

Review of Department of Public Works Policies and Procedures Related to Heat Safety



COMPILED FOR MAYOR BRANDON M. SCOTT

October 24, 2024



TABLE OF CONTENTS

- Administration Memorandum
- Full Conn Maciel Carey LLP Independent Review
- DPW Draft Heat Illness Prevention Plan (as submitted to MOSH August 2024)



CITY OF BALTIMORE
MAYOR BRANDON M. SCOTT

MEMORANDUM

To: Mayor Brandon M. Scott

From: Faith P. Leach, City Administrator

THRU: Khalil Zaied, Director, Department of Public Works
Stephen Salisbury, Deputy City Solicitor

Date: October 24, 2024

Re: Review of DPW Policies and Procedures Related to Heat Safety

Introduction

In the aftermath of the tragic death of Department of Public Works (“DPW”) employee Ronald Silver on August 2, 2024, Mayor Scott directed the City Administrator to review policies and procedures at the Bureau of Solid Waste (“BSW”) within DPW related to heat safety. The review included input from key agencies including the Law Department, Office of Risk Management, Human Resources and the Office of the Labor Commissioner and was intended to supplement—not duplicate or supersede—ongoing investigations into DPW facilities already underway by the Office of the Inspector General (“OIG”), as well as an investigation by the Maryland Occupational Safety and Health Administration (“MOSH”) into Mr. Silver’s death. As part of the review, the City engaged the firm Conn Maciel Carey to conduct its own assessment and generate recommendations that will be considered as part of the City’s overall policy recommendations.

The objective of the review process was to develop and ultimately implement a set of recommendations that will not only bring DPW’s BSW into compliance with newly proposed heat safety requirements at the federal and state level but make the Department a leader on heat safety by endorsing standards that protect our employees. What follows is a summary of the findings and recommendations to date.

Reviews into DPW Occupational Safety and Health

Office of the Inspector General Investigation

Prior to Mr. Silver’s tragic death, the Office of the Inspector General (OIG) had undertaken a sweeping investigation into the state of DPW facilities. This resulted in a series of findings in June and July of 2024 that identified concerns with DPW facilities. The OIG’s investigation is

ongoing, and inquiries regarding the investigation should be directed to the OIG. At the conclusion of the OIG's investigation, DPW will incorporate any additional recommendations into an overall implementation plan.

MOSH Investigation

Immediately following the death of Ronald Silver, the Maryland Occupational Safety and Health Administration ("MOSH") initiated an investigation into Mr. Silver's death. DPW has provided MOSH with documentation and connected MOSH with DPW employees so that MOSH can conduct its own investigation into whether there were occupational safety violations. MOSH's investigation is ongoing, and questions about MOSH's investigative process should be directed to MOSH. At the conclusion of the MOSH investigation, DPW will incorporate any additional recommendations into an overall implementation plan.

Conn Maciel Carey Findings and Recommendations

The city engaged Conn Maciel Carey ("CMC") to conduct a comprehensive review of DPW's existing heat safety standard operating procedures aided by an industrial hygienist with expertise in occupational safety. CMC interviewed approximately 35 DPW employees, including at the executive, supervisory, and frontline level. CMC also conducted its own worksite observations at the Reedbird and Bowley's Lane solid waste facilities and participated in a ride-along on a waste collection route with a DPW solid waste driver. Based on interviews and observations, CMC generated a set of findings about DPW's heat safety program. CMC also generated a set of recommendations for DPW to improve heat safety protocols. CMC's complete report is included as an appendix to this memo. The following is a high-level overview of CMC's findings and recommendations.

CMC's Findings

First, CMC identified that DPW did not in fact have in place a comprehensive heat illness prevention program as of August 2024. While DPW has prepared a draft plan that was shared with MOSH that mirrors the requirements of the MOSH's heat safety rule, this plan is still only in draft form. The most up-to-date version of that draft is attached as an appendix to this memo. CMC found a lack of standards and procedures for assessing working conditions on days of extreme weather and adjusting operations to ensure safe working conditions. CMC was told in multiple interviews that supervisors did not enforce cool down rest breaks which resulted in front-line workers attempting to finish their shifts as quickly as possible so that they could conclude their workday. Finally, consistent with the OIG's findings, CMC found that DPW facilities were not adequately maintained.

CMC also found that DPW lacks the necessary protocols and procedures to appropriately respond to heat-related illnesses and emergencies. One of the key issues was a lack of clarity about the roles of individuals responsible for ensuring safety, training, and compliance. CMC found that there was no clear, uniform protocol for employees in cases of medical emergency related to heat illness. This was compounded by a lack of sufficient communication and collaboration among divisions responsible for ensuring safety of BSW employees.

CMC found that BSW infrastructure, including trucks and facilities, have not been adequately maintained. CMC noted that particularly with respect to heat illness, it is essential to maintain

vehicles with adequate climate control. While CMC noted that many DPW trucks have been updated, employees reported that older trucks may still be used. CMC noted that it did not run testing on DPW vehicles.

CMC found that DPW employees received little to no training on heat and safety in extreme weather working conditions. CMC's review noted that prior to 2022, DPW provided some heat safety training in the form of periodic heat related safety talks. However, those talks provided only generalized guidance and stopped in 2022. It appears that these talks did not fully resume until after the tragic death of Mr. Silver on August 2, 2024.

CMC found that DPW does not have a clear, uniform protocol for responding to cases of emergency related to heat illness. Notwithstanding the existence of an emergency phone line, CMC's investigation revealed that most employees and supervisors were unaware of the line, and there was a lack of clarity by the command center personnel who field emergency calls. CMC identified a lack of supervisory training, responsibility, and accountability as one of the common refrains that the firm reported hearing. Supervisors told CMC that they believed it was the responsibility of frontline workers to account for their own safety and security. This issue was compounded by a lack of leadership training, particularly for those individuals who had been promoted from within the ranks of DPW.

Finally, CMC learned that front line employees feel excluded, skeptical, and distrustful of management, and fearful of retaliation for raising safety concerns. According to both supervisory and frontline workers, DPW has not taken action to address safety and security issues that have been raised in the past to ensure that employees are protected from heat illness. Additionally, employees expressed skepticism that DPW will take adequate measures to improve heat safety in the future.

CMC Recommendations

Based on their findings, CMC proposed the following recommendations:

1. **Finalize Development of Heat Illness Prevention Program:** DPW has submitted a draft HIPP to the city's Office of Risk Management and MOSH. Many of CMC's recommendations mirror those in DPW's draft plan, as well as the new requirements in Maryland's heat safety rule. CMC recommended DPW go farther in one key respect: the institution of a stop-work trigger during those portions of the day that reach an extreme heat index.
2. **Enhance Heat Illness Prevention and Safety and Wellness Training:** CMC recommended enhancing training around heat and heat related illness for existing BSW employees, as well as ensuring that the roles and responsibilities of safety officers are clarified from those of the Environmental Regulatory Compliance and Safety division.
3. **Enhance Heat Illness Related Emergency Response Protocols:** CMC Recommended formalizing the control one (emergency call line) function in written guidance and ensuring that all employees are provided information and training around the call line.

4. **Enhance Fleet, Fixed Facilities, and Personnel:** CMC recommended a series of steps to ensure that solid waste collection trucks have functioning climate control and functional two-way radio systems. The report also recommended steps to ensure ongoing maintenance and compliance efforts by performing regular audits and designating someone responsible for monitoring compliance with the HIPP. Finally, CMC recommended hiring a full-time industrial hygienist at DPW.
5. **Workplace Culture and Supervisory Accountability:** CMC recommended requiring management and leadership training for all supervisors, in addition to ensuring that supervisors are trained on DPW's HIPP. Additionally, CMC recommended DPW take steps to ensure that supervisors are held accountable through counseling, performance reviews, and discipline for monitoring and ensuring worker safety.
6. **Workplace Communication and Anti-Retaliation:** CMC recommended developing a strategy to inform employees and unions about the new comprehensive HIPP once it has been finalized as well as its training requirements. In addition, employees should be trained on non-retaliation, which should be enforced through anti-retaliation mandates. Lastly, CMC recommended the consideration of a safety ombudsman either for DPW or throughout City government.

Final Recommendations Endorsed by the Administration

While the OIG and MOSH investigations are ongoing, the City Administrator convened a group of internal City Stakeholders from the DPW, the Law Department, Risk Management, the Office of the Labor Commissioner, and the Department of Human Resources to review the findings and recommendations found in the CMC report and to supplement where necessary. Based on this process, this internal stakeholder group has endorsed the following recommendations:

1. **Finalize Development of a Heat Illness Prevention Plan.** DPW should implement their draft heat illness prevention plan and should include enhanced training, and heat safety triggers that require additional remedial measures like available water and additional rest breaks and ultimately mandatory rest breaks.
 - **DPW Progress to Date:** DPW has prepared a draft Heat Illness Prevention Plan. Pending completion of this review process and external stakeholder input, DPW will implement heat related operations for summer 2025.
2. **Enhanced Training and Clarification of Responsibilities:** DPW should enhance training at all levels within the BSW around safety and wellness. In particular, DPW should provide an updated description of roles and responsibilities to the City Administrator, as well as the DPW workforce with a clear description of the various roles and responsibilities of all professionals working on safety-related issues. This should include a clear plan of action to be distributed to all DPW personnel and included in HIPP training that details exactly what steps must be taken in case of a heat illness emergency.
 - **DPW Progress to Date:** DPW will develop a training plan for BSW employees and provide the plan to the City Administrator and share updates with the BSW

workforce. Lastly, DPW will work to expedite trauma-informed care training for all DPW personnel.

3. **Enhancements to DPW's Fleet and Infrastructure:** The City has made a number of improvements to its solid waste infrastructure in recent years. However, there is clearly more work to be done, particularly around the physical facilities at Bowley's Lane and Reedbird. To that end, the City should conduct an audit of climate control devices on all vehicles in its current fleet. Additionally, DPW should update its workforce and members of the public on all ongoing infrastructure improvements at the BSW facilities and develop a timeline for completion. Lastly, the City should add an industrial hygienist to monitor workplace safety conditions across all City agencies.
 - **DPW Progress to Date:** During the Scott Administration, DPW budgeted \$8.1M for renovations at Reedbird and \$2.1M for renovations at the Bowley's Lane solid waste facilities. DPW also worked with the Department of General Services (DGS) to purchase 152 new solid waste vehicles. In addition, DPW intends to develop a centralized facilities office, which will be responsible for monitoring capital improvements at solid waste facilities and monitoring ongoing facility operations and needs.

4. **Management and Leadership Training:** DPW should institute mandatory leadership and management training for everyone in a supervisory position within the agency. This includes training on the HIPP. DPW should also implement a plan to hold supervisors accountable, not simply for the completion of solid waste collection responsibilities, but for the enforcement of the provisions of the HIPP.
 - **DPW Progress to Date:** DPW has already commenced this mandatory supervisor training. Solid Waste Leaders received Accountability in the Workplace training on September 30, 2024. They will receive Workplace Connection & Difficult Conversations on Oct 21, 2024, and October 28, 2024. Supervisors will then be required to complete Absence Management and Talent Acquisition training. DPW will continue to provide refresher trainings as well. Solid Waste leaders will be a part of a pilot program for DHR's in-person leadership academy. These trainings will be ongoing.

5. **Culture:** Lastly, apparent throughout this review process is a need to improve the culture throughout BSW, particularly between frontline and supervisory employees. While there is a hope that the implementation of the preceding recommendations will aid that effort, the following more concrete set of steps must be taken: 1) communicate the availability of heat safety training; 2) educate employees and supervisors around protections from retaliation; and 3) create a safety ombudsman for DPW.
 - **DPW Progress to Date:** DPW will conduct training on retaliation in January 2025 and enforce current city policies to hold employees accountable. DPW will also pursue working with DHR to obtain Employee Assistance Program (EAP) flyers/quarterly site visits /office hours for BSW employees. Additionally, DPW will update BSW facilities with posters with details on how to report employee concerns, anonymously.

Next Steps

The Administration will continue to meet with DPW workers, labor leaders, and other external stakeholders to review these recommendations before formal adoption and implementation. This group will consider the proposed recommendations, and supplement with additional recommendations for implementation ahead of summer 2025.



**FULL CONN
MACIEL CAREY
LLP INDEPENDENT
REVIEW**

**REPORT OF INVESTIGATION AND
PROGRAM ASSESSMENT**

TO: Khalil Zaied, Director
Baltimore City Department of Public Works

FROM: Conn Maciel Carey LLP

Eric J. Conn, Chair, OSHA Practice

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Anthony Casaletta, Sr. Counsel and Industrial Hygienist

DATE: September 30, 2024

**RE: Baltimore City Department of Public Works
Heat Illness Prevention Program Assessment and Recommendations**

INTRODUCTION

In August 2024, the Baltimore City Department of Public Works (DPW) engaged the national [OSHA Practice at Conn Maciel Carey LLP](#) (CMC) to conduct an investigation and assessment of DPW's Heat Illness Prevention Program and related policies, training, and resources, and to provide the Department with actionable recommendations to enhance worker protections from exposure to high heat conditions. This report provides a review of applicable regulatory requirements and CMC's investigative factual findings and recommended action items.

Our investigative findings and recommendations address DPW's:

- (1) Heat Illness Prevention Program;
- (2) Training;
- (3) Fleet, Facilities, and Personnel;
- (4) Emergency Response; and
- (5) Workplace Culture/Employee Relations.

The issues arising in these categories are discussed in detail below, followed by a comprehensive set of recommended actions to enhance DPW worker safety, operational, engineering and administrative controls, facilities and equipment maintenance, training, and the work culture at DPW.

OVERVIEW

The CMC team conducted a comprehensive investigation and program assessment, which included:

- Interviewing more than 35 DPW employees, including chief administrators, safety enforcement officers, Control One supervision, solid waste supervisors, and solid waste frontline workers (drivers and laborers) responsible for waste collection at the Reedbird and Bowley's Lane facilities;
- Conducting worksite observations at the Reedbird and Bowley's Lane solid waste facilities as well as the incineration plant used by the City (also known "wheelabrator" located at 1801 Annapolis Rd., Baltimore, MD)
- Riding along a waste collection route with a DPW solid waste driver;
- Evaluating waste collection vehicles;
- Reviewing safety training materials; and
- Reviewing numerous other relevant documents, including draft programs, emails regarding roles and responsibilities, and procedures.

SUMMARY OF INVESTIGATIVE FINDINGS

1. DPW Did Not Have a Heat-Related Health and Safety Program

Based on our discussions with various senior leaders, front line supervisors, and safety officers with up to 38 years of service with the City, we have determined that as of August 2024, DPW did not have in place a comprehensive heat illness prevention program (HIPP).¹ There was no written HIPP, and while DPW had historically provided some periodic heat illness related training in the form of safety talks, that training stopped in 2022 (see below). The Department had a series of disparate safety policies and operational procedures that relate to weather-related hazards, but even collectively those policies were not sufficient for the heat illness hazard faced by DPW workers, particularly in solid waste collection, and individually there was no coherent HIPP. There were no special requirements or prohibitions that were triggered on high-heat workdays, insufficient guidance to supervisors and employees, inadequate training on the signs and symptoms of heat stress, and no established protocols for reporting and responding to heat-related illnesses events.

Written program aside, our investigation revealed that in practice, there is a lack of standards and procedures for assessing working conditions on days of extreme weather

¹ DPW was far along in development of a comprehensive written HIPP. As Maryland Occupational Safety (MOSH) and Health was working to finalize a Heat Illness Prevention Standard for Maryland employers, DPW was developing a written program to comply with that standard-in-development. Shortly after the August 2, 2024 heat illness fatality involving Mr. Ronald Silver, DPW completed its draft HIPP and shared it with MOSH for collaboration.

(such as excessive heat) and making appropriate adjustments to operations and/or work assignments to ensure safe working conditions and overall health and safety for solid waste workers. For example, several solid waste supervisors and employees allege that during high temperature days, the City gives a heat warning to residents, instructing them to bring their pets indoors because of dangerous heat conditions, and allegedly the City allows some City employees to leave work early. Meanwhile, solid waste drivers and laborers have historically been required to complete their routes on such days.

Similarly, in practice, supervisors did not enforce cool down rest breaks and this operational practice created an incentive for the front-line workers to push through the work to finish as quickly as possible because they are permitted to finish their task work early and still be paid for their entire shift. Our investigation also revealed that Solid Waste facilities are not adequately maintained.

Route audits to assess and, if warranted, adjust workloads have not routinely been conducted. Operational changes as well as community changes over the years have lengthened certain routes, resulting in prolonged worker exposure to extreme heat (or cold). However, our investigation did not reveal routine assessments of the waste collection routes to ensure appropriate route allocation, staffing levels, and equipment to accommodate for changing workloads.

2. DPW Lacked Necessary Protocols and Procedures to Appropriately Respond to Heat-Related Illnesses/Emergencies

Our investigation revealed that several key individuals responsible for ensuring employee safety, training, compliance, and emergency response disagree (or are unsure) about their role and responsibility with respect to these key duties. Additionally, there is no clear, uniform protocol in cases of medical emergency related to heat illness. Although there is a dedicated DPW emergency phone line (Control One) that employees and supervisors can call for assistance in an emergency, there is a lack of consistency in appropriate use of this resource. In fact, several individuals at all levels within DPW's solid waste operation do not know about the Control One resource or are unclear about the process and expectations for contacting Control One. There does not appear to be any informational materials to inform employees about Control One nor its process for responding to emergencies.

There also appears to be a lack of sufficient communication, coordination, and collaboration among divisions responsible for ensuring the safety of, and/or monitoring and responding to emergencies involving, Solid Waste frontline employees. For example, our investigation revealed confusion about the division of labor and responsibilities between the Safety Training and Professional Development division and the Environmental Regulatory of Compliance and Safety division. There is confusion with respect to what officials or employees are responsible for responding to certain types of on-the-job incidents and under what circumstances. There also appears to be some confusion about the appropriate chain of communication and methods of communication in emergencies.

3. The Fleet of Solid Waste Collection Trucks and Physical Facilities Have Not Been Adequately Maintained.

There is a need to ensure that all work vehicles and equipment are in good working order and are regularly maintenance. For purposes of protection against heat illness, it is particularly critical that the vehicles are all equipped with climate control and the climate controls functionality is maintained. Our investigation revealed that many of DPW's waste collection trucks are newer and have functioning air conditioning, but employees reported that the older trucks with broken or ineffective air conditioning systems may still be utilized (perhaps as back-up vehicles).² This has resulted in DPW drivers failing to report safety or operational issues on their vehicles out of concern they would be assigned a vehicle without air conditioning or other essential functions while their primary vehicle is being serviced.

Additionally, although waste collection workers are provided a Rubicon communication and tracking device, the batteries on those devices drain over the course of a shift, and there is no means by which employees can recharge the devices in the trucks. Therefore, in cases of emergency or a need to communicate with supervisors, employees may be unable to get the assistance needed because the Rubicon battery is dead.

Finally, as noted above, the fixed facilities where solid waste collection employees report for work are not adequately maintained.

4. DPW Employees Received Little to No Training Regarding Health and Safety in Extreme Weather Working Conditions

Prior to 2022, DPW Safety Enforcement Officers (SEOs) in the Department's Safety Training Division provided some heat safety training in the form of periodic heat-related safety talks, but that stopped in early 2022. The safety talks were provided at least twice a year (once for summer and once for winter). However, those talks provided only generalized guidance concerning work in excessive heat based on guidance issued by the Centers for Disease Control and Prevention. For example, the talks covered topics such as prevention of heat exhaustion, sunburn, dehydration, and bug bites. Those talks were not part of an overall heat-illness awareness and prevention program, nor did they include detailed guidance or protocols for responding to extreme heat/weather related medical emergencies.

Our investigation found that after an administrative restructuring of safety roles at DPW among the Safety Training and Professional Development division and the Environmental Regulatory Compliance and Safety division, some confusion developed about which department was responsible for heat-related safety training. Consequently, the heat-related safety talks that had been provided by the safety enforcement officers employees regularly stopped in 2022, and did not resume again until after the August 2 incident

² The investigation, however, did not include testing all DPW vehicles.

involving Mr. Ronald Silver.³ Mr. Silver, and quite a few other DPW employees started work with DPW since these training events stopped, and with no other heat illness related training program, these employees received no formal training on heat illness, the signs and symptoms of heat illness, administrative and engineering controls available to mitigate the hazard, or emergency response protocols. Likewise, frontline supervisors had not received or observed any heat related safety training during that period.

5. There Has Been a Lack of Clarity and Responsibility for Heat-Related Emergency Response.

DPW does not have clear, uniform protocols for responding to cases of medical emergency related to heat illness. Although there is an emergency phoneline (the Control One outlet) where employees and supervisors can call for assistance in an emergency, it was clear that many employees are not aware of that resource or are unclear about the process and expectations when contacting Control One. There appears to also be a lack of clarity by the command center personnel who field emergency calls about the lines of communication, escalation protocols, and proper response to heat-related emergency calls.

6. There was a Lack of Supervisory Training, Responsibility, and Accountability Regarding Employee Health and Safety.

Frontline supervisors in the solid waste division are quite often promoted through the ranks from prior roles as laborers and truck drivers, which is a good approach to developing leaders with working knowledge of the jobs they are supervising. However, our investigation revealed that upon promotion, these frontline supervisors are not provided with adequate and effective management training to understand how to manage and communicate with direct reports, how to respond to their employees' workplace safety concerns, or how to appropriately counsel them.

We observed that these supervisors, in general, take a very hands-off approach to employee wellness. They consistently express that the key to heat safety is employee self-awareness and self-care. To that end, we also concluded that supervisors are not regularly following their crews' routes. Drivers and solid waste collectors reported that they see a supervisor following the route only occasionally, but not on a regular and consistent basis, and not on any more frequent basis during high-heat days.

Some supervisors expressed reluctance to require breaks, counsel their direct reports, or even prevent a direct report from working because of apparent impairments related to potential medications and/or substance use. This reluctance is out of fear of the potential threat of verbal or physical violence. For example, one supervisor reported that employees refer to him as a "bitch ass" for his efforts to address work-related concerns such as safety. Supervisors also expressed concerns about external environmental or behavioral factors that may impact some employees' physical ability to perform their work under

³ Although, there may have been some supervisory heat-illness training (distinguished from "safety talks") provided in late July 2024, the supervisors interviewed recalled such training prior to the August 2, 2024 incident.

strenuous conditions associated with the waste collection job. However, it is our understanding that some supervisors permit employees to start a route although the employee may be exhibiting signs of an impaired physical state (i.e., intoxicated).

7. Employees Feel Excluded, Skeptical, Distrustful of Management, and Fearful of Retaliation for Raising Safety Concerns.

Our investigation revealed a history of heat-related medical emergencies among the solid waste collectors, such as fainting, severe cramping, vomiting, and more severe physical responses, with an inadequate agency response from DPW. According to various DPW supervisory and non-supervisory employees, little or no action has been taken to address these issues or be sure employees are adequately protected from heat illness hazards, thus fueling a deep skepticism and distrust by frontline workers about the City's ability and willingness to address their safety concerns. Many questioned DPW's willingness to take remedial measures and maintain them long-term.

Several front-line waste collection employees expressed fear of retaliation for voicing concerns about workplace safety based on past experiences of retaliation for doing so. These employees pointed to past incidents where complaining employees were subjected to more onerous working conditions, assigned demeaning work tasks, and/or denied certain benefits such as overtime assignments.

HEAT ILLNESS PREVENTION REGULATORY LANDSCAPE

Workplace health and safety for the State of Maryland is regulated by Maryland Occupational Safety and Health Administration (MOSH) in the State's Department of Labor and Industries. As a regulatory agency, MOSH has jurisdiction over most private sector workers and all state and local government workers, including DPW employees. The primary duty of MOSH is to develop and enforce the State's workplace health and safety regulations, most of which have been adopted from the Federal Occupational Safety and Health Administration (OSHA).

As of August 2024, neither OSHA nor MOSH had promulgated a specific standard that addressed exposure to high heat working conditions. Indeed, very few OSH agencies nationally had yet to set specific requirements or prohibitions related to heat illness prevention. Both federal OSHA and MOSH were working on heat illness standards, and MOSH has since published its Heat Stress Standards as a final regulation in the September 20, 2024 edition of the Maryland Register. That final rule will be incorporated into the Code of Maryland Regulations as a new chapter, COMAR 09.12.32 (Heat Stress Standards), and will be effective September 30, 2024.

A. Summary of Current State OSH Agencies' Heat Illness Standards

As of August 2024, only five States – California, Minnesota, Oregon, Washington, and Colorado – had promulgated specific heat standards. State standards differ in the scope of coverage. For example, Minnesota's standard covers only indoor workplaces. Washington's

standard covers only outdoor workplaces. California similarly covered only outdoor workplaces until June 2024, when it promulgated a companion indoor heat illness standard, like the State of Oregon.

State rules also differ in the methods used for triggering protections against hazardous heat. For example, Minnesota’s standard considers the exertion-level of the work being performed (light, moderate, or heavy) and provides Wet Bulb Globe Temperature thresholds based on the type of work activity. California’s heat-illness prevention protections are triggered at an ambient temperature of 80°F. Washington’s rule also relies on ambient temperature readings combined with considerations for the breathability of workers’ clothing. Oregon’s rule sets a trigger based on heat index at 80°F.

California, Washington, Colorado, and Oregon all have additional protections that are triggered by high heat. However, they differ as to the trigger for these additional protections. In California and Colorado, high heat protections are triggered at an ambient temperature of 95°F (only applicable in certain industries). In Washington and Oregon, high heat protections are triggered at an ambient temperature or heat index of 90°F.

All the State standards require training for employees and supervisors. All the State standards, except for Minnesota, require employers to provide at least one quart of water per hour for each employee, require some form of emergency response plan, include provisions related to gradual acclimatization to heat for new workers, and require access to shaded or cooled break areas. California’s standards require employers to create a written heat illness prevention plan in English as well as in whatever other language is understood by the majority of workers at a given workplace.

Table III–1 below provides an overview of the provisions included in the existing and proposed State standards on heat injury and illness prevention. Table III–2 provides an overview of the additional provisions required when the high heat trigger is met or exceeded.

TABLE III–1—INITIAL HEAT TRIGGERS AND PROVISIONS IN STATE HEAT STANDARDS									
	Threshold	Provision of water	Shade or cool-down means	Rest breaks if needed	Emergency response	Acclimatization	Training	Heat illness prevention plan	Observation/supervision
General									
California: Outdoor	80 °F (Ambient) ¹ .....	•	•	•	•	•	•	• .....	.....
Washington: Outdoor	80 °F (Ambient), All other clothing; 52 °F, Non-breathable clothes.	•	•	•	•	•	•	• (accident prevention).	.....
Colorado: Agriculture	80 °F (Ambient) .....	•	•	•	•	•	•	.....	•
California (proposal): Indoor.	82 °F (Ambient) .....	•	•	•	•	•	•	• .....	.....
Maryland (proposal): Indoor & Outdoor.	80 °F (Heat Index) ....	•	•	.....	•	•	•	• .....	.....
Minnesota: ² Indoor	86 °F (WBGT), Light work; 80 °F, Moderate work; 77 °F, Heavy work.	.....	.....	.....	.....	.....	•	.....	.....
Oregon: Indoor & Outdoor.	80 °F (Heat Index) ....	•	•	.....	•	•	•	• .....	.....
¹ Some provisions, including water, emergency response, training, and heat illness prevention plan, apply to covered employers regardless of the temperature threshold. ² Minnesota uses a 2-hour time-weighted average permissible exposure limit rather than a trigger.									

	Threshold	Work-rest schedule	Observation/supervision	Pre-shift meetings	Assessment and control measures ¹
Additional High Heat Provisions					
California: Outdoor ²	95 °F (Ambient)	• (only agriculture) .....	• .....	•	.....
Washington: Outdoor	90 °F (Ambient) .....	• .....	• .....	•	.....
Colorado: Agriculture	95 °F (Ambient) or other condition ³ .	•	covered in general provisions above.	•	.....
California (proposal): Indoor	87 °F (Ambient or Heat Index) or other conditions ⁴.	.....	.....	.....	•
Maryland (proposal): Indoor & Outdoor.	90 °F (Heat Index) .....	• .....	• .....	.....	.....
Oregon: Indoor & Outdoor	90 °F (Heat Index) .....	• .....	• .....	.....	.....

¹ Assessment and control measures include measuring temperature and heat index, identifying and evaluating all other environmental risk factors for heat illness, and using specified control measures to minimize the risk of heat illness.

B. Maryland Occupational Safety and Health’s New Heat Illness Standard

In 2020, the Maryland Legislature passed a [bill](#) directing MOSH to establish a heat illness rule by October 1, 2022. MOSH issued a draft rule in 2022, and after new leadership was appointed to the Department of Labor and Industries, a newly drafted proposed rule was developed and published in the Maryland Register on July 26, 2024, and then published it as a final rule during the final week of September 2024. Here is a detailed overview of the key elements of the MOSH rule:

i. Scope of MOSH’s Heat Stress Rule

MOSH’s rule is broad in scope, as it applies to any employer with employees whose employment activities, indoor or outdoor, expose employees to a heat index in the work area that equals or exceeds 80°F. MOSH has limited exceptions in which the rule does not apply to emergency operations and essential services, incident exposures when an employee is not required to perform work activities for more than 15 consecutive minutes per hour, and buildings, structure, and vehicles that have a mechanical ventilation system or fan that maintains the heat index below 80 degrees.

Like other states, MOSH’s rule also addresses specific requirements related to written program elements, temperature monitoring, water provisions, access to shade, acclimatization, high heat protocols, emergency response, training, and recordkeeping.

ii. Temperature Monitoring

Covered employers must monitor the heat index throughout the work shift in area(s) where employees perform work using one of the following methods:

- direct measurement of the temperature and humidity at the same time and location in the area(s) where employees perform work;
- use of local weather data reported by the National Weather Service or other recognized source to determine the heat index; or
- use of the National Institute for Occupational Safety and Health’s Heat Safety Tool application to determine the heat index.

For employers 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 location in area(s) where employees perform work.

iii. Written Program

Employers must develop and implement a written heat illness prevention program that is available and accessible to employees. The written program must address each of the following elements:

- how sufficient amounts of drinking water will be provided;
- how employees will be provided sufficient opportunities and encouragement to stay hydrated by drinking water;
- how to recognize the symptoms of heat-related illnesses, including heat exhaustion and heat stroke;
- how to respond to suspected heat-related illnesses, including heat exhaustion and heat stroke;
- how employees will be provided with sufficient time and space to rest in a shaded or cool, climate-controlled area(s) to cool off;
- how the employer will implement rest break schedules as necessary;
- how the employer will consider environmental conditions, workload, required clothing, personal protective equipment, and alternative cooling and control measures when determining rest break schedules;
- how employees will be encouraged to take rest breaks as needed to prevent heat-related illness;
- how employees will be trained on the hazards of heat exposure and the necessary steps to prevent heat-related illnesses;
- the use and maintenance of alternative cooling and control measures used to manage heat;
- procedures for heat acclimatization;
- procedures for high heat conditions; and
- emergency response plan and protocols

iv. Initial Heat Trigger Requirements

When the heat index is 80°F (initial heat trigger), employers must provide:

a. Water

Employers must provide drinking water at no cost to exposed employees as close to the work areas as practicable and make available at least 32 ounces of drinking water per hour to each exposed employee per workday.

b. Break Areas

Employers must provide shaded areas to exposed employees as close to the work area as practicable. Shaded areas must be:

- Outside, open and exposed to air on at least three sides;
- Prevent contributing heat sources from reducing effectiveness;
- Be sufficiently sized for the number of employees utilizing the shaded area;
- Be arranged in a configuration that allows employees to sit in normal posture; and
- Accommodate the removal and storage of personal protective equipment during periods of use.

If it is infeasible or unsafe to create outdoor shade, employers must implement alternative cooling and control measures that provide equivalent protection to shade.

c. Acclimatization

Employers will be required provide for acclimatization of exposed employees for a period of up to 14 days when an employee is newly exposed to heat in the workplace and whenever an employee returns to work after seven or more consecutive days of absence from work.

Employers must develop and implement an acclimatization schedule which complies with one of the following:

- a schedule which gradually increases exposure time over a 5-14 day period, with a maximum 20% increase each day;
- a schedule which uses the current National Institute for Occupational Safety and Health's recommendations for acclimatization; or
- a schedule which uses a combination of gradual introduction and alternative cooling and control measures that acclimate an employee to the heat.

The gradual acclimatization schedule for new workers shall be in writing and consider the following elements:

- acclimated and unacclimated employees;
- the environmental conditions and anticipated workload;
- the impact of required clothing and personal protective equipment to the heat burden on employees;
- the personal risk factors that put an employee at a higher risk of heat-related illness;
- re-acclimatizing employees as necessary; and
- the use of alternative cooling and control measures

Employers must also monitor employees during the acclimatization period for signs of heat-related illnesses through regular communication via phone or radio, a buddy system, or other effective means of observation.

v. High Heat Protocols

In addition to all the requirements above under the initial heat trigger, employers must implement high heat procedures when the heat index reaches or exceeds 90°F in the area where the work is being performed. Unless effective heat management and protection from heat illness through alternative cooling/control measures are feasible, employers must provide:

MANDATORY REST BREAKS:

- 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
- a minimum rest period of 15 minutes for every hour worked where employees are exposed to a heat index above 100 degrees Fahrenheit; or
- 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.

OBSERVATION:

- Employers must also monitor employees for signs of heat-related illness when the high heat procedures are in effect with regular communications via phone or radio; a buddy system; or other effective means of observation.

The rest breaks can coincide with scheduled rest or meal breaks, but they must be taken in the shade.

If an employer utilizes alternative cooling and control measures to address heat, such that the rest breaks above are not required, the measures must always be readily available and accessible to employees when work is being performed and be documented in writing.

vi. Emergency Response

Employers must develop an emergency response plan that includes procedures for:

- 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;
- responding to signs and symptoms of possible heat-related illness in employees;

- monitoring and providing care to employees who are exhibiting symptoms of heat-related illness; and
- contacting emergency medical services and, if necessary, transporting employees to a location accessible to emergency medical services.

vii. Training

Employers must provide initial heat stress training to employees and supervisors in a language they can understand prior to an employee's first exposure to heat. Employees and supervisors must also be re-trained annually prior to exposure and immediately following any incident involving a suspected or confirmed heat-related illness.

The training must include at least the following:

- the work and environmental conditions that affect heat illness;
- the personal risk factors that affect heat illness;
- the concept, importance, and methods of acclimatization;
- the importance of frequent consumption of water and rest breaks in preventing heat-related illness;
- the types of heat illnesses, signs and symptoms of heat illnesses, and the appropriate first aid and emergency response measures;
- the importance of and procedures for employees immediately reporting to the employer signs and symptoms of heat illness; and
- the employer's procedures and the requirements for complying with MOSH's heat illness rule.

viii. Recordkeeping

Employers must maintain training records for one year from the date on which the training occurred. The training records must include the following information:

- names of the persons trained
- dates of the training sessions; and
- a summary or outline of the content of the training sessions.

RECOMMENDATIONS

The events surrounding the August 2, 2024, tragic passing of Mr. Silver cast a spotlight on the growing issues with excessive heat exposure for DPW workers. To address these issues, the following recommendations have been prepared to help DPW implement a best-in-class heat illness prevention program and provide greater protection from heat exposures to DPW workers.

Recommendation 1: Heat Illness Awareness and Prevention

- We recommend that DPW build upon the work it has already done to develop a foundational heat illness prevention program in coordination with MOSH, and enhance and implement a comprehensive and sustainable heat illness prevention program that includes at least the following elements:
 - Establish three-stages of heat threshold triggers at which specific program elements kick in:
 - *Initial Heat Trigger* – Set at a Heat Index of 80°F
 - *High Heat Trigger* – Set at a Heat Index of 90°F
 - *Extreme Heat / Stop Work Trigger* – Set at a Heat Index of 105°F ⁴
 - **At the Initial Heat Trigger**, the HIPP should require, at a minimum:
 - **Water** –
 - Ensure employees have ready access to at least 32 ounces of cool, potable drinking water at no cost to employees.
 - Evaluate possible installations on solid waste collection vehicles to accommodate a water supply; e.g., space to secure coolers or water coolers.
 - Reinforce the importance of hydration on each occasion employees are working in conditions at or above the initial heat trigger.
 - **Cool Down Rest Breaks** –
 - During periods when the heat index is at or above the Initial Heat Trigger, prohibit use of any solid waste collection vehicle that does not have a functional air conditioning system.
 - Encourage employees to take cool down rest breaks as needed.
 - Reinforce the importance of hydration on each occasion employees are working in conditions at or above the initial heat trigger.
 - **Enhanced Supervision** –
 - Utilize a two-way communications system to monitor employees for signs or symptoms of heat illness.

⁴ In the Summer of 2024, the Extreme Heat Trigger was achieved on thirteen occasions. On two of those occasions, the 105°F threshold was achieved three days in a row (July 4-7 and August 1-3), and on another it was achieved four days in a row (July 14-17). In the Summer of 2023, the Extreme Heat Trigger was achieved on four occasions total. On each of those occasions in 2023 and 2024, there were material portions of each day when the heat index was below the Extreme Heat Trigger.

- **At the High Heat Trigger**, in addition to all of the requirements that kick-in at the Initial Heat Trigger, the HIPP should require, at a minimum:
 - **Cool Down Rest Breaks** –
 - Cool down rest breaks become mandatory. We recommend mandatory 15-minute minimum paid rest breaks at least every two hours.
 - To enforce the mandatory cool down rest breaks, Supervisors should: (1) utilize the Rubicon System to track the movement of the solid waste collection vehicles to ensure they are stopping for cool down rest breaks; and (2) mandatory in-person, en route visits with each crew in the field to observe for signs and symptoms.
 - **Hazard Alerts** – On High Heat Days, employees should be provided reminders about heat illness, the elements of the Department’s HIPP, the importance of hydration and cool down rest breaks, and DPW’s heat emergency procedures.
- **At the Extreme Heat / Stop Work Trigger**,⁵ in addition to all of the requirements that kick-in at the Initial and High Heat Triggers, the HIPP should require, at a minimum:
 - Cessation of work by solid waste collection personnel (i.e., truck drivers and laborers) in the field.
 - On days when the Extreme Heat Trigger is achieved, if there are reasonable periods of the day when the heat index is below that threshold, field work activities should be permitted.
 - During the period of the workday when the heat index exceeds the Extreme Heat Trigger, employees can engage in various activities at the Department’s fixed establishments, such as:
 - refresher heat-illness and other safety and wellness training;
 - sanitation and maintenance work to enhance the fixed facilities; and/or
 - sanitation and maintenance to enhance the solid waste collection vehicles.
- Develop Procedures:
 - to ensure appropriate gradual acclimatization;

⁵ This recommendation exceeds all current and proposed regulatory requirements around heat illness prevention. No OSH Agency or state law requires workers to stop work at any particular heat or heat index level, but because of the extraordinary physical demands of solid waste collection, we believe at such a high heat index, the work simply cannot be done safely, regardless how much water is provided or what breaks are mandated.

- for training and educating supervisors and employees on heat illness awareness (signs and symptoms) and prevention;
- for modifying work schedules and duties in response to elevated risks of heat illness; and
- for emergency response to heat illness events.

Recommendation 2: Enhance Heat Illness Prevention and other Safety and Wellness Training and Clarify Training Responsibilities.

- Develop comprehensive annual and semi-annual refresher training on heat and heat-related illness. The training should be provided to new hires at orientation, annually for existing employees, and perhaps mid-year as a refresher. All DPW solid waste employees and those who supervise or control their terms and conditions of employment should be required to complete the initial training and attest to having been trained.
- Assign heat illness related training to the Office of Safety Training and Professional Development and the safety enforcement officers. The safety enforcement officers should also resume/continue the regular safety talks.
- Ensure that roles and responsibilities of the Safety Training and Professional Development division and the Environmental Regulatory of Compliance and Safety division are clearly defined and formalized in either memoranda of understanding, job descriptions, or other appropriate departmental/agency communication.
- Consider advancing the rollout timeline of the City’s Trauma-Informed Care Training to DPW.

Recommendation 3: Enhance Heat Illness Related Emergency Response Protocols and Lines of Responsibility.

- Formalize the Control One function in written guidance and ensure that all employees involved in solid waste collection are provided with information and training concerning Control One.

Recommendation 4: Enhance Fleet, Fixed Facilities, and Personnel.

- Prioritize maintenance for air conditioning systems in solid waste collection trucks.
- Equip solid waste collection trucks with portable battery charging capabilities to ensure full-shift functionality of the Rubicon System and modes of two-way communication.
- Ensure that the solid waste facilities are regularly maintained and inspected using a formal checklist.

- Audit solid waste collection routes to ensure efficiency and safety.
- Designate an official responsible for managing and monitoring compliance with DPW's HIPP.
- Consider adding a professional Industrial Hygienist to DPW's safety team.
- Consider adding a Social Worker / Counselor on-site in the Health and Wellness Division, like the Baltimore Police Department have.

Recommendation 5: Workplace Culture and Supervisory Accountability

- Develop or contract for management/leadership training and require all supervisors to complete the training.
- Ensure that all supervisors are formally trained in DPW's HIPP developed based on the recommendations in this report.
- Hold supervisors accountable (through counseling, performance reviews, and even discipline) for monitoring and ensuring worker safety, following the routes, checking on the status of their crews while in the field, providing necessary water and other resources to workers in the field.
- Ensure that supervisors and drivers are informed about the Substance Abuse and Control Officer functions and enlist their assistance any time an employee appears for work in an inebriated state.
- Consider requiring toxicology testing for all work-related illnesses and accidents in the field, not just for drivers but for the laborers as well.

Recommendation 6: Workplace Communication and Anti-Retaliation

- Develop a communications strategy to inform employees and unions about the comprehensive heat illness awareness and prevention program as well as training requirements.
- As part of the annual training, emphasis should be placed on non-retaliation.
- Consider developing a hotline that employees can call to report workplace abuse or retaliation anonymously.
- Enforce anti-retaliation mandates via counseling and other forms of discipline.
- Consider a Safety Ombudsman for DPW or the City within the Office of Environmental Regulatory Compliance and Safety to field and help resolve concerns from employees related to health, safety, well-being , and other workplace matters..



DPW DRAFT HEAT ILLNESS PREVENTION PLAN

(as submitted to MOSH August 2024)



City of Baltimore
Department of Public
Works



Heat-Illness Prevention Plan

Table of Contents

I.	INTRODUCTION	3
II.	PURPOSE.....	4
III.	SCOPE.....	4
IV.	DEFINITIONS.....	4
V.	DPW POLICY	6
VI.	TRAINING.....	8
VII.	HEAT-ILLNESS PREVENTION STRATEGIES.....	9
VIII.	MEDICAL EMERGENCIES.....	22
IX.	ENFORCEMENT.....	22
X.	INCIDENT INVESTIGATIONS.....	23
XI.	CHANGES TO PLAN	23
	APPENDIX A: JOB SPECIFIC HEAT-ILLNESS PREVENTION PLAN	24
	APPENDIX B: EMPLOYEE INCIDENT REPORT (Click to go to Link).....	27
	APPENDIX C: SUPPLEMENTAL HEAT-RELATED REPORT FORM	28
	APPENDIX D: DPW HEAT ILLNESS INCIDENT INVESTIGATION EVALUATION SHEET	30
	APPENDIX E: HEAT ILLNESS PREVENTION PLAN – INDIVIDUAL SITE PLAN TEMPLATE (Click to go to Link)	31
	APPENDIX F: SAMPLE TRAINING ATTENDANCE SIGN IN SHEET (Click to go to Link)	35

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 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 with 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 if 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. 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 temperatures greater than 90 °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 temperatures will exceed 90 °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

HEAT HAZARD ASSESSMENT

When weather or workplace conditions will exceed 90 °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:

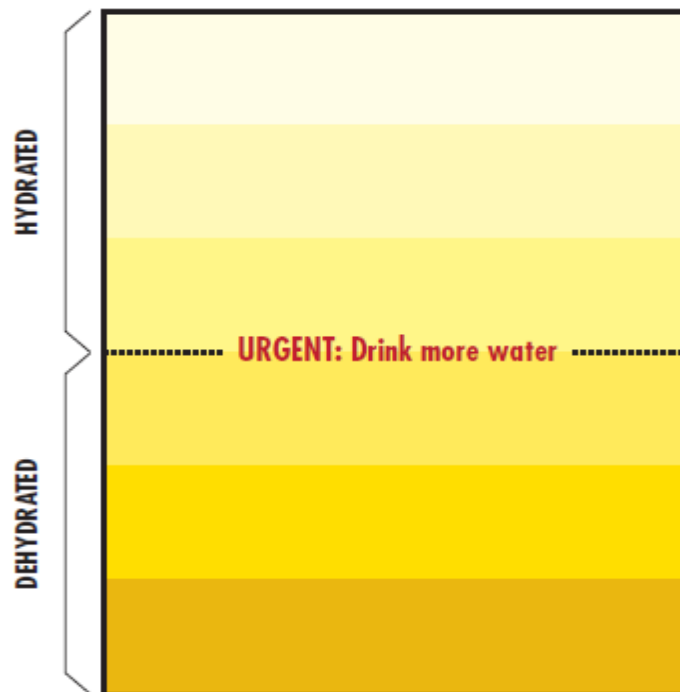
1. When feasible, and approved by the Labor Commissioner, suspend activities during the hottest part of the day and change work schedule to cooler times of the day.
2. Provide shade or shelter from the sun and eliminate solar irradiance to 0 Watts/m².
3. When feasible and safe to do so, eliminate use 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.
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;

Urine Color Chart Are you hydrated?



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

Step 3. Implement Engineering (Physical or Mechanical) Controls

When the risk level is moderate 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. 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. 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:
 - ix. Outside, open, and exposed to air on at least three sides;
 - x. Prevent contributing heat sources from reducing effectiveness;
 - xi. Sufficiently sized for the number of employees utilizing the shaded area;
 - xii. Arranged in a configuration that allows employees to sit in normal posture; and
 - xiii. Accommodate the removal and storage of personal protective equipment during periods of use.
 - xiv. 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 ▶	
<input type="checkbox"/> 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 #:				1 Date this report	
<input type="checkbox"/> RE-INJURY FOR A RE-INJURY CLAIM, FOLLOW CLINIC OR HOSPITAL INSTRUCTIONS ABOVE. Fax form to Key Risk at 410-954-1255. DO NOT CALL IN CLAIM				2 Date Month Day Year INCIDENT OCCURRED Time Shift	
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 <input type="checkbox"/> Male <input type="checkbox"/> Female		15 Date of Employment Date assign, to pres. job		16 GROSS RATE OF PAY \$ PER (HOUR, DAY, WEEK)	
17 DISPOSITION <input type="checkbox"/> CLINIC <input type="checkbox"/> HOSPITAL Name-Hospital or Clinic		20 FRONT BACK Circle Body Part Injured 			
18 Specify exact address where incident occurred. Also specify exact location at this address.		21 According to employee, what part(s) of his (her) body was injured.			
19 Employee's description of how incident occurred. (Use additional signed sheets if necessary)		22 Employee's Signature Date <input type="checkbox"/> Check here if unable to sign			
23 WHEN DID YOU FIRST LEARN OF INCIDENT? DATE TIME <input type="checkbox"/> AM <input type="checkbox"/> PM		24 Is the employee's statement in accordance with Supervisor's knowledge of the facts? <input type="checkbox"/> YES <input type="checkbox"/> NO If no, explain details of incident in your words. (Use additional sheets if needed)			
25 Part of machine on which incident occurred		26 Was safety equipment provided? <input type="checkbox"/> YES <input type="checkbox"/> NO		Was it in use at time? <input type="checkbox"/> YES <input type="checkbox"/> NO	
27 Was incident caused by injured's failure to observe safety rules? <input type="checkbox"/> YES <input type="checkbox"/> NO		28 Steps taken to prevent future similar injuries.			
29 If injury due to vehicle accident: MAKE/MODEL: SHOP/FLEET # COMPLAINT # SEATBELT IN USE: <input type="checkbox"/> YES <input type="checkbox"/> NO PCD IN USE: <input type="checkbox"/> YES <input type="checkbox"/> NO					
30 WITNESSES Name (Print) OFF. EMPLOYED 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? <input type="checkbox"/> YES <input type="checkbox"/> NO	
34 Signature -Commanding Officer or Battalion Chief				Date	

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:	

<p>1) How does management monitor heat conditions throughout the worksite, throughout the day?</p>	
<p>2) How does management ensure that employees are provided sufficient opportunities and encouragement to stay hydrated by drinking water?</p>	
<p>3) How will employees at the worksite recognize the symptoms of heat-related illnesses, including heat exhaustion and heat stroke?</p>	
<p>4) What steps will employees follow to respond to suspected heat-related illnesses, including heat exhaustion and heat stroke?</p>	
<p>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?</p>	
<p>6) How has management implemented rest break schedules to accommodate for heat/temperature related risks?</p>	

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

<p>12) Describe the procedures for high heat conditions and monitoring employees:</p>	
<p>13) Implement an emergency response plan that includes procedures for:</p> <ul style="list-style-type: none"> 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. 	<p>A)</p>
	<p>B)</p>
	<p>C)</p>
	<p>D)</p>

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		

