DAMAGE TO PROPERTY	AMOUNT OF DAMAGES
DAMAGE PROPERTY OWNER'S NAME	
ADDRESS	

DESCRIBE ACCIDENT IN DETAIL BELOW - INDICATING ALL DAMAGE. INCLUDE ORIGIN AND DESTINATION

INDICATE ON DIAGRAM POSITION OF VEHICLES INVOLVED- SHOWING DIRECTION OF TRAVEL.

INDICATE NORTH BY ARROW



CITY OF BALTIMORE

EMPLOYEE'S INCIDENT REPORT

IF FATALITY SHOW DATE ▶

☐ **NEW INJURY**

IF EMPLOYEE IS SENT TO CLINIC:
Complete this form before sending employee to Clinic. Keep copy for files. Send form with employee to Clinic.
IF EMPLOYEE IS SENT TO HOSPITAL:
Complete immediately after sending employee to the nearest medical facility for treatment.
CALL 1-877-607-8600 to report claim Date Called: Confirmation #:

☐ **RE-INJURY**

FOR A RE-INJURY CLAIM: FOLLOW CLINIC OR HOSPITAL INSTRUCTIONS ABOVE. Fax form to Sedgwick at 667-260-5086. DO NOT CALL IN CLAIM

1 Date this report

2 Date INCIDENT OCCURRED — Month | Day | Year | Time | Shift

EMPLOYEE SECTION

3 Employee's Name — Last | First | Middle Initial

4 Social Security Number

5 Job Title

6 Home Address

7 Phone - Home | Phone - Work

8 Agency

9 Division, Region, District, Unit, Etc.

10 Payroll Dept. Code

11 Payroll Location Code

12 Date of Birth | 13 Age | 14 Sex ☐ Male ☐ Female | 15 Date of Employment | Date assign. to pres. job

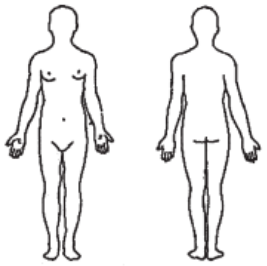
16 GROSS RATE OF PAY $ PER (HOUR, DAY, WEEK)

17 **DISPOSITION** ☐ CLINIC ☐ HOSPITAL Name-Hospital or Clinic

18 Specify exact address where incident occurred. Also specify exact location at this address.

19 Employee's description of how incident occurred. (Use additional signed sheets if necessary)

20 Circle Body Part Injured



Employee's Initials:

21 According to employee, what part(s) of his (her) body was injured.

22 Employee's Signature | Date | ☐ Check here if unable to sign

23 WHEN DID YOU FIRST LEARN OF INCIDENT? DATE | TIME ☐ AM ☐ PM

24 Is the employee's statement in accordance with Supervisor's knowledge of the facts ☐ YES ☐ NO
If no, explain details of incident in your words. (Use additional sheets if needed)

SUPERVISOR SECTION

25 Part of machine on which incident occurred

26 Was safety equipment provided? ☐ YES ☐ NO | Was it in use at time? ☐ YES ☐ NO

27 Was incident caused by injured's failure to observe safety rules? ☐ YES ☐ NO

28 Steps taken to prevent future similar injuries.

29 If injury due to vehicle accident:
MAKE/MODEL: SHOP/FLEET # COMPLAINT #
SEATBELT IN USE: ☐ YES ☐ NO PCD IN USE ☐ YES ☐ NO

30 WITNESSES

Name (Print)	CITY EMPLY.	ADDRESS	PHONE

31 Supervisor's Name and Title (Print) | Phone # | Signature | Date

GREY AREA - - POLICE AND FIRE DEPARTMENT USE ONLY

32 Signature - Investigating Officer | Date | Rank

33 Was injured employee acting in a higher grade at the time of this incident? ☐ YES ☐ NO

34 Signature -Commanding Officer or Battalion Chief | Date

28-1608-5149 REV. 3/09 1400-26-13

COPIES TO: 1.) MERCY (With Employee) 2.) SEDGWICK 3.) SAFETY (DOS) 4.) AGENCY

SOP Title: **Extreme Cold Stress Weather Standard Operating Procedure**

SOP No:

Department of Public Works

Original Date: 10/4/2024 **Revision Date:** 01/22/2025

Standard Operating Procedure

1. Purpose

This Standard Operating Procedure (SOP) aims to ensure the health and safety of employees working in extreme cold conditions by providing essential safety guidelines for managing work conditions during extreme cold weather events.

2. Scope

This SOP applies to all employees whose job may be exposed to extreme cold conditions. These conditions include (a) temperatures below 30^{O} F, (b) wind chill temperatures at or below 13^{O} F, (c) temperature of 25^{O} F accompanied by winds of 15-miles per hour wind chili, (d) or other thresholds defined by the City Health Department. There is a general SOP that addresses all other cold-related illness hazards.

3. Related SOP's/Policies

- DPW Cold Stress and Illness Prevention Plan
- Extreme Heat Stress Weather Safety SOP
- City of Baltimore (COB)- Attendance Standards Policy
- COB-AM-203-2 Family and Medical Leave
- COB-AM-204-14 Sick Leave
- COB-AM 203-5 Reasonable Accommodations
- COB- AM 106 -1 Bureau of Risk Management

4. Definitions

- **Extreme Cold:** Temperatures that pose a significant risk to health and safety, as defined by local weather services.
- **Hypothermia:** a medical condition that occurs when the body's temperature drops below 95^{O} F It is a medical emergency that can be life threatening if not treated quickly.
- **Crystallization of Body Temperature**: This happens in extreme cold conditions where the body temperature rapidly loses heat, leading to the formation of ice crystals in bodily fluids.
- **Muscle Cramp**: A sudden, painful, and involuntary contraction of a muscle. The muscle feels tight, knotted, harder than other relaxed muscles. Cramps can affect one or more muscle, and they can last from a few seconds to several minutes.
- **High Cold Conditions:** working conditions where the wind chill equals or is below 30^{O} F .
- **Hydration Stations:** Areas where water and/ or warm beverages are provided to employees.
- **Cold Stress:** An environmental condition in which body heat is lost faster than the body can produce. It is a danger to the employee and increases potential danger to those in the work area. Moderate cold exposure can impair performance of cognitive tasks, decrease manual dexterity, impair skilled performance, increase fatigue and mental confusion, and impact effective communication
- **Hydration Kits:** Insulated coolers with water are stored in each vehicle for use while employees are in the field.
- **Drinking Water:** Potable water that is safe.
- **Wind chill:** A measure of how cold it feels when wind is considered with air temperature.

5. Responsibilities

Bureau Heads Responsibilities

- Coordinate with relevant stakeholders (Human Resources, Office of the Labor Commissioner, Bureau of Risk Management, DPW Communications Division and related stakeholders as necessary) to adjust operational schedules, when the temperatures or the wind chill for the start of the shift or during the shift is expected to be below 30^{O}F.

- Evaluate the sustainability of scheduled operations during extreme cold/icy event conditions.

Facility Manager/Designee/Supervisors and Managers

- Inspect and ensure all DPW buildings and vehicles are prepared for the cold season on or by October 31st every year.
- Have a plan in place to monitor every worker's condition.
- Have a schedule with frequent short breaks for all employees in warm dry areas to allow the employee's body to warm up.
- Provide adequate hydration daily.
- Track all cold weather-related incidents
- Maintain a daily facility checklist including, but not limited to:
    - Heating systems
    - Water or sugar free electrolytes
    - Heaters
    - Appropriate weather uniforms
    - Hats
    - Vehicle heating systems
    - Insulated non-slippery gloves.

Supervisors must ensure that each employee confirms having all the necessary and recommended personal protective equipment, gear, supplies, etc. before departing on the route and daily routine.

Employees

- Call 911 immediately in case of emergencies!
- ***Discuss/report with DPW Human Resources if you are experiencing any heart conditions, taking any over the counter medications or anything that could alter your physical or mental condition (Note. Bureau of Risk will send DPW the exact AM manual reference that includes this language for DPW record/ reference)***
- Dress warmly and wear appropriate Personal Protective Equipment (PPE): Wear layers of loose-fitting clothing to retain warmth, insulated gloves and boots to protect against the cold, and ensure your head is adequately covered.
- Take warm breaks and change out of wet clothes, as needed. If an extended break is needed, notify supervision immediately.
- Keep a change of clothing available and in case work clothes become wet notify supervisor to bring replacement.
- Move to a warm area when you start to feel very cold or numb.
- Watch out for the safety of your coworkers
- Report any signs of illness or impairment to a supervisor immediately.
- Complete mandatory Cold Stress Prevention training.

Office of Training and Professional Development (OTPD)/Facility Managers/Office of Safety

- Ensure all field employees complete mandatory Cold Stress Prevention training and any other relevant cold-weather training by October of each year.
- Partner with DPW Office of Safety to provide safety talks regularly.
- Document all trainings and attendance.
- Upload attendee's sign in sheets to Workday or approved record retention site.

Chiefs/Managers/Superintendents/Supervisors

- Review and comply with the provisions outlined in this SOP. and ensure it is available to employees.
- Partner with DPW Office of Training to provide training at the beginning of each cold season (October through March).
- Document any in-person training conducted.
- Assure employees have the appropriate personal protective equipment (PPE) prior to working in extreme temperature conditions.
- Ensure employees are familiar with this safety program
- Monitor weather conditions and make decisions regarding work continuation.

Human Resources

- Upload signed acknowledgement forms to Workday or place in employee personnel record/file.
- Manage administrative leave request for employees affected by cold weather conditions.

6. Procedure

6.1 Extreme Cold Weather Protocol – Daily Checklist

Daily checklist for rollcalls and safety talks		
Water	Ensure sufficient drinking water for employees. Refill water coolers with room temperature water throughout the day.	
Training	Verify that employees understand the signs of Cold Stress, precautions, and the importance of hydration.	

Emergencies	Confirm employees are familiar with emergency contacts and procedures, including describing their location if they need an ambulance.	
Warm Break Areas	When temperature/wind chill is below 30^{O} F or as defined by the city Health Commissioner, ensure warm area is available for breaks.	
Employee Reminders	Safety first. Dress in warm winter work clothes and wear layers of loose, dry clothes. Change or get dry immediately if clothes get wet. Take breaks. Move to a warm area when you start to feel cold and numb. Report cold symptoms early. Know what to do in an emergency. Call 911 if you notice signs of Cold Stress in you or in co-workers. Communicate any employee health issues to management as soon as possible.	
Supervisor Reminders	Ensure that assigned staff have the required issued uniforms, gloves PPE, other seasonal gear, etc. before leaving the yard. Weekly safety talks.	

Daily Morning Setup:

- **Encourage employees to stay warm, stay hydrated.**

- **Superintendent or designee to** – Conduct brief early morning roll calls/tailgate meetings at the beginning of each shift with supervisors to review the daily cold weather safety checklist. Check-in with drivers/ crew leaders every two hours.

6.2 Monitoring Outdoor Temperatures

- **Daily Review**: Obtain and distribute weather forecast 24 hours in advance. DPW Leadership will adjust team schedules as necessary.
- **Daily Notification:** People leader will monitor temperature, precipitation, and wind chill throughout the work shift.

6.3 Monitoring Indoor temperatures

- **Temperature Checks:** When the outdoor temperature/wind chill falls below 13^{O} F Fahrenheit or as defined by the city Health Commissioner, designate the site-specific safety coordinator to check and record indoor temperatures every hour. *This section is not applicable to structures with a mechanical heating system that maintains indoor temperature at 68 F or above.*

6.4 Extreme-Cold Protocol

Outdoor Wind chill equals or is below 30-^{O} F :

- **Notification:** Notify all employees via established communication channels and prepare to activate applicable SOP.
- **Hydration:** Ensure employees have enough hydration
- **Mandatory Breaks:** Implement required warming breaks. Employees on the road can utilize public heated spaces. Rest periods should be taken in a warm area.

DPW Administration employee check- in:

- Both management and supervisors will be assigned routes to ensure employees' wellness.
- DPW will track current and projected wind chill for Baltimore city throughout the day.
- Once the wind chill reaches 13^{O} F degrees or below or 25^{O} F degrees with a 15-miles per hour wind chill (Health Department Blue Code),
- **:** Implement more frequent mandatory breaks in warm areas of the buildings/vehicles.

Sending Non-Essential Employees Home:

- **Criteria for Sending Home: Defer to the Labor Commissioner**

- **Procedure for Requesting Permission Leave:**
  - **Contact HR:** Supervisors should contact HR to seek approval for Administrative Leave from the Labor Commissioner for employees whose roles are unable to telework or relocate.
  - **Documentation:**
    - Supervisors identify and record the names of the affected employees and send them to HR to process the permission leave request.
    - HR will maintain records of all leave arrangements.

  - **Notification:** Once HR confirms approval for leave from the Labor Commissioner, Supervisors will inform employees when it is time to go home.

6.5 Training and Awareness

- **Cold Safety Training:** OTPD will conduct mandatory training sessions for all employees on recognizing cold-related illnesses, proper hydration, and following this SOP on or by October 31st of each year. In addition, mandatory refresher training will be provided immediately following any work site incident involving a suspected or confirmed cold-related illness.
- **Signage:** Place posters and signs strategically to remind employees of safety practices and emergency procedures.

6.6 Emergency Response

- **First Aid Kits:** Ensure first aid kits are stocked in every truck and worksite with supplies to treat cold-related illnesses.
- **Emergency Contacts:** Maintain a list of updated emergency contacts and ensure employees know who to contact in case of a cold-related emergency.
- **Immediate Action:** , Supervisors are to remind employees daily to call 911 immediately if they recognize the symptoms or signs of cold stress in themselves or coworkers.

7. References

- Applicable Federal and State laws.
- Maryland Occupational Safety & Health (MOSH)

8. Prerequisites

Cold Stress Training for all employees who primarily work outside.

Review and Updates

- The SOP shall be consistent with current regulations. To the extent any provision in this SOP gets superseded by new law, DPW staff shall follow such new regulations as applicable. This SOP will be reviewed annually or as needed based on regulations and best practices changes.

Approval

- This SOP is approved by the Agency Director /Deputy Director and is effective as of the date signed.

Date Approved ----------

Employee Signature and Date Received ----------

Supervisor/Manager ----------